

SYSTEMS+

**THE ULTIMATE DESIGN GUIDE
FOR KNAUF PLASTERBOARD
AND LIGHTWEIGHT SYSTEMS**

OCTOBER 2025

The Knauf logo is positioned in the bottom right corner of the page. It features the word "KNAUF" in a bold, blue, sans-serif font. The letters are slightly italicized, giving it a dynamic feel. The logo is set against a white background that is part of a white triangular shape pointing towards the center of the page.

KNAUF

PREFACE

Today Knauf is one of the world's leading manufacturers of modern insulation materials, dry lining systems, plasters and accessories, thermal insulation composite systems, floor screed, floor systems, and construction equipment and tools. With more than 300 production facilities and sales organisations in over 90 countries, 40,000 employees worldwide, and sales of 12.6 billion Euro, the Knauf Group is, without doubt, one of the big players on the market – in Europe, the USA, South America, Asia, Africa and Australia.

At the Knauf Group, we believe the best innovations start with a purpose – a focus on why the innovation is needed and who will benefit from it. Our focus is to deliver innovations that help you work smarter, do more and build better. We do so by investing in purposeful innovation, expanding into different markets and constantly searching for new ways to increase performance and productivity.

This commitment to innovation and focus on you, our customer, is inspired by a desire to enable architects, contractors and workers alike to improve the way we live by changing the way buildings are designed and built.

At Knauf, we are committed to delivering only the best to you – our customers and partners.
For more information on Knauf refer to knauf.com



All works undertaken to prescribe the use of or to install Knauf's products and systems must be performed by experienced and, where required by applicable laws, appropriately licensed personnel. Knauf's products and systems must be installed in accordance with Knauf's installation manual, Systems+, and any other product or system specific literature issued by Knauf. If installation works are not performed in compliance with such product literature, by experienced and licensed personnel, or are incorrectly performed by experienced or licensed personnel, there is a serious risk that the works, application and performance of the relevant system or products will be compromised, which could result in property damage, injury or death.

All personnel who undertake works to install Knauf's products and systems must comply with all applicable health and safety laws, including wearing appropriate personal protection equipment. If personnel do not comply with applicable health and safety laws, including by not wearing appropriate personal protection equipment, there is a serious risk of injury or death.

All of Knauf's products and systems must only be used for the uses identified in this document (and any other product or system specific literature issued by Knauf from time to time). Before prescribing or using any Knauf product or system for any other use, you must contact Knauf.

All recommended component parts for Knauf's products and systems should be used and not substituted for other products. If component parts are substituted, there is a serious risk that the works, application and performance of the relevant system or products will be compromised, which could result in property damage, injury or death.

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Section A

General Information

10/2025

GENERAL INFORMATION

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PRELIMINARIES

Introduction

This manual is intended for use by building designers, builders, certifiers and plastering contractors dealing with fire rated and acoustic construction. It provides fire rating, acoustic and structural performance data for a wide range of Knauf building systems including lightweight wall and ceiling systems, masonry upgrades and beam/column fire protection systems.

In addition to the systems listed in this publication, Knauf offers many other system configurations to suit specific project requirements. Performance data on the full range of Knauf systems can be found at knauf.com/en-AU/knauf-gypsum/services/tools/eselector

Scope

This manual lists Knauf fire rated wall systems up to FRL -/180/180 and FRL 120/120/120.

Fire rated ceiling systems are available up to FRL 120/20/120 (from below) and beam/column fire protection systems up to FRL 120/-/-.

A wide range of acoustic systems are available to meet National Construction Code (NCC) and other performance requirements. These include plasterboard wall and ceiling systems with $R_w + C_v$ 50 or higher, a range of Knauf acoustic ceiling tiles up to NRC 0.75, and Knauf Stratopanel with an NRC of up to 0.90.

Certification

Knauf systems have been assessed to meet the relevant requirements of Australian Standards and the NCC:

Fire Resistance

Fire testing and assessment has been done to AS 1530.4 *Methods for fire tests on building materials, components and structures — Fire resistance test of elements of construction* and carried out by:

- CSIRO, Manufacturing and Infrastructure Technology, North Ryde, NSW
- Warrington Fire, Dandenong, Victoria
- BRANZ, Judgeford, New Zealand.

Acoustic Ratings

All acoustic ratings provided in this publication are either laboratory tested results or opinions provided by Renzo Tonin & Associates (RT&A), SLR Consulting Australia (SLR) or PKA Acoustic Consulting (PKA) and are covered by the stated Opinion Reference in each table. These opinions are based on acoustic tests of similar systems (laboratory and/or site tests) as well as theoretical models, and are produced by experienced acousticians who are members of the Australian Acoustical Society. RT&A, SLR and PKA are member firms of the Association of Australian Acoustical Consultants (AAAC).

Structural

Structural testing of wall systems has been carried out at the NATA registered laboratories of Knauf at Pinkenba. Structural appraisal of the systems was carried out by Wynton Stone Australia Pty Ltd and Taylor Thomson Whitting of Melbourne.

Fire, acoustic and structural test reports and opinions can be made available on request from Knauf.

NOTES:

- Various system certifications are valid only when the relevant systems are constructed in accordance with Knauf specifications and using the stated materials and components. Fastening should be of the same type and at centres no greater than detailed for particular systems.
- While Knauf systems are certified to achieve the stated fire resistance and acoustic ratings, it is the responsibility of the relevant project consultant to ensure that the selected systems satisfy project requirements.
- Acoustic ratings provided in this publication are the expected laboratory test results based on the opinion of acoustical experts. Laboratory measurements are conducted under strict and near ideal conditions. On-site performance is generally lower due to flanking effects.

PRELIMINARIES

Standards

The following Australian and other Standards are referenced in this publication:

- AS 1530.4 *Methods for fire tests on building materials, components and structures — Fire resistance test of elements of Construction*
- AS ISO 717.1 *Acoustics — Rating of sound insulation in buildings and of building elements — Airborne sound insulation*
- AS ISO 717.2 *Acoustics — Rating of sound insulation in buildings and of building elements — Impact sound insulation*
- AS 1191 *Acoustics — Method for laboratory measurement of airborne sound transmission insulation of building elements*
- AS/NZS 2499 *Acoustics — Measurements of sound insulation in buildings and of building elements — Laboratory measurement of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it*
- AS ISO 11654 *Acoustics — Rating of sound absorption — Materials and systems*
- AS/NZS 1170.2 *Structural Design Actions — Wind actions*
- AS 1170.4 *Structural Design Actions — Earthquake actions*
- AS 1397 *Steel Sheet and Strip — hot dipped, zinc coated or aluminium/zinc coated*
- AS 1684 *Residential timber framed construction*
- AS/NZS 1716 *Respiratory protective devices*
- AS/NZS 2588 *Gypsum Plasterboard*
- AS/NZS 2589 *Gypsum Linings — Application and finishing*
- AS 3566.1 *Self-drilling screws for the building and construction industries*
- AS 3600 *Concrete Structures*
- AS 3700 *Masonry Structures*
- AS 3740 *Waterproofing of domestic wet areas*
- AS 4055 *Wind loads for housing*
- AS/NZS 4600 *Cold-formed steel structures*
- AS/NZS 4858 *Wet Area Membranes*
- AS/NZS 5601.1 *Gas installations – General installations*
- AS/NZS ISO 9001 *Quality management systems — Requirements*
- ISO 9002 *Quality systems – Model for quality assurance in production, installation and servicing*
- ASTM G21 *Determining Resistance of Synthetic Polymeric Materials to Fungi*
- ASTM D3273 *Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.*

Abbreviations

The following abbreviations are used throughout this manual:

| TABLE A1: ABBREVIATIONS | |
|-------------------------|--|
| ABBREVIATION | DESCRIPTION |
| AAAC | The Association of Australasian Acoustical Consultants |
| BCA | Building Code of Australia |
| NCC | National Construction Code |
| BMT | Base Metal Thickness |
| ctrs | Centres |
| Max | Maximum |
| LB | Load Bearing |
| Min | Minimum |
| NLB | Non-Load Bearing |
| Nom | Nominal |
| NA | Not Applicable |
| p | Page |
| pbd | Plasterboard |
| RT&A | Renzo Tonin & Associates |
| SLR | SLR Consulting Australia |
| PKA | PKA Acoustic Consulting |
| UNO | Unless Noted Otherwise |

Performance Indicators

The following performance indicators are mentioned in various parts of this manual:

| TABLE A2: PERFORMANCE INDICATORS | |
|----------------------------------|--|
| INDICATOR | DESCRIPTION |
| Fire Resistance Properties | |
| FRL | Fire Resistance Level |
| RISF | Resistance to Incipient Spread of Fire |
| Acoustic Properties | |
| α_w | Weighted Sound Absorption Coefficient |
| CAC | Ceiling Attenuation Class |
| $D_{nc,w}$ | Weighted Suspended Ceiling Normalised Level Difference (laboratory performance) |
| $D_{nT,w}$ | Weighted Standardised Sound Level Difference (field performance) |
| $D_{nT,w} + C_s$ | Weighted Standardised Sound Level Difference with Spectrum Adaptation Term (field performance) |
| $L_{n,w}$ | Weighted Normalised Impact Sound Pressure Level (laboratory performance) |
| $L'_{nT,w}$ | Weighted Standardised Impact Sound Pressure Level (field performance) |
| NRC | Noise Reduction Coefficient |
| R_w | Weighted Sound Reduction Index (laboratory performance) |
| $R_w + C_s$ | Weighted Sound Reduction Index with Spectrum Adaptation Term (laboratory performance) |
| T_{60} | Reverberation Time |
| Other | |
| LR | Light Reflectance |

For the full description of various performance indicators refer to the relevant parts of the General Information section.

PRELIMINARIES

Quality Assurance

Knauf is a Quality Endorsed Company (Lic No 0400) conforming to AS/NZS ISO 9001 *Quality management systems – Requirements*.

All Australian Knauf plasterboard production facilities are certified under ISO 9002 *Quality systems – Model for quality assurance in production, installation and servicing*.

Knauf plasterboard is machine made under a continuous process to the requirements of AS/NZS 2588 *Gypsum plasterboard*.

Sustainability

Raw Materials

Gypsum used in locally manufactured Knauf plasterboard products is mined from abundant resources at Kevin in South Australia.

The mine has in place a rehabilitation and revegetation strategy aimed at creating a landscape with natural appearance and native local vegetation.

Plasterboard paper liner is manufactured from 100% recycled waste paper fibre and contains no virgin paper fibre.

FIBEROCK Aqua-Tough gypsum board contains 95% recycled content.

Plasterboard Manufacture

Apart from natural gypsum and recycled paper, the key inputs in the plasterboard manufacturing process are natural gas and potable water.

Knauf aims at exceeding the local Environment Protection requirements and at maximising the use of recycled water at its manufacturing facilities.

Recycling

Plasterboard waste can be recycled into new plasterboard or as soil conditioner.

For further information contact your local Knauf office.

GECA Certification

The following Knauf plasterboards have been certified by Good Environmental Choice Australia (GECA):

- 10 mm / 13 mm SHEETROCK ONE
- 10 mm SHEETROCK PLUS
- 13 mm WetStop
- 13 mm / 16 mm FireStop
- 13 mm ImpactStop
- 13 mm / 16mm MultiStop ONE
- 13 mm MultiStop ONE HI
- 13 mm / 16 mm FIBEROCK Aqua-Tough
- 25 mm Shaftliner MouldStop

Embodied Energy

As shown in the following table, embodied energy per kg of plasterboard compares favourably with other common lining materials:

| MATERIAL | PER* EMBODIED ENERGY (MJ/ kg) |
|---------------|-------------------------------|
| Plasterboard | 4.4 |
| Fibre cement | 4.8 |
| Particleboard | 8.0 |
| Plywood | 10.4 |
| MDF | 11.3 |
| Hardboard | 24.2 |

* PER - Process Energy Requirements.
Source: Building Materials Energy and the Environment, Bill Lawson, The Royal Australian Institute of Architects, 1996.

Safety

The following precautions are recommended when installing and finishing plasterboard:

- Avoid creating dust when handling plasterboard or mixing plaster compounds.
- When sanding, minimise the effects of dust by:
 - providing adequate ventilation
 - wearing eye protection
 - wearing a respiratory mask conforming to AS/NZS 1716 *Respiratory protective devices*
 - using mechanical sanding tools fitted with dust extractor and storage bag.
- Keep tools and materials out of reach of children. In addition, the users should observe Occupational Health and Safety tips contained on the packaging labels for Knauf products as well as safe manual handling practices.

First Aid

- If plaster compound or dust comes into contact with the eyes, wash eyes thoroughly with clean potable water.
- If plaster compound or dust comes into contact with skin, wash skin thoroughly with soap and water.
- If dust is inhaled, move to a fresh air environment.
- If plastering compound or dust is ingested, drink plenty of water.

Material Safety Data Sheets for Knauf products can be downloaded from knauf.com

In emergencies call **1800 033 111**

For poison assistance call **13 11 26**

PRELIMINARIES

Plasterboard Properties

Thermal Resistance

The thermal resistance ratings (R-values) of some plasterboard produced by Knauf, are provided in the following table:

| PLASTERBOARD PRODUCT | R-VALUE |
|-------------------------------|------------------------------|
| 13 mm FireStop | 0.061 m ² K/W±10% |
| 13 mm FIBEROCK Aqua-Tough | 0.049 m ² K/W±10% |
| 16 mm FireStop | 0.074 m ² K/W±10% |
| 25 mm Shaftliner MouldStop | 0.112 m ² K/W±10% |

Calculation of the above R-values is based on test data of thermal conductivity as reported in BRANZ Report No EC0713, 22/10/2003. FIBEROCK Aqua-Tough R-values are based on tests carried out by USG.

When plasterboard is fixed to framework, creating a cavity construction, R-values of plasterboard systems can be easily upgraded through addition of bulk or reflective insulation.

Total thermal resistance ratings of various external wall systems are shown in the relevant system tables.

Specific Heat Capacity

The Specific Heat Capacity is a measure of a material's capacity to store heat, the higher the Specific Heat Capacity the greater the capacity to store heat.

| PRODUCT | SPECIFIC HEAT CAPACITY | BASIS |
|-------------------------------|------------------------|--|
| 13 mm FireStop | 960 J/kgK ±10% | BRANZ Report No EC0713/2, 22/10/03 |
| 25 mm Shaftliner MouldStop | 979 J/kgK ±10% | BRANZ Report No EC0713/2, 22/10/03 |

Temperature Effects

Thermal co-efficient of linear expansion of plasterboard is 16.2×10^{-6} mm/(mm°C) over the range 4°C to 38°C.

Knauf does not recommend the use of radiant heating systems continuously subjecting plasterboard ceilings to temperatures in excess of 52°C.

Moisture Effects

The hygrometric co-efficient of linear expansion of plasterboard is 7.2×10^{-6} mm/(mm% RH) over the range 5% to 90% relative humidity.

As exposure to moisture may affect performance of plasterboard linings, it is recommended that plasterboard is installed in well ventilated areas protected from moisture penetration.

Building designers should be aware that some types of bulk insulation tend to absorb and retain the moisture against the face of plasterboard.

Impact Resistant Linings

Knauf offers a number of lining products specifically developed for applications requiring enhanced impact resistance:

| PRODUCT | IMPACT RESISTANCE LEVEL |
|---------------------------|-------------------------|
| SHEETROCK PLUS | Impact |
| ImpactStop, MultiStop ONE | High Impact |
| MultiStop ONE HI | Very High Impact |
| FIBEROCK Aqua-Tough | Ultimate Impact |

Water and Mould Resistance

Although plasterboard is not a waterproof material, Knauf offers a number of lining products classified as water resistant under the NCC requirements for domestic wet areas. These products include:

- SHEETROCK PLUS
- WetStop
- MultiStop ONE and ONE HI
- FIBEROCK Aqua-Tough
- Shaftliner MouldStop

The following Knauf products are classified as mould resistant:

- MultiStop ONE and ONE HI (achieved no mould growth with a rating of 0 when tested in accordance with ASTM G21, and the highest score of 10 when tested in accordance with ASTM D3273)
- FIBEROCK Aqua-Tough (achieved the highest score of 10 when tested in accordance with ASTM D3273)
- Shaftliner MouldStop (achieved no mould growth with a rating of 0 when tested in accordance with ASTM G21, and the highest score of 10 when tested in accordance with ASTM D3273).

MATERIALS

Plasterboard

Knauf offers a wide range of plasterboard products to suit various applications:

TABLE A7: KNAUF PLASTERBOARD

| PRODUCT NAME | NOMINAL THICKNESS mm | NOMINAL MASS kg/m ² | APPLICATIONS |
|----------------------|-------------------------|-----------------------------------|---|
| SHEETROCK ONE | 10 | 5.9 | Residential wall and ceiling linings |
| | 13 | 8.5 | Residential/ Commercial wall and ceiling linings |
| SHEETROCK PLUS | 10 | 8.5 | Residential wet area, external & garage ceiling, acoustic wall and ceiling and impact resistant linings |
| WetStop | 13 | 9.2 | Wet area, external and garage ceiling linings |
| FireStop | 13 | 10.9 | Fire resistant wall and ceiling linings |
| | 16 | 13.4 | |
| ImpactStop | 13 | 12.0 | High impact, sound and fire resistant linings |
| MultiStop ONE | 13 | 12.0 | High impact, fire, sound, water and mould resistant linings |
| | 16 | 14.6 | |
| MultiStop ONE HI | 13 | 12.0 | Very high impact with mesh reinforcement, sound, fire, water and mould resistant linings |
| Shaftliner MouldStop | 25 | 20.5 | Shaft enclosures & separating walls |
| Flexiboard | 6.5 | 4.1 | Curved wall and ceiling linings |
| FIBEROCK Aqua-Tough | 13 | 11.7 | Ultimate impact, water, sound, fire and mould resistant linings |
| | 16 | 15.1 | |
| EchoStop | 12.5 | 10.0 | Sound absorption within a room |
| Stratopanel | 12.5 | 7.4 - 8.6 | Sound absorption within a room |
| GIB X-Block | 13 | 17.2 | X-ray radiation protection |

Note:

Product availability should be checked with Knauf as some products may only be available on order and/or in minimum order quantities.

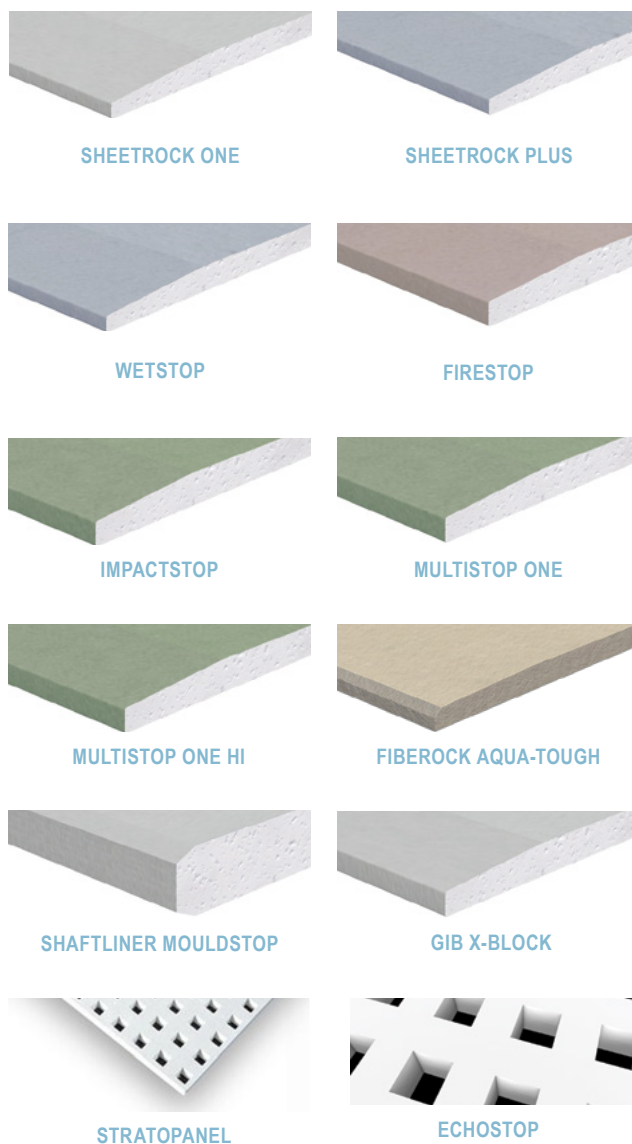


Figure A1: Knauf Plasterboards

MATERIALS

Metal Components

Steel Stud Walls

Knauf steel stud wall systems utilise Rondo lipped C-studs, wall tracks and deflection head tracks as listed in the Steel Stud Walls section.

ShaftWall

Knauf Shaftwall system utilises Rondo CH-Studs and other components as listed in Specialty Systems – Service Shafts.

Furred Systems

Knauf furred wall and ceiling systems utilise Rondo furring channels and fixing clips as outlined in the relevant sections of this manual.

Suspended Ceilings

Knauf suspended ceilings utilise the following suspension systems:

- Rondo DONN® Brand Exposed Grid
- Rondo Xpress Drywall Grid
- Rondo KEY-LOCK® Suspended Ceiling System
- Rondo DUO® Exposed Grid Ceiling System.

Timber Sections

Knauf timber stud wall systems utilise standard stud and plate sizes as listed in the Timber Stud Walls section.

Acoustic ratings of timber framed floor/ceiling systems are based on 240 mm deep joists.

Insulation

Glasswool Insulation

Knauf glasswool insulation offers a unique combination of performance characteristics – delivers high levels of thermal performance, high levels of sound absorption, is naturally non-combustible and is inherently low in embodied carbon. Knauf glasswool insulation contains up to 80% recycled content and is manufactured using a unique bio-based binder – ECOSE Technology, which is made from natural raw materials that are rapidly renewable, and is 70% less carbon intensive to manufacture than traditional binders. Unlike binders used to manufacture traditional and alternative glasswool products, ECOSE Technology binder contains no added formaldehyde or phenol resulting in Knauf Insulation glasswool products subsequently being awarded the Declare Red List Free label by the International Living Future Institute.

The following Knauf Insulation glasswool products have been tested and or assessed to be used in Knauf systems to achieve designated fire, acoustics and thermal performance:

- KI 25G24 - 25 mm glasswool insulation 24 kg/m³ density
- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
- KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
- KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density
- KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density
- KI 90G14 - 90 mm glasswool insulation 14 kg/m³ density
- KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
- KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density
- KI 90G R1.5 - R1.5 Wall Batts glasswool insulation
- KI 90G R2.0 - R2.0 Wall Batts glasswool insulation
- KI 90G R2.5 - R2.5 Ceiling Batts glasswool insulation
- KI 145G R3.0 - R3.0 Ceiling Batts glasswool insulation
- Foil-faced 60 mm (R1.4) nom roof insulation blanket.







MATERIALS

Fasteners

The following fasteners are suitable for fixing of plasterboard linings:

TABLE A8: PLASTERBOARD SCREWS¹

| SCREW TYPE | APPLICATION |
|---|---------------------------|
| S  | Steel BMT* up to 0.75 mm |
| W  | Timber only |
| D  | Steel BMT* 0.80 - 2.00 mm |
| L  | Gypsum board laminating |

* BMT – Base Metal Thickness.

TABLE A9: PLASTERBOARD TO PLASTERBOARD FASTENERS

| NUMBER OF LAYERS OF PLASTERBOARD x THICKNESS | | TYPE L ¹⁰ SCREWS FOR FIXING PLASTERBOARD A TO B |
|---|----------------|--|
| PLASTERBOARD A | PLASTERBOARD B | |
| 1x13 mm | 1x13 mm | 10-8x32 mm |
| 1x16 mm | 1x16 mm | 10-8x38 mm |
| 1x16 mm | 2x16 mm | 6-8x50 mm |

TABLE A10: PLASTERBOARD TO FRAME FASTENERS

| PLASTERBOARD THICKNESS mm | TIMBER FRAME | | | | STEEL FRAME |
|---------------------------------|--|--|---|---------------------------------|---|
| | KNAUF SMOOTH SHANK GOLD PASSIVATED NAILS ⁹ | KNAUF ANNULAR RING SHANK NAILS ⁹ AND UNI-NAILS ⁹ | GALVANISED NAILS ⁹ (2.8 mm DIA UNO) | TYPE W SCREWS ² | TYPE S ³ AND TYPE D ⁴ SCREWS |
| 1x10 | 40 softwood 30 hardwood | 30 | 40 softwood 30 hardwood | 6-9x25W wall 6-9x32W ceiling | 6-18x25 ⁷ D, S |
| 1x13 | 40 softwood 30 hardwood | 30 | 40 softwood 30 hardwood | 6-9x32W | 6-18x25 ⁷ D, S |
| 1x16 | 50 | - | 50 softwood 40 hardwood | 6-9x40W | 6-18x30 D, S |
| 1x25 | - | - | - | - | 6-18x40D, S |
| 2x10 | 50 | - | 50 | 6-9x40W | 6-18x30D, S |
| 2x13 | 65 | - | 50 | 6-9x50W | 6-18x40D, S |
| 13+16 | 65 | - | 50 | 6-9x50W | 6-18x40D, S |
| 2x16 | 65 | - | 65 | 6-9x60W | 6-18x45D, S |
| 3x13 | - | - | 75x3.75 | 8-8x60W | 7-16x50S |
| 3x16 | - | - | 75x3.75 | 8-8x75W | 8-15x60S |

NOTES:

- Screws to be Class 3 or Class 4 as appropriate for the corrosion conditions for wet areas and protected external applications.
- "W" is a needle point, bugle head type W gypsum screw for fixing to hardwood and softwood framing. In some instances double start thread screws are permissible (refer Knauf).
- "S" is a needle point, bugle head type S gypsum screw for fixing to steel gauges of up to 0.75 mm BMT.
- "D" is a drill point, bugle head type D gypsum screw for fixing to steel gauges 0.80 to 2.00 mm BMT.
- "L" is a needle point, bugle head type L gypsum screw for fixing plasterboard to plasterboard.
- Screw designation given as (minimum screw gauge) — (threads per inch +1) x (minimum screw length).
- For ease of construction with framing steel gauges of less than 0.8 mm
- BMT use 30 mm minimum screw length.
- Correct screw length is critical when fastening to resilient furring channel to avoid acoustic bridging.
- Nail lengths are minimums, however care is needed when selecting longer nails to avoid nail bending in hardwoods or popping of plasterboard with unseasoned timber.
- For wall systems only. Tables to be read in conjunction with plasterboard installation details.

MATERIALS

PERMAROCK® Cement Board

Knauf Permarock Cement Boards are manufactured with aggregated Portland cement and coated glass fibre mesh embedded in the back and front surfaces.

PERMAROCK Cement Board is non combustible and water-resistant. Under water impact, PERMAROCK Cement Board displays extremely slight and system-safe changes in form.

The cement board changes neither its structural cohesion nor its static characteristics. PERMAROCK Cement Board is resistant to mould growth and is therefore also suitable for use in areas where there is a high level of damp.

Altogether, this robustness, resistance and reliability in performance makes PERMAROCK Cement Board ideal for both walls and ceilings systems in wet environments. Knauf utilises the following products in our wall and ceiling systems.

- 12.5 mm PERMAROCK Cement Board Indoor (approx.11.0 kg/m²)
- 12.5 mm PERMAROCK Cement Board Outdoor (approx.16.0 kg/m²)



Figure A2: PERMAROCK Board

Jointing Tapes

Jointing tapes are used to provide reinforcement to plasterboard joints and angles.

Paper tape is recommended by Knauf for jointing of gypsum wall and ceiling linings due to its high strength and suitability for all jointing compounds and applications.

Paper jointing tape must be used in wet area and fire rated applications and with air-drying type jointing compounds.



Figure A3: Paper Jointing Tape

Sealants

H.B. Fuller Firesound® sealant is recommended for sealing of perimeter gaps and penetrations in Knauf fire rated and acoustic systems.

A suitable flexible waterproof sealant must be used to seal the sheet ends of water resistant plasterboard to other surfaces, such as preformed shower bases, baths and plumbing fixtures (see Wet Areas).

MATERIALS

Jointing Compounds Range

This technical information is intended to provide general information on plasterboard products and should not be used as a substitute for professional building advice.

We recommend you use a qualified person to install Knauf plasterboard. To ensure the information you are using is current, Knauf recommends you review the latest building information available on the Knauf website knauf.com

| | | Bedding & Base | | | All Purpose | |
|---------------------------|---------------------------|---|---|---|---|---|
| | |  |  |  |  |  |
| | | BaseCote™ 45 BaseCote™ 60 BaseCote™ 90 | Uniflott™ (a) | RediBase™ | All Purpose Premix | Total Joint Finish |
| Jointing | 1st Coat | ✓ ^(b) | ✓ ^(b) | ✓ ^(b) | ✓ ^(b) | ✓ ^(b) |
| | 2nd coat | ✓ | – | ✓ | ✓ | ✓ |
| | Finishing Coat | – | – | – | ✓ | ✓ |
| | External Angles | ✓ | – | ✓ | ✓ ^(c) | ✓ ^(c) |
| | Mechanical Tools | ✓ | – | ✓ | ✓ | ✓ |
| Systems | Fire Rated ^(d) | ✓ | – | ✓ | ✓ | ✓ |
| | Wet Area | ✓ ^(e) | – | – | ✓ ^(f) | ✓ ^(f) |
| Curing Type | | Setting | Setting | Air-Drying | Air-Drying | Air-Drying |
| Working Times | | 45, 60 or 90 mins | 45 mins | – | – | – |
| Product Size | | 20 kg bag 10 kg available for BC45 | 5 kg bag | 18 kg pail | 18 kg pail | 12 kg pail, 4.8 kg pail, 2 kg pail |
| Packs /Pallet Quantity | | 56 (20 kg) 91 (10 kg) | 200 | 48 | 48 | 64 (12 kg), 144 (4.8 kg), 245 (2 kg) |
| Scrape Back | | Easy to scrape | – | Very easy to scrape | Very easy to scrape | Very easy to scrape |
| Sanding | | – | – | – | Moderate | Moderate |
| | | | | | 150 - 180 grit | 150 - 180 grit |
| Compound Type | | Powder | Powder | Ready Mix | Ready Mix | Ready Mix |
| Colour | | Off-White | White | Off-White | White | White |

Note 1 – Fire Rated

Paper tape must be used in fire-rated applications.

Note 2 – Wet Area

Knauf base compounds can be used if a waterproofing membrane installed by a specialist contractor and complying with the requirements of AS/NZS 4858 Wet Area Membranes is applied over the whole face of Wet Area walls. Paper tape must be used in wet area applications.

Note 3

Paper tape must be used with first coat compounds when jointing.

Note 4 – Air Drying/ Ready Mix Compounds

Mix Compounds are not recommended for embedding External Angles due to the extended drying time.

MATERIALS

| Finishing Compounds | | | Patching | X-ray |
|---|---|---|--|---|
|  |  |  |  |  |
| SHEETROCK® Total LITE™ | LiteFinish™ | FinalCote™ | Patching Plaster | GIB X-Block® Jointing Compound® |
| - | - | - | - | ✓ [®] |
| ✓ | ✓ | - | - | ✓ |
| ✓ | ✓ | ✓ | - | - |
| - | - | - | - | ✓ |
| ✓ | ✓ | ✓ | - | ✓ |
| ✓ | ✓ | ✓ | - | ✓ |
| ✓ ^m | ✓ ^m | ✓ | - | - |
| Air-Drying | Air-Drying | Air-Drying | Setting | Air-Drying |
| - | - | - | 50 mins | - |
| 17.5 kg pail | 18 kg pail | 20 kg pail | 1.5 kg pail | 25 kg bag |
| 48 | 48 | 48 | 245 | 25 |
| - | - | - | Scrape while green | Easy to scrape |
| Very easy sanding | Very easy sanding | Easy sanding | Moderate | - |
| 180 - 220 grit | 180 - 220 grit | 180 grit | 150 - 180 grit | - |
| Ready Mix | Ready Mix | Ready Mix | Powder | Powder |
| Yellow | Yellow | Off-White | Off-White | Brown |

Note 5 – Stratopanel

Uniflott is only for use in Stratopanel ceiling systems.

Note 6 – X Ray GIB X-Block

Jointing Compound is specifically designed to give lead equivalent joints on walls and ceilings when using GIB X-Block Plasterboard. GIB X-Block Jointing Compound must be applied to all joints including inner layer joints of 2 or more layer systems. Paper tape must be used for jointing and at least 2 coats of GIB X-Block Jointing Compound should be applied to prevent penetration of X-Rays at joints. Joints can be finished with any of the Knauf premium finishing compounds. GIB X-Block Jointing Compound is an air-drying type compound so ensure each coat has thoroughly dried before applying the next coat.

Note 7 – Only when used as a finishing coat.

DESIGN

Structural

As required by the NCC and relevant Australian Standards, in addition to any acoustic or fire design, building elements must be checked for structural adequacy under dead, live, wind and other applicable loads.

Wall design must allow for:

- Expected vertical deflection due to building movement
- Thermal expansion during fire service
- The support, including lateral support of any door or access panel frames, supported external cladding, internal lining, dampers, shelves, cupboards, attachments or other loadings required to be supported by the wall or wall embedded frame
- Any loadings due to internal or external pressure differentials
- Vertical loads.

Head Clearance

Almost all structures will deflect during service. Designers should be aware of the expected deflections of the building structure as they affect partitions. These deflections may be due to both dead and live loadings. Non-load bearing partitions are not designed to take any axial loading due to building deflection.

In fire rated steel stud walls, thermal expansion of studs of up to 5 mm/m should be expected during fire service. Stud shortening due to thermal bowing may reduce the expansion, especially in thinner walls.

Designers should make due allowance for expected vertical deflections and stud thermal expansion in considering deflection head requirements and, where necessary, refer to Knauf for further information. Standard partition head details should accommodate normal service deflections.

Plasterboard as Structural Bracing

Knauf does not recommend the use of plasterboard ceiling linings to brace the roof structure or individual roof truss chords.

Knauf does not recommend the use of plasterboard for dedicated bracing of walls.

Maximum Wall Heights

Wall heights for non-load bearing steel stud walls must not exceed the maximum heights specified in Steel Stud Walls section.

Maximum heights for non-load bearing steel stud walls have been provided for 0.25kPa lateral serviceability pressure and are based on L/240 deflection criteria set out in the NCC. For maximum heights at 0.35kPa serviceability pressure refer knauf.com/en-AU/knauf-gypsum/services/tools/eselector

For other design pressures contact TecASSIST **1800 811 222**

Load Bearing Walls

A load bearing wall is a wall that is intended to resist vertical forces in addition to its own weight.

Refer to Steel Stud Walls section for notes on load bearing steel stud frames.

Refer to Timber Stud Walls section for maximum loads on fire rated timber framed walls.

Wall Loading

Walls, including fire rated walls, that carry shelf loadings must be designed accordingly. Refer to Rondo for permissible shelf loadings on steel stud walls.

Timber noggings and plywood bracing may be incorporated within steel framed fire rated walls to allow for attachments such as TVs, hand rails or picture frames etc. The attachment loads must be included in the structural design of steel framing and in accordance with fire assessment reports. Refer Rondo for structural design requirements and contact TecASSIST 1800 811 222 for noggling and plywood backing details.

The following shear loads can be supported directly by FIBEROCK Aqua-Tough linings under non-fire rated conditions:

TABLE A11: MAXIMUM LOADS ON FIBEROCK AQUA-TOUGH GYPSUM BOARD

| FIBEROCK AQUA-TOUGH THICKNESS | MAXIMUM POINT LOAD PARALLEL TO THE BOARD* |
|-------------------------------|---|
| 10 mm | 10 kg |
| 13 mm | 13 kg |
| 16 mm | 16 kg |

* Loads should be attached with minimum 8 gauge high thread screws installed with the thread for the full thickness of the board.

Allowable Ceiling Loads

Plasterboard spans and loads directly supported on ceiling linings must not exceed the maximum values indicated in Table G1 in the Ceilings section.

DESIGN

Seismic

Seismic compliance refers to the use of approved systems and designs that meet the seismic design requirements of a building project to provide life safety to occupants and maintain building function during and after an earthquake. Non-structural components often represent a high percentage of a project's capital investment. Failure of these components in an earthquake has the potential to cause harm, block egress and impede rescue efforts, and can disrupt the building's function. The basic objectives of seismic design for non-structural components are to provide life safety, minimise property loss and prevent functional loss.

All framing components and connections for walls and ceilings must be suitably designed by Rondo or project engineer in accordance with AS/NZS 1170.4 earthquake actions and other relevant standards for use in seismic applications.

Knauf recommends that all Suspended Grid Ceiling Systems be designed and installed in accordance with AS/NZS 2785 'Suspended ceilings - Design and Installation'.

Every project must be specifically designed to meet AS 1170.4 and/or AS/NZS 2785 requirements based on the project location, importance level, and application type, and must be certified and approved based on local State building regulations and requirements.

Fire Resistance

Fire Resistance Level (FRL)

Fire rating requirements of the Building Code of Australia are specified in terms of Fire Resistance Level (FRL). The FRL specifies the performance, in minutes, for each of the following three design criteria when specimens are fire tested to the requirements of the Australian Standard AS 1530 *Methods for Fire Tests on Building materials, Components and Structures — Part 4: Fire-Resistance Tests of Elements of Building Construction*:

Structural Adequacy

The specimen can no longer carry its load (self weight and superimposed loads).

Integrity

Cracks or openings develop that allow the passage of flames or hot gases.

Insulation

The unexposed face temperature rises by more than 140°C on average or 180°C for a single point.

For example, a wall system under fire test that carries its load for 120 minutes and maintains its integrity and insulation for 120 minutes is given a FRL of 120/120/120, ie 120 minutes structural adequacy, 120 minutes integrity and 120 minutes insulation.

Systems that achieve a particular FRL can be used to satisfy the requirements for a lesser FRL.

Support

Any structure required to support a fire rated system must have a fire resistance structural adequacy level of at least that of the system. This includes vertical support to ceilings and walls and lateral support to the top of walls which may be provided from both sides. Refer NCC for specific requirements.

DESIGN

Adjacent Structure

The NCC requires that building elements, other than roof sarking or certain roof battens, must not pass through or cross a fire rated wall unless the Fire Resistance Level of that wall is maintained. Where trusses and beams pass over or through a fire rated partition, the following measures can be taken to ensure that the Fire Resistance Level of the partition is not degraded due to a failure of these members in the case of fire:

- Construct a fire rated ceiling that protects the structural members
- Fire protect the structural member or
- Ensure the partition can carry loading from the fire affected structural member and that the member can still carry its loading when it is supported on a partition (for trusses this may mean the inclusion of additional webbing above the partition). Ensuring the partition can carry these new loadings may require:
 - Making it into a load bearing partition
 - Constructing the partition with a protected column within it or
 - Constructing unprotected columns on both sides of the partition.

Portal Frame Behaviour

In portal frames affected by the fire the rafters often push outwards on the column members until the ridge sinks and then pulls the columns inwards. Should drywall be used to provide a fire separation within portal framed building, the above mode of failure needs to be recognised by the designer.

As mentioned above, load bearing elements may need to be incorporated within, or adjacent to, the partition to maintain support to the roof structure during a fire event.

Direction of Attack by Fire

In most cases the direction of attack by fire is assumed to be from both sides of the partition. In some cases, such as exterior walls of a Class 10 building or exterior walls of a Class 2-9 building of Type C Construction adjacent to a fire source feature (as defined in the NCC), the rating may be required from one side only. For conventional fire rated plasterboard ceiling systems direction of attack by fire is always from below, while for spanning ceilings it can also be from both sides or from above. Applicable fire attack direction is indicated for each fire rated system listed in this manual.

Maximum Heights

Maximum heights listed for fire rated steel stud partitions are the lesser of maximum fire heights and structural heights for a given wall configuration and stated lateral pressure. Maximum fire heights were derived from full scale tests carried out by CSIRO, BHP, BRANZ and from fire engineering principles.

Maximum structural heights have been obtained by computation and from extensive mechanical testing. Refer to maximum wall height tables for steel stud systems, and Rondo for varying stud configurations to achieve alternative heights.

Resistance to Incipient Spread of Fire (RISF)

The NCC stipulates instances when a ceiling system must be resistant to the incipient spread of fire. This requirement determines the ability of the ceiling to provide adequate thermal insulation to combustible materials within the ceiling plenum thus avoiding the danger of the materials there igniting.

Many of the ceiling systems in this manual carry an RISF rating which is noted as such. RISF is a more onerous requirement than FRL.

Systems that achieve a particular RISF may be used to satisfy the requirements for a lesser RISF.

Insulation Materials

Insulation for thermal or acoustic reasons may be placed within partition cavities. The following is a list of insulation materials, that will not adversely affect the FRL:

TABLE A12: INSULATION MATERIALS

| MATERIAL | RESTRICTION |
|---|---|
| Foil-backed sarking, batt, blanket or loose rockwool or ceramic fibre | No restriction |
| Batt, blanket, loose wool or glasswool | Any thickness but density not less than a tested system |

Fire Hazard Properties

Wall and ceiling lining materials in certain types of buildings must comply with the Fire Hazard Properties requirements of the NCC.

All Knauf gypsum board lining products are classified as Group 1 (least hazardous) materials and have a smoke growth rate index less than 100 and/or an average specific extinction area less than 250 m²/kg when tested in accordance with the NCC.

DESIGN

Combustibility

In accordance with Deemed-to-Satisfy Provision C2D10 of the NCC Volume One, and H3D2 of the NCC Volume Two, gypsum boards can be used wherever a non-combustible material is required.

NOTE:

FIBEROCK Aqua-Tough and PERMAROCK cement board are deemed non-combustible when tested in accordance with AS 1530.1-1994.

Gas Reticulation in Fire Rated Walls

Oxygen or combustible fluid reticulation systems should not be located within fire rated walls unless designed, fire tested and constructed to suit this application.

Penetrations

Penetrations in a fire rated system must be treated strictly in accordance with relevant test reports and approved installation details in order to maintain the system's Fire Resistance Level.

Where components by others are specified in Knauf fire rated penetration details (ie dampers GPOs, fire collars, etc), such components must be installed in accordance with the manufacturer's specifications. It is the responsibility of the component manufacturer to ensure that the fire rating performance of the system is not affected.

Smoke Walls

Where smoke walls are required in accordance with the NCC, such walls can be lined with minimum 13 mm SHEETROCK ONE plasterboard.

Jointing

Compounds used for finishing plasterboard joints in fire rated systems may be any plaster or vinyl based compounds supplied by Knauf that are normally used for this purpose.

Knauf vinyl jointing compounds have been shown by test not to self ignite at temperatures below 200°C and thus are suitable for use in fire rated systems.

Acoustics

Weighted Sound Reduction Index (R_w)

The NCC has adopted the Weighted Sound Reduction Index (R_w) as a measure of sound insulation of building elements. A partition with a high R_w isolates sound better than a partition with a low R_w (an increase of 10 points in R_w indicates doubling in perceived performance).

R_w ratings are obtained from tests carried out in certified laboratories, under controlled conditions. Determination of R_w is defined in AS ISO 717.1 *Acoustics — Rating of sound insulation in buildings and of building elements Part 1: Airborne sound insulation*.

In practice the sound insulation is used to measure the speech privacy between spaces, but the level of privacy depends on both the background noise as well as the sound insulation between spaces. Indicative examples of the speech privacy using Knauf wall systems, based on a background noise level of 30 dB(A), is shown below.

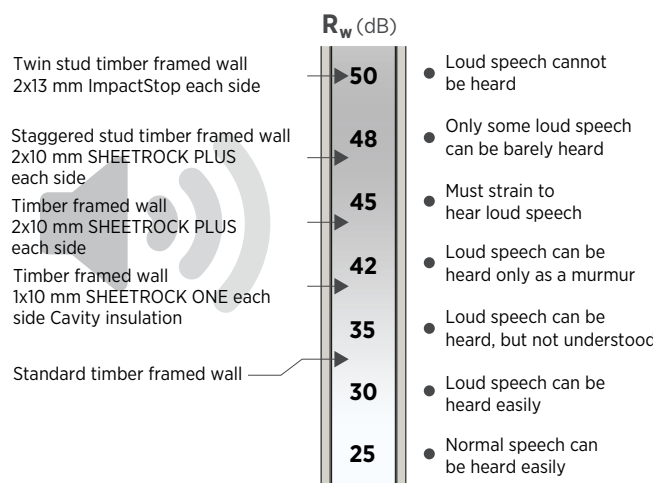


Figure A4: Noise Levels

DESIGN

Spectrum Adaptation Term (C_{tr})

The R_w alone is not a good indicator of how well the partition isolates low frequency (bass) sounds. To better measure the low frequency performance of wall & floor/ceiling partitions, the NCC requires specific walls to meet an $R_w + C_{tr}$ criterion.

When the C_{tr} is combined with the R_w , the result is a single number index which provides a more reliable indicator of the ability of the partition to isolate noise containing low frequency components.

Two partitions with the same $R_w + C_{tr}$ value will typically have similar low frequency isolation properties even if their respective C_{tr} terms are very different. The higher the $R_w + C_{tr}$ value for a wall or ceiling partition the better the sound insulation performance, particularly in the low frequencies.

The C_{tr} typically ranges between -1 dB to -15 dB and is calculated from the airborne performance of a partition in the range of frequency bands measured. Determination of C_{tr} is defined in AS ISO 717.1 *Acoustics — Rating of sound insulation in buildings and of building elements Part 1: Airborne sound insulation*.

Impact Sound Insulation

Walls

NCC requires that certain walls between sole occupancy units in multi-residential buildings Class 1, 2, 3 and 9c must provide impact sound insulation.

Under the deemed-to-comply provisions of the NCC walls requiring impact sound insulation in Class 2 and 3 buildings must be of 'discontinuous construction'. The NCC defines discontinuous construction as a wall having a *minimum 20 mm cavity between two separate leaves*, and:

- For masonry, where wall ties are required to connect leaves, the ties are of the resilient type
- For other than masonry, there is no mechanical linkage between leaves except at the periphery.

Knauf wall systems qualifying as 'discontinuous construction' include:

- Twin stud wall systems, both in timber and steel
- IntRwall systems (which include a separate steel stud at least on one side)
- PartiWall systems (with aligned floors on each side of separate dwellings)
- Masonry acoustic upgrade systems with a free-standing wall at least on one side.

NOTE:

The NCC states that a staggered stud wall is not deemed to be discontinuous construction.

Floors

In addition to a minimum sound isolation performance ($R_w + C_{tr}$), the NCC contains a requirement for an impact sound rating of floors between sole occupancy units in multi-residential buildings Class 2 and 3, expressed as $L_{n,w}$.

The Weighted Normalised Impact Sound Pressure Level ($L_{n,w}$) is measured in a laboratory and indicates how much sound reaches the receiving room from a standard tapping machine. The lower the number the better the performance of the floor at isolating impact sounds.

$L_{n,w}$ is defined in AS ISO 717.2 *Acoustics — Rating of sound insulation in buildings and of building elements — Impact sound insulation*.

Difference Between Laboratory and Field Acoustic Performance

On-site field testing is allowed as a verification method to comply with the provisions of the NCC. The on-site rating measurement under the NCC is the $D_{nT,w}$ (Weighted Standardised Level Difference) and is, technically, slightly different to the laboratory R_w assessment.

When identical partitions are tested on site it is often found that the site rating, $D_{nT,w}$, is lower than the R_w (laboratory performance). This reduction in performance can be due to:

- Incorrect installation procedures
- Flanking paths (ie. noise passing through adjacent parts of the building)
- Non-ideal measurement conditions. For instance, small room sizes may affect accurate measurements in particular frequencies.

The NCC allows a 5 dB concession between the laboratory performance and the field performance to allow for flanking and the technical difference in units. Therefore, the $D_{nT,w} + C_{tr}$ may be up to 5 dB less than the $R_w + C_{tr}$.

For the transmission of impact generated sound through floors, the NCC does not allow any concession from the laboratory performance to the field performance. Therefore, the on-site performance requirement, $L'_{nT,w}$ (Weighted Standardised Impact Sound Pressure Level), cannot exceed the maximum $L_{n,w}$ required by the NCC.

DESIGN

Sound Insulation Rating of Services

The NCC requires ducts, soil and waste pipes and water supply pipes that serve or pass through more than one SOU, including those located in a party wall or floor cavity to be acoustically separated from Habitable and non-Habitable rooms by a construction with a minimum $R_w + C_{tr}$ rating.

In addition to the airborne rating, the NCC requires that water supply pipes must only be installed in the cavity of discontinuous construction.

To achieve the sound insulation requirements of the NCC, one of the options for soil and waste pipe treatment includes acoustic lagging of the pipes which typically comprises a loaded vinyl isolated from the pipe with foam or fibreglass. It is important that the lagging and pipe are not in contact with ceilings, walls or supports and the pipe mounts and supports are not in contact the surrounding bulkheads or risers.

Over-partition Noise Rating

Sound can easily travel through an exposed grid or flush suspended ceiling and over the top of a partition where it abuts the underside of a suspended ceiling. This is a common source of sound transmission particularly where the ceiling is porous to sound.

In this case the sound rating of the ceiling element is stated as the $D_{n,c,w}$ — Weighted Suspended-Ceiling Normalised Level Difference.

The $D_{n,c,w}$ is defined in AS ISO 717.1 *Acoustics - Rating of sound insulation in buildings and of building elements Part 1: Airborne Sound Insulation*, where the individual $D_{n,c}$ values (Suspended Ceiling Normalised Level Differences) are determined by laboratory measurements as defined in AS/NZS 2499 *Acoustics — Measurements of sound insulation in buildings and of building elements — Laboratory measurement of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it*.

Where sound insulation is important, partitions should, wherever possible, continue through the ceiling to the structural soffit and be sealed at their perimeter.



Figure A5: Sound Transfer Over Partition

Sound Absorption Rating

The reverberation time is a critical element in determining the acoustic quality of a space. The reverberation time is determined by a number of factors, but the most important is the amount of acoustic absorption in the space. The overall acoustic absorption is determined by the area of absorptive material and the absorption coefficient of the material.

The sound absorption coefficient, α , is a measure of how well a material stops sound being reflected as is measured in accordance with AS ISO 354 *Acoustics - Measurement of Sound Absorption in a Reverberation Room*. The absorption coefficient varies as a function of frequency, and the sound absorption of a material is usually expressed as a single number rating, the Weighted Sound Absorption Coefficient, α_w , which is calculated in accordance with AS ISO 11654 *Acoustics - Rating of Sound Absorption - Materials and Systems*.

Construction Changes and Substitutions

Changes in construction and substitution of different materials can increase or decrease the acoustical isolation of wall and floor/ceiling systems and may result in the acoustical isolation falling below the specification or NCC requirements. The following comments apply to wall systems unless otherwise noted:

Studs

- Except for staggered stud and twin stud wall systems, substituting timber studs in place of steel studs generally results in a significant decrease in sound insulation.
- In single stud walls lined both sides increasing the thickness of steel studs from 0.50 BMT or 0.55 BMT to 0.75 BMT or 1.15 BMT will generally decrease sound insulation.
- Decreasing the stud spacing will decrease the sound insulation.

Plasterboard

Substituting with lighter plasterboard will usually result in a change in R_w of around 1-2 dB for most systems, although a greater reduction may occur with separating wall systems such as PartiWall.

Insulation

- Thinner insulation may decrease the sound insulation.
- Thicker insulation may increase the sound insulation.
- Higher density insulation will generally increase the acoustic performance of a system.

DESIGN

Fixings

- Using more screws or nails than specified may reduce the sound insulation.
- Using cornice adhesive or other methods of laminating plasterboard, other than nailing or screw fixing, will reduce the sound insulation.

Perimeter Acoustical Sealing

It should be noted that as the sound insulation requirement of a partition increases, the control of flanking paths becomes more critical. Consequently, the perimeter sealing requirements for a low sound rating wall, such as R_w 30 dB, are lower than for a high sound rating wall, such as R_w 60 dB. It cannot be over-emphasised that for high performance walls, the sealing of each face must be virtually airtight.

For a sealant to be effective at controlling noise passing through gaps, it must have the following properties:

- Good flexibility, elastic set
- Low hardness
- Excellent adhesion, usually to concrete, timber, plaster and galvanised steel
- Minimal shrinkage (less than 5%)
- Density greater than 800 kg/m³
- Fire rated (where required).

All of the above properties must be maintained over the useful life of the building.

Some silicone sealants and some acrylic latex sealants are examples of suitable sealants. Reference should be made to the manufacturer to ensure the particular type or grade of sealant is suitable for the purpose.

Knauf recommends H.B. Fuller Firesound sealant for caulking of acoustic systems.

NOTE:

The use of expanding foam sealants is not acceptable.

Noise Flanking

Noise flanking can significantly reduce the perceived isolation of a wall or floor/ceiling system and should therefore be given careful consideration.

Typical flanking paths for a wall include:

- Through ceilings and via the ceiling cavity above
- Through floors and via the floor crawl space below
- Through glazing and windows
- Through light switches, or GPOs, located in the wall
- Through gaps, cracks, holes or other penetrations or services (continuous pipes, ducts, etc.)
- Through shared building elements such as floor boards, floor joists, continuous plasterboard walls, continuous plasterboard ceilings and even continuous concrete walls and floors
- Through the perimeter joints between the wall and the floor, or the wall and the ceiling (or underside of the floor slab) or wall junctions
- Via adjacent walls or facade walls.

Typical flanking paths for a floor/ceiling system include:

- Through windows
- Through light fittings or air conditioning fixtures in the ceiling
- Through shared building elements, such as external walls
- Through any sound leaks
- Through the perimeter joints between the floor and walls, or between the ceiling and wall.

DESIGN

Acoustic Performance On Site

Acoustic performance ratings stated in this manual are based on tested laboratory results or the expected laboratory results based on the opinions of independent acoustical consultants.

To reproduce the stated performance in the field, attention to detail in the design and construction of the partition/ceiling and its associated structure is of prime importance. Even the most basic principles, if ignored, can significantly downgrade the sound insulation performance.

Knauf cannot guarantee that the site tested acoustic performance of the systems will achieve the laboratory test results or the expected laboratory performance (opinion). The NCC provides a margin of 5 dB between the laboratory tested values and the equivalent site tested values for airborne sound transmission loss, and different types of systems are likely to have different variances between laboratory and site tested values. However, with careful attention during erection of the wall or ceiling, correct installation to specification and proper caulking/sealing, the difference between the laboratory or estimated laboratory value and the site measured value should be minimised.

Apart from installation procedures, workmanship and caulking the following factors can also affect the acoustic performance on site:

Doors

Hollow core and even solid doors generally provide unsatisfactory sound insulation between rooms. Doors can also provide direct air leaks between rooms thus having a detrimental effect on the overall sound insulation of the partition in which they are located. The higher the insulation of the partition, the worse is the effect of doors.

Where sound insulation is important, specialised heavyweight doors or, preferably, two doors separated by an absorbent lined airspace or lobby should be used.

Because air leakage largely determines the sound insulation of a single door, consideration must be given to providing airtight seals between the door and the frame and at the threshold. The joints between the door frame and partition structure should also be sealed. The door seal must be compatible with the fire resistance of a door if required.

Lightweight Panels Above Doors

These are often incorporated for aesthetic reasons, however, the performance of a partition with high sound insulation can be considerably downgraded by lightweight panels.

Air Paths through Gaps, Cracks or Holes

Gaps, cracks or openings, however small, readily conduct airborne sounds and can considerably reduce the sound insulation of a construction.

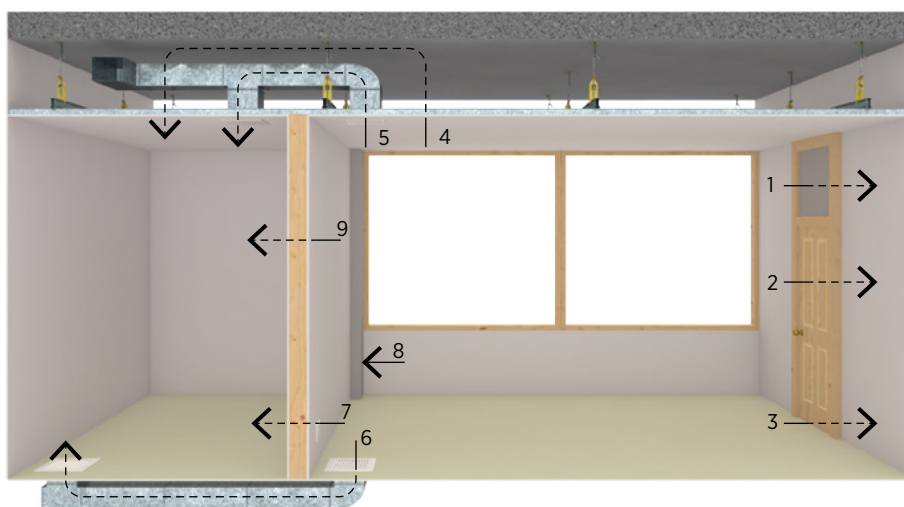


Figure A6: Sound Flanking Paths

Diagram Key

1. Lightweight panels above doors
2. Doors
3. Air leaks through gaps, cracks or holes
4. Sound transmission via suspended ceilings/partitions
5. Common ventilation system without sound absorbent treatment
6. Common floor duct
7. Electrical outlets and service pipes
8. Lightweight mullions or mullion/partition closers
9. Partition performance.

DESIGN

Appliances

In cases where sound insulation is important, noise producing fixtures or appliances such as water closets, cisterns, water storage tanks, dishwashers, washing machines and pumps should be repositioned or isolated from the structure with resilient mountings and flexible service leads and connections.

Where fittings are duplicated on opposite sides of partitions, such as back to back baths or unit shower cubicles, the partition wall should be continuous between the fittings, otherwise a path for direct sound transmission will exist.

Electrical Outlets and Service Pipe Penetrations

Penetrations in separating walls should be avoided. This includes recessed fittings or ducts such as skirting heating, electrical or other wiring, light fittings, intercommunication systems and alarms, medical and laboratory gas outlets.

Plumbing connections between fittings or appliances on opposite sides of a partition offer a path for transmission of sound and should be sealed. If possible introduce discontinuity in the pipe work between fittings, such as a flexible connection within or on the face of a partition.

The acoustic performance may be downgraded where penetrations or services exist within the wall unless extreme care is taken at the detailing and construction stages. This is especially likely with acoustical bridging caused by plumbing or electrical services or by structural members including flooring.

Where penetrations are not avoidable in separating walls, electrical outlets, switch boxes and similar penetrations should not be placed back-to-back. Seal backs and sides of boxes and the perimeter of all penetrations with acoustic sealant. Preferably, sound-rated electrical outlets and switches should be used, or outlets and switches should be surface mounted on sound rated walls.

The NCC states that electrical outlets must be offset from each other in timber or steel framed walls by not less than 300 mm.

Penetrations in Linings Separating Soil and Waste Pipes

The acoustic ratings for unlagged soil and waste pipes are provided in Section I of Systems+.

The effect of penetrations differs between the unlagged and lagged and clad pipes. Lagging and cladding has the benefit of reducing the noise emitted from the pipe itself.

Refer to lagging manufacturer's data for acoustic ratings of lagged soil and waste pipes.

Wet Areas

Regulatory Requirements

Wet area as defined in the National Construction Code (NCC) is an area within a building supplied with water from a water supply system and includes bathrooms, showers, laundries and sanitary compartments.

According to NCC, building elements in wet areas must be waterproof or water resistant depending on the location within a wet area and must comply with AS 3740 *Waterproofing of domestic wet areas*.

AS 3740 sets out minimum material, design and installation requirements for waterproofing of wet areas within residential buildings and other buildings with a similar usage intensity. It also outlines typical wet area construction materials and methods.

Water-resistant plasterboard manufactured to AS/NZS 2588 *Gypsum Plasterboard* constitutes a water resistant substrate for the purposes of AS 3740.

Waterproofing membranes used in wet areas must comply with AS/NZS 4858 *Wet Area Membranes*.

Refer to AS 3740 and the NCC for minimum extent of waterproofing in wet areas.

Ceilings over Wet Areas

As the NCC does not require the use of water resistant ceiling linings over wet areas, Knauf non-water resistant gypsum boards provide an adequate solution for this application. Knauf water resistant gypsum boards can be used in wet area ceilings if desirable.

Knauf recommends that ceiling paint in wet areas should be impervious to moisture.

Knauf Wet Area System

Knauf Wet Area System comprises materials and installation details outlined in Knauf Installation Manual and must be installed in accordance with Knauf specification to achieve the required performance.

Knauf Wet Area System complies with the requirements of AS 3740 and is therefore suitable for use in residential buildings and other buildings with a similar usage of wet areas.

Knauf Wet Area System is not suitable for use in high exposure applications such as group shower rooms, steam rooms, etc. or in areas of high humidity (above 90% RH). For such applications refer to Knauf Permarock Cement Board Indoor systems in this manual.

DESIGN

Radiation Protection

Medical X-ray diagnostic rooms require protective barriers to shield operators and occupants of adjacent areas against excessive levels of radiation.

Radiation intensity depends on the application and the minimum shielding requirements are set out by the relevant Government Authorities. Advice on X-ray protection for a particular installation must be sought from a qualified Health Physicist to ensure the requirements for occupational and public protection are met.

Shielding for diagnostic X-ray rooms tends to be specified in terms of the thickness of lead required to achieve the appropriate level of protection.

GIB X-Block is a lead-free plasterboard that provides X-ray and Gamma ray protection. X-block avoids the health and waste disposal issues associated with using lead and is lighter and easier to install than lead based solutions.

Refer to the GIB X-Block Radiation Shielding Systems manual for product performance data and installation specifications.

Thermal Insulation

Under the Deemed-to-Satisfy provisions of the NCC, the elements of building envelope must achieve minimum thermal resistance (R) values stipulated for various Classes of buildings and Climate Zones (thermal resistance requirements for Class 2 buildings are summarised in Multi-Residential section).

The total R-value of a building system is a sum of R-values of the system components, enclosed air gaps and internal and external air layers. R-values of various Knauf lining products are shown in Table A4.

Although plasterboard itself does not provide high thermal resistance, R-values of framed plasterboard systems can be significantly increased by incorporating bulk or reflective cavity insulation.

Refer to the External Walls section for thermal resistance ratings of Knauf external wall systems.

Design Considerations

Condensation

Condensation occurs when warm and humid air comes into contact with cold surfaces.

Condensation on internal building surfaces is more likely to occur where there are large temperature fluctuations and the moisture content inside a house (often generated in a bathroom, laundry or kitchen) is high.

Repeat or prolonged condensation may lead to; nail-popping, sagging ceiling linings, rotting, mould growth, joint and corner cracking and deterioration of internal air quality. If left untreated, condensation may result in structural damage to the building and health concerns for the building occupants.

The following precautions can help minimise internal condensation:

- Keep air spaces well ventilated to promote moisture dissipation, especially in the roof and sub-floor spaces.
- In rooms such as bathrooms, kitchens and laundries exhaust moisture-laden air to the outside of the building and not into the roof or ceiling space.
- Use vapour barriers in conjunction with insulation around the building envelope. Place vapour barrier on the warm side of insulation.
- Use thermal breaks on steel framing members (refer NCC).

Devices Generating Heat

Knauf Plasterboard does not recommend the use of radiant heating systems continuously subjecting plasterboard ceilings to temperatures in excess of 52°C.

Prolonged exposure to temperatures higher than 52°C may cause changes in the chemical composition of the gypsum core and loss of plasterboard integrity over time.

The following regulatory and normative requirements must be followed in order to prevent plasterboard deterioration due to excessive temperatures from heat generating devices:

- NCC provisions for installation of heating appliances, fireplaces, chimneys and flues
- AS 2918 *Domestic solid-fuel burning appliances — Installation*
- AS/NZS 5601.1 *Gas installations*.

In accordance with AS/NZS 5601.1, combustible surfaces within 200 mm of the edge of the nearest burner must be protected to a height of not less than 150 mm above the periphery of that burner and for the full length of the cooking surface area.

10 mm plasterboard covered with 5 mm ceramic tiles or toughened safety glass is an acceptable method of protection for combustible surfaces in domestic applications. An additional layer of 6 mm fibre cement fixed over the plasterboard is required for a sheet metal facing.

13 mm and 16 mm FIBEROCK Aqua-Tough is classified as a fire resistant material in accordance with AS/NZS 5601.1 Appendix C and is suitable for use in non-loadbearing applications to protect combustible surface materials adjacent to appliances other than commercial catering appliances.

Refer to AS/NZS 5601.1 for clearance zones around domestic and commercial gas installations, and splashback fire protection requirements by relevant State and Territory authorities.

NOTE:

Knauf does not advise the use of plasterboard as a wall lining behind and around fireplaces unless protected in accordance with the NCC.

DESIGN

Control and Movement Joints

The purpose of control joints is to accommodate hygrometric (moisture caused) and/or thermally caused changes in plasterboard dimensions. Control joints are required in unbroken plasterboard walls and ceilings at no greater than 12 metre centres in both directions (6 metre maximum spacing for external ceilings).

Movement joints are required in walls and/or ceilings in order to accommodate movements in the building structure (ie. due to shrinkage, settlement, wind or seismic forces) and include construction and expansion joints and joints at changes in substrate materials.

Control joints in non-fire rated systems can be formed by fitting Rondo P35 control joint or plastic expansion beads that leave a neat and flexible joint.

Control joints in plasterboard walls and ceilings must coincide with control/movement joints in superstructure.

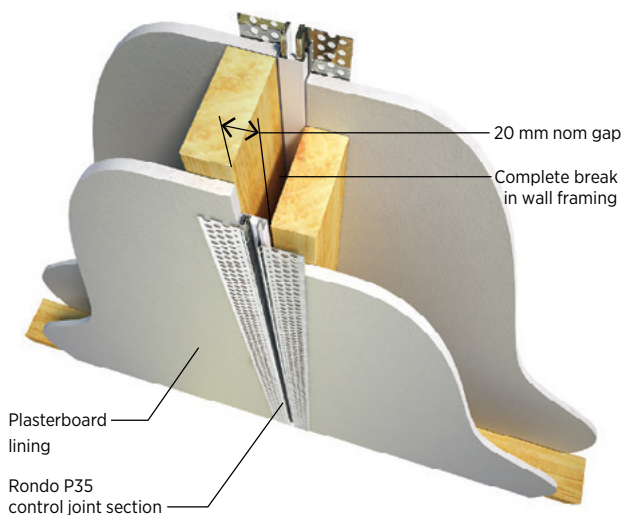


Figure A7: Control Joint in Non-Fire Rated System

Refer to Junctions and Penetrations section for details of Knauf online CAD Finder for control and movement joints in fire rated systems.

Jointing

Compounds used for finishing plasterboard joints in fire rated systems may be any plaster or vinyl based compounds supplied by Knauf that are normally used for this purpose.

Knauf vinyl jointing compounds have been shown by test not to self ignite at temperatures below 200°C and thus are suitable for use in fire rated systems.

Impact Resistance

Impacts on walls come in three basic forms: soft body, abrasive and hard body. Each of these can affect the wall lining in different ways and consequently affect the choice of the lining system.

Soft Body Impact

Soft body impact is the type of impact one would associate with people hitting walls with their shoulder or hip. Soft body impact testing is a requirement under the NCC (Specification 6) for certain types of wall systems.

Up to the point of breaking the lining, soft body impacts rarely leave any visible marks on the face of the wall, unlike hard body and abrasive impacts.

Where required, Knauf systems comply with the soft body impact resistance provisions of the NCC.



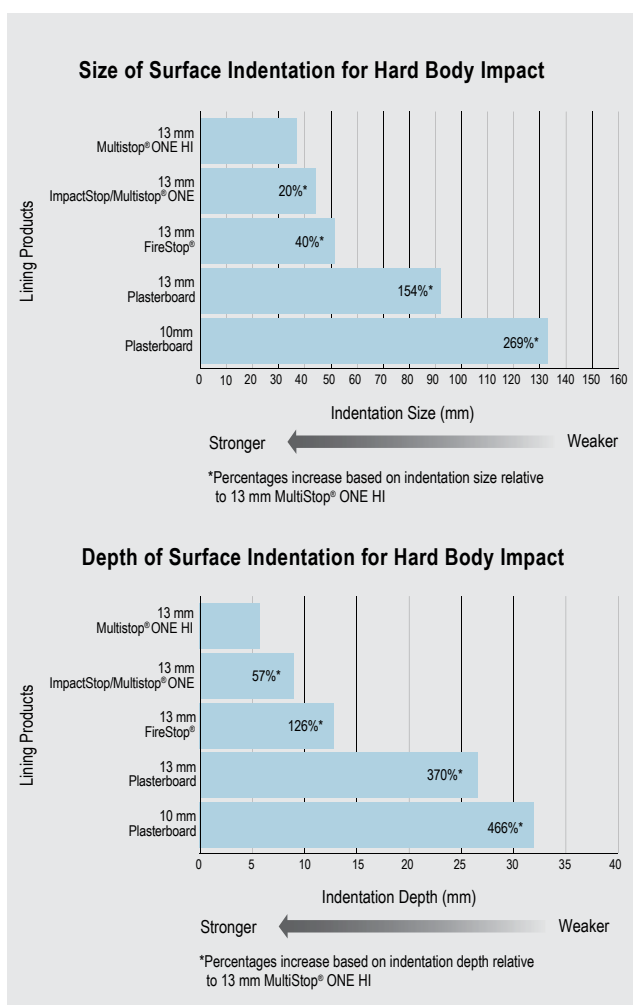
Figure A8: Impact Test In Progress

DESIGN

Hard Body Impact

The NCC specifies a static test measuring resistance to indentation of wall linings (Specification 6), but no hard body impact requirements. All plasterboard products produced by Knauf meet this surface indentation criteria.

These hard body impacts result in dents or gouges and sometimes penetration of the wall lining. Examples of hard body impacts would include kicks and hits with trolleys or hockey sticks. Knauf has developed hard body impact test simulations with a 4.0 kg steel ball on various plasterboard products. Refer below for relative hard body impact performance.



Abrasive Impact

This impact occurs when an object is scraped along the face of the wall and usually is seen by marks in the paint covering the wall lining.

Resistance against abrasion is more a function of the surface coating over the face of the wall lining, than the lining itself.

With a glancing impact, where a hard body object strikes the wall at an angle of less than 90 degrees, the damage will often be a combination of abrasion and denting.

Design Options

The following design options can be incorporated in Knauf wall systems if required:

Insulation

Various forms of insulation can be placed within wall cavities and over ceilings to achieve acoustic or thermal requirements. However, designers should be aware of the following:

- The mass of insulation acting directly on ceilings must not exceed maximum loads indicated in Table G1 in the Ceilings section.
- Insulation that attracts and holds moisture for prolonged periods is not recommended for use in Knauf ceiling systems.

Overall Width of Partition

Twin and staggered stud walls, often used to form a services duct, can be varied in width to suit the building design. Note that reducing the width may adversely affect the acoustic properties of the partitions.

Where discontinuous construction is required by the NCC, the gap between the two leaves of the partition should not be less than 20 mm.

Frame

Other factors remaining the same, steel stud depth and gauge greater than that specified may be used without adversely affecting the fire resistance of the wall system (note that changes in stud size or gauge may affect the system acoustic rating).

Permissible variations for fire rated timber framed systems include the following:

- Timber sections other than specified can be used provided that they are of the same:
 - stress grade or higher
 - section or deeper, and/or wider
 - or higher average density.
- Treated timber can be used in place of untreated timber provided that its charring rate is proven by fire testing to be no greater
- Studs or noggings may be paired, or installed at closer centres than shown (acoustic considerations may limit the minimum stud centres).
- Flat strap, sheet or angle bracing flattened over studs before lining is applied may be used in timber framed walls without affecting the FRL or design capacity of the system provided the studs remain unnotched. These types of bracing can also be used in staggered stud walls.
- Top plates in timber framed walls should be designed by a suitably qualified Structural Engineer where dead and/or live loads are applied at more than 1.5x plate depth from the stud.

DESIGN

Frame Spacing

Unless noted otherwise, all plasterboard supporting framework must be spaced at no greater than 600 mm centres.

Stud Substitution

Rondo steel studs have been used in the development of Knauf acoustic and fire rated systems.

Limiting heights and spans listed are for Rondo studs only.

Other stud sections should not be used unless it can be shown that they are at least equal to Rondo studs in all of the relevant performance characteristics.

Structural and fire properties of unlippped C-studs can vary significantly from those of lippped studs, therefore unlippped C-studs must not be used without their independent assessment by a qualified Engineer.

Cavity Structures

Ballistic or forcible entry protective items may be included within walls. In the case of fire rated walls, adequate allowance must be made for expansion relief at the perimeter of ballistic/protective steel sheets. Security mesh may be incorporated within steel framed fire rated walls to Knauf details. Structural steel or timber sections may be incorporated within fire rated walls, refer to Column and Beam protection systems for details.

Noggings and plywood bracing may be incorporated within steel framed fire rated walls. Contact TecASSIST **1800 811 222** for noggging and plywood backing details.

Board Orientation

In wall systems the sheets of plasterboard may be oriented with the bound edges horizontal, vertical or, in the case of multilayer systems, both horizontally and vertically oriented layers. This option may be useful in achieving the best outcome in the prevailing lighting conditions.

Beams and Columns

Wall support beams, walls under beams, structural frames and columns within walls may be incorporated as per standard Knauf details.

Fastener Size and Spacing

Screws and nails of greater gauge and at lesser centres than specified may be used without adversely affecting the fire resistance level of a partition or ceiling (note that acoustic performance of the system may be affected).

Curved Walls and Ceilings

Refer to Knauf for construction details for curved fire rated and non-fire rated walls and ceilings.

Curved fire rated ceilings to have a radius of no less than 6000 mm.

Attachments, Shelf Loading Capacity

In general, items may be attached through a fire rated lining to the wall frame providing that:

- The frame is designed and constructed to take the loading from the attachments and
- The attachments have a self ignition temperature of not greater than 200°C.

Electrical conduits may be attached to steel stud partitions by means of clipping to screw fixed pressed metal sections without detrimentally affecting the FRL of the partition provided that:

- The conduits are self supporting and do not impose any axial load on the partition and
- The clips used to restrain the conduits are manufactured from a material having a melting point not exceeding 250°C.

Refer to Knauf for attachment options for non-load bearing walls.

For load bearing steel stud walls, framing and fastenings are to be designed by an appropriately qualified Structural Engineer and shall comply with AS 4600 *Cold-formed steel structures*.

Exterior Cladding, Lining

Exterior cladding or interior lining may be added to walls providing the frame is designed and constructed to accommodate the extra loading and, in the case of fire rated walls, the self ignition temperature of the cladding components exceeds 200°C.

As with other materials, plasterboard lined exterior walls will require careful detailing to avoid possible problems associated with effects of moisture.

Penetrations

Access hatch, duct, GPO, lighting recesses, tapsets, pipe and cable penetrations in fire rated walls and ceilings are to be constructed to fire tested or assessed details.

The incorporation of services and penetrations must not adversely affect the structural capacity of the framing members or the acoustic properties of the wall system.

DESIGN

Lighting Recesses and Service Chases

Where items such as lights, plumbing, heating or electrical services are fitted within or pass up through a fire rated wall, the recess/chase must first be framed out then the top, bottom, sides and back are to be lined using the same thickness and number of linings as on the penetrated face of the wall.

All corners between plasterboard linings are to be formed herringbone style, backed by a stud, metal stud track or angle of greater than 0.7 mm BMT and any cable penetrations are to be sealed with an approved fire grade sealant. Refer to the relevant details in the Junctions and Penetrations section.

NOTES:

- The acoustic insulation capacity of walls is likely to suffer where chases and/or lighting recesses are provided within the wall or ceiling.
- Lighting or other heat producing items should not be included within walls where there is any likelihood that, through continuous, extensive use, temperatures in the plasterboard surrounding the fitting remain above 52°C for a prolonged period of time.

Access Panels

Access panels up to 600 mm square may be constructed within non-load bearing fire rated walls with a FRL of up to –/120/120. Prefabricated non-fire rated and fire rated access panels are also available (refer to panel manufacturers for installation details and fire test reports/certificates).

Ducts, Dampers and Grilles

Where items such as ducts, dampers and grilles pass through a fire rated wall, the penetration systems must be fire tested or assessed for compliance by Fire Testing Authority. The aperture must first be framed out allowing for lining and sealing of the aperture and expansion of the penetrating item during fire service where required. A useful rule of thumb for the amount of expansion to be allowed for is 10 mm + 1% of the side under consideration. Some dampers are built to absorb their thermal expansion within their outside dimensions (refer to damper manufacturer's specifications).

The wall frame may need to be strengthened locally to account for any crippling of studs causing redistribution of loadings into the adjacent full height studs (ie. these studs may be required to be boxed or require additional structural steel).

The aperture should be lined using the same thickness and number of linings as on the face of the wall. The sealing/mounting system around the penetrating item is to be as tested or assessed for that particular item.

Appearance

Levels of Finish

The term 'Level of Finish' applies to plasterboard linings prior to decoration.

AS/NZS 2589 *Gypsum linings — Application and finishing* defines three levels of finish: 3, 4 and 5. Level 4 is the default level of finish for plasterboard linings, unless specified otherwise.

It is essential that the level of finish is determined at the design stage since each level has specific requirements for substrate tolerances and plasterboard installation, jointing and finishing. The desired level of finish may not be achieved unless all of these requirements are met through various stages of construction.

Levels of finish recommended for various lighting conditions and surface decorations are shown in Figure A9.

For the full description of levels of finish and guidelines on assessment of finished surfaces refer AS/NZS 2589.

A summary of various levels of finish is provided below:

Level 3

This level of finish is used in areas that do not require decoration or where finish is not important (for example, above ceiling level or inside service shafts and the like).

All joints and interior angles must have tape embedded in the joint compound and one separate coat of joint compound applied over all joints and fastener heads.

Butt joints and recessed joints in walls and ceilings can be on framing members.

Level 4

This is the default and generally accepted level of plasterboard finish. All joints and interior angles must have tape embedded in the jointing compound and a minimum of two separate coats of joint compound applied over all joints, angles, fastener heads and accessories.

Wall butt joints can be on framing members. If wall butt joints are between framing members, any butt joints longer than 400 mm and less than 2 m above the floor must be back-blocked.

Ceiling butt joints must be between framing members. All ceiling butt joints must be back-blocked. Ceiling recessed joints must be back-blocked in any area containing three or more recessed joints.

If Level 4 surface is to be exposed to critical light (see Glancing Light on page A26), it should be covered with textured finishes or wall coverings. Smooth textured finishes and flat/matt or low sheen paints can be used when Level 4 finish is illuminated by non-critical lighting. Flat paints in this situation tend to conceal joints better.

DESIGN

Weight, texture and sheen level of wall coverings and finishes should be carefully evaluated and joints should be adequately concealed if wall-covering material is lightweight, glossy or lightly patterned.

NOTES:

- In critical lighting conditions, surface variations may still be apparent in a Level 4 surface finish.
- Gloss, semi-gloss or deep tone paints are not recommended for Level 4 finish, as they accentuate surface variations.

Level 5

Level 5 finish should be used where gloss or semi-gloss paints are specified or where lining surfaces will be exposed to critical lighting conditions.

Level 5 finish is characterised by a parity of surface texture and porosity. All joints and interior angles must have tape embedded in the jointing compound and a minimum of two separate coats of jointing compound applied over all joints, angles, fastener heads and accessories.

Butt joints in walls and ceilings must be between framing members and back-blocked. Recessed joints in the ceilings must be back-blocked.

The work is finished with proprietary surface preparations or skim coating to remove differential surface textures and porosity. A suitable paint or plaster material (eg SHEETROCK Tuff-Hide primer surfacer) is sprayed, rolled or trowelled over the defined area. The surface texture must be random and monolithic, concealing joints and fixing points.

NOTES:

- If Level 5 finish is desired for a decorated plasterboard surface, this must be specified at the design stage.
- Level 5 finish is difficult to achieve and always requires the cooperation of the framer, plasterer and painter in establishing suitable work practices that deliver the agreed painted finish for the given project.
- Some minor surface variations may still be visible in Level 5 finish, however, these will be minimised.
- The surface of the defined area may require sanding to be suitable for decoration.

Framing Tolerances

Refer to Table A8 for maximum allowable framing tolerances for various levels of finish.

Influences

There are many factors in modern building design that influence the overall appearance of a wall or ceiling.

Modern features such as lower unbroken ceiling areas across adjoining rooms, large open living areas, and importantly, larger windows with greater use of natural light from skylights and mirrored walls etc often create conditions in which it is difficult to achieve the desired level of finish.

Consumers are often not aware of the difficulties involved in achieving their expectations, particularly when some design conditions highlight rather than camouflage surface conditions. It is therefore very important that the consumer's expected standard of finish matches the level of finish the tradesperson is capable of achieving given the particular design features of the project.

Glancing Light

Glancing light is the light that shines across the surface of a wall or ceiling rather than directly on it. When considering the type of finish required it is important to understand how the overall appearance is likely to be affected by glancing light in a particular situation.

Refer Knaf publication *Guide to Lighting and Decoration of Plasterboard* for guidance on good lighting and decoration practices.

Gloss/Sheen Paints

Full gloss paint finish is not recommended on plasterboard walls or ceilings. When semi-gloss paint is to be used in large open rooms or vast areas with uncurtained windows, the highest level of finish (Level 5) is essential.

Where gloss or impervious sheen paint finishes are desired for purely functional reasons eg, kitchens, bathrooms etc, some loss of appearance should be accepted.

Paint Discolouration

Whilst a plasterboard installation may conform to the relevant Australian Standards, discolouration of the joints may occur due to effects of condensation, mould growth, contaminated paint or other factors.

The risk of paint discolouration can be reduced through good design practices and the use of quality products and workmanship.

TABLE A8: LEVELS OF FINISH REQUIREMENTS SUMMARY

| LEVEL OF FINISH | ALLOWABLE BUTT JOINTS LOCATION | | CEILING BUTT JOINTS BACK-BLOCKING | CEILING RECESSED JOINTS BACK-BLOCKING | | FRAMING TOLERANCES* (mm) | | JOINTING SYSTEM |
|-----------------|--------------------------------|-------------------------------|-----------------------------------|---------------------------------------|-------------------------------------|--------------------------|----------------|---|
| | WALLS | CEILINGS | | LESS THAN 3 RECESSED JOINTS IN A ROOM | 3 OR MORE RECESSED JOINTS IN A ROOM | 90% OF AREA | REMAINING AREA | |
| 3 | On or between framing members | On or between framing members | Optional | Optional | Optional | 4 | 5 | Tape Coat + 2nd Coat |
| 4 | On or between framing members | Between framing members only | Must | Optional | Must** | 4 | 5 | Tape Coat + 2nd Coat + Finishing Coat |
| 5 | Between framing members only | Between framing members only | Must | Must | Must | 3 | 4 | Tape Coat + 2nd Coat + Finishing Coat + Skim Coat over whole face |

* Maximum deviation at any point of the bearing surface of the finished framing prior to installation of plasterboard linings, when measured with 1.8 m straight edge (refer AS/NZS 2589).

** Level 4 ceilings supported by a ceiling suspension system in accordance with AS/NZS 2785 do not require back-blocking of recessed joints provided there is not rigid connection between ceiling and wall.

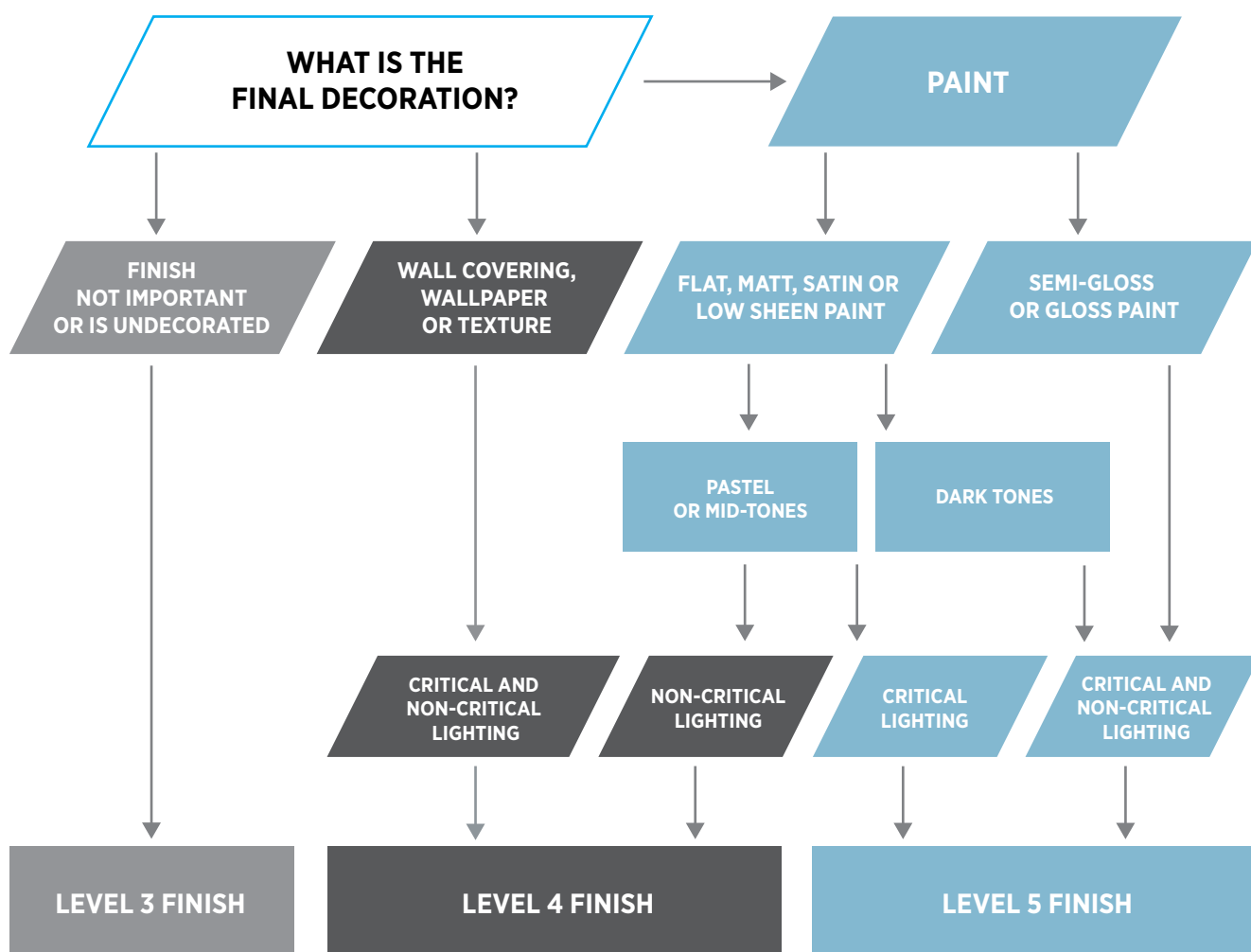


Figure A9: Levels of Finish

Section B

Acoustic Requirements

10/2025

ACOUSTIC REQUIREMENTS

Click on the links below to navigate to page

- B 2** Introduction
- B 3** Multi-Residential Buildings
- B 4** Commercial Buildings
- B 6** Educational Facilities
- B 8** Health Care Buildings



INTRODUCTION

Multi-residential Buildings

Any wall or floor/ceiling system separating sole-occupancy units in townhouses (Class 1a) or multi-residential buildings (Class 2, 3 and 9C) must comply with the acoustic provisions of the NCC (refer to the Multi-Residential section for a summary of NCC acoustic requirements).

While NCC specifies minimum levels for sound insulation between attached dwellings, these levels may not always be sufficient to meet the expectations of the building occupants. In view of this, a higher degree of sound insulation, commensurate with the expectations of the end user, may need to be considered.

To this end the Association of Australian Acoustical Consultants (AAAC) developed the Guideline for Apartment and Townhouse Acoustic Rating providing a 'Star Rating' system that ranks the acoustical quality of multi-residential buildings on a scale from 2 (worst performing) to 6 (best performing) stars.

The Star Rating system covers noises associated with inter-tenancy activities such as voices, home theatre, internal building services and appliances (ie. air conditioning, lifts, water supply systems) as well as external noise intrusion (ie road, rail, and air traffic).

Provided on pages B3 are the performance indicators for star ratings meeting or exceeding NCC requirements (4 to 6 stars) for separating walls and floors. The full description of Star Rated system refer to the Guideline for Apartment and Townhouse Acoustic Rating available at the AAAC web site aaac.org.au

Commercial Buildings

Concerned with the limited building regulations governing acoustical quality of commercial buildings, the AAAC has developed the Guideline for Commercial Building Acoustics focusing in particular on office buildings.

In developing this Guideline, the AAAC aimed at encouraging consistency between different developments and highlighting the importance of buildings acoustics to the apparent quality of commercial buildings.

This Guideline is intended to complement the relevant AS/NZS Standards (in particular AS/NZS 2107 *Acoustics — Recommended design sound levels and reverberation times for building interiors*) and Green Building Council Australia (GBCA) rating tools for Office Design and Office Interiors. It addresses such major issues as external noise, noise from building services, noise transfer between separate tenancies and noise transfer within the same tenancy.

Extracts from the Guideline for Commercial Building Acoustics specific to noise isolation are provided on pages B4 and B5.

The full Guideline can be found at aaac.org.au

Educational Buildings

In the absence of consistent Australia-wide regulations and standards encompassing all aspects of the acoustic qualities of Educational buildings, the AAAC has developed the Guideline for Education Facilities Acoustics.

This Guideline is intended to be complimentary to local authority building requirements and individual and state guidelines (where they exist) and is consistent with the requirements of the NCC.

The Guideline is aimed at achieving appropriate sound levels within teaching spaces while taking into account not only the activities that occur inside classrooms and teaching spaces, but also the activities that typically occur in adjacent spaces and outside during the course of a day.

Extracts from the Guideline for Education Facilities Acoustics are provided on pages B6 and B7. The full Guideline can be found at aaac.org.au

Health Care Buildings

The design of health care facilities in Australia must comply with the NCC, the relevant Australian Standards and state regulations. In addition, Australasian Health Facility Guidelines (AusHFG) provide general guidance on various aspects of typical Health Care Facilities in order to facilitate the provision of appropriate physical environments.

In relation to acoustic requirements for health care buildings, AusHFG refers to AS/NZS 2107 *Acoustics — Recommended design sound levels and reverberation times for building interiors*.

As a further guide for designers and builders of health care facilities, included on page B8 are acoustic rating recommendations contained in the AAAC Guideline for Health Care Facilities. The full Guideline can be found at aaac.org.au

MULTI-RESIDENTIAL BUILDINGS

Extract from AAAC Guidelines

| TABLE B1: INDICATIVE SOUND INSULATION PERFORMANCE OF THE VARIOUS STAR RATINGS IN RESPECT TO CONTROLLING TYPICAL DOMESTIC NOISE | | | |
|--|---|--------------|--------------|
| TYPE OF NOISE SOURCE | SOUND INSULATION EXPRESSED AS $D_{nT,w} + C_{tr}$ | | |
| | 45* | 50 | 55 |
| | 4 STAR | 5 STAR | 6 STAR |
| Normal Speech | Not Audible | Not Audible | Not Audible |
| Raised Speech | Just Audible | Not Audible | Not Audible |
| Dinner Party/Laughter | Just Audible | Not Audible | Not Audible |
| Shouting | Audible | Just Audible | Not Audible |
| Small Television/Small Entertainment System | Audible | Just Audible | Not Audible |
| Large Television/Large Hi-fi Music System | Clearly Audible | Audible | Just Audible |
| DVD With Surround Sound | Clearly Audible | Audible | Audible |
| Digital Television With Surround Sound | Clearly Audible | Audible | Audible |

*Min NCC requirement.

| TABLE B2: MINIMUM IN-SITU ACOUSTIC PERFORMANCE OF SEPARATING WALLS AND FLOORS, $D_{nT,w} + C_{tr}$ | | | |
|--|--------|--------|--------|
| INTERTENANCY ACTIVITIES | 4 STAR | 5 STAR | 6 STAR |
| (A) AIRBORNE SOUND INSULATION FOR WALLS AND FLOORS | | | |
| Between Separate Tenancies $D_{nT,w} + C_{tr} \geq$ | 45* | 50 | 55 |
| Between A Lobby/Corridor & Bedroom $D_{nT,w} + C_{tr} \geq$ | 40 | 45 | 50 |
| Between A Lobby/Corridor & Living Area $D_{nT,w} + C_{tr} \geq$ | 40 | 40 | 45 |
| (B) Corridor, Foyer To Living Space Via Door(s) $D_{nT,w} \geq$ | 30 | 35 | 40 |
| (C) IMPACT ISOLATION OF FLOORS | | | |
| Between Tenancies $L_{nT,w} \leq$ | 50 | 45 | 40 |
| Between All Other Spaces & Tenancies $L_{nT,w} \leq$ | 50 | 45 | 40 |
| (D) IMPACT ISOLATION OF WALLS | | | |
| Between Tenancies | Yes | Yes | Yes |
| Between Common Areas & Tenancies | No | Yes | Yes |

*Min NCC requirement.

NOTE:

Wall and floor/ceiling systems separating sole-occupancy units in a multi-residential building must comply with the minimum acoustic provisions of the NCC (refer to the Multi-Residential section for a summary of NCC acoustic requirements).

COMMERCIAL BUILDINGS

Extract from AAAC Guidelines

TABLE B3: ACCEPTABLE D_w VALUES DEPENDING ON A ROOM'S NOISE LEVEL AND THE TOLERANCE IN THE ADJACENT SPACE

| NOISE TOLERANCE IN RECEIVING ROOM | SOURCE ROOM ACTIVITY NOISE | | | |
|--------------------------------------|----------------------------|---------|------|-----------|
| | LOW | AVERAGE | HIGH | VERY HIGH |
| High | 30 | 35 | 40 | 45 |
| Medium | 35 | 40 | 45 | 50 |
| Low | 40 | 45 | 50 | 55 |
| Very Low | 45 | 50 | 55 | 60 |

For guidance on expected noise source levels and tolerance for various room occupancies refer to table B4.

TABLE B4: ROOM NOISE SOURCE LEVELS AND TOLERANCE

| TYPE OF OCCUPANCY/ACTIVITY | SOURCE ACTIVITY LEVEL | NOISE TOLERANCE |
|----------------------------|-----------------------|-----------------|
| Board and Conference Rooms | High | Very Low |
| Cafeterias | Very High | High |
| Call Centres | Average - High | Low - Medium |
| Computer (Server) Rooms | High | Medium - High |
| Corridors and Lobbies | Average | High |
| Design Offices | Average | Low |
| Drafting Offices | Average | Low |
| General Office Areas | Average | Medium |
| Private Offices | Low | Low |
| Public Spaces | Average | High |
| Reception Areas | Average | Medium |
| Rest Rooms and Tea Rooms | High | High |
| Toilets | Average | High |
| Undercover Car Parks | Very High | High |

COMMERCIAL BUILDINGS

Extract from AAAC Guidelines

TABLE B5: PERFORMANCE REQUIREMENTS BETWEEN SEPARATE TENANCIES WHERE SPACE USE IS UNKNOWN

| WEIGHTED LEVEL DIFFERENCE (D_w) | | | | |
|-------------------------------------|---------|------|-----------|-----------|
| POOR | AVERAGE | GOOD | VERY GOOD | EXCELLENT |
| 35 | 40 | 45 | 50 | 55 |

TABLE B5: Provides acoustic quality as it relates to the quality of the development and where the use of the spaces either side of a common wall is unknown. The AAAC Guideline suggests a minimum R_w 50 (D_w 45) between tenancies.

TABLE B6: PERFORMANCE REQUIREMENTS WITHIN THE SAME TENANCY WHERE SPACE USE IS YET TO BE DEFINED

| WEIGHTED LEVEL DIFFERENCE (D_w) | | | | |
|-------------------------------------|---------|------|-----------|-----------|
| POOR | AVERAGE | GOOD | VERY GOOD | EXCELLENT |
| 30 | 35 | 40 | 45 | 50 |

TABLE B6: Provides acoustic quality as it relates to the quality of the development and where the use of spaces on each side of the wall is yet to be defined, otherwise table B3 can be used.

NOTE:

For office areas where walls do not extend full height, the ceiling selected will also become critical. Refer to Ceilings — Over Partition Systems for ceiling configurations required to maintain wall acoustic rating.

EDUCATIONAL FACILITIES

Extract from AAAC Guidelines

TABLE B7 AIRBORNE AND IMPACT SOUND INSULATION REQUIREMENTS

| ROOM | SOUND INSULATION | | |
|---|-------------------------------|--|---------------------------------|
| | SOURCE ROOM IMPACT GENERATION | SOURCE ROOM ACTIVITY AIRBORNE NOISE GENERATION | RECEIVING SPACE NOISE TOLERANCE |
| Atria (for circulation, not teaching) | Medium | Average | High |
| Art / craft studios | Medium | Average | Medium |
| Assembly halls up to 250 seats | High | Very High | Low |
| Assembly halls over 250 seats | High | Very High | Low |
| Audio-visual areas | Low | High | Low |
| Cafeterias | High | Very High | High |
| Computer rooms – Teaching | Low | Average | Medium |
| Computer rooms – Laboratories | Low | Average | Medium |
| Conference room | Low | High | Very Low |
| Corridors and lobbies | Medium | Average | High |
| Drama Studios | Medium | High | Low |
| Dance Studios | High | Very High | Medium |
| Engineering workshops – Teaching | High | High | High |
| Engineering workshops – Non-teaching | High | High | High |
| Gymnasia / indoor sports | High | Very High | Medium |
| Weight training / fitness room | High | High | Medium |
| Interview / counselling rooms | Low | Low | Medium |
| Laboratories – Teaching | Low | Average | Medium |
| Laboratories – Working | Low | Average | Medium |
| Lecture rooms – up to 50 seats | Low | Average | Medium |
| Lecture theatres – without speech reinforcement and >50 seats | Low | Average | Low |
| Lecture theatres – with speech reinforcement | Low | High | Medium |
| Libraries – General areas | Medium | Average | Medium |
| Libraries – Reading areas | Low | Low | Low |
| Manual arts workshops | Medium | Average | Medium |
| Medical rooms (First aid) | Low | Low | Medium |
| Music practice rooms | Low | Very high | Low |
| Music studios | Low | Very high | Very Low |
| Nursery school – Play rooms | Medium | Average | Medium |
| Nursery school - Quiet rooms | Low | Low | Low |
| Office areas | Low | Average | Medium |
| Professional and administrative offices | Low | Average | Medium |
| Teaching spaces – Open plan | Low | Average | Low |
| Teaching spaces – Primary schools | Low | Average | Low |
| Teaching spaces – Secondary schools | Low | Average | Low |
| Teaching spaces – Hearing impaired | Low | Average | Low |
| Staff common rooms | Low | Low | Medium |
| Staff studies / collegiate | Low | Low | Low |
| Toilet / change / showers | Medium | Average | High |
| Swimming pools | Medium | High | High |
| Plant rooms | Low | High | High |

EDUCATIONAL FACILITIES

Extract from AAAC Guidelines

TABLE B8: SOUND INSULATION RATINGS FOR INTERFACES WITHOUT PASS DOORS (D_w)

| NOISE TOLERANCE IN RECEIVING ROOM | ACTIVITY NOISE IN SOURCE ROOM | | | |
|--------------------------------------|-------------------------------|---------|------|-----------|
| | LOW | AVERAGE | HIGH | VERY HIGH |
| High | 30 | 35 | 40 | 45 |
| Medium | 35 | 40 | 45 | 50 |
| Low | 40 | 45 | 50 | 55 |
| Very Low | 45 | 50 | 55 | 60 |

NOTE: Where doors are proposed between spaces consideration must be given to the placement and performance requirements of the door since ratings for doors with no acoustic treatment are not likely to exceed D_w 20 dB while standard solid core doors with full perimeter acoustic seals could achieve a rating up to D_w 30 dB.

TABLE B9: IMPACT ISOLATION RATINGS FOR FLOOR/CEILING BETWEEN VERTICALLY SEPARATED SPACES (L'_{nTw})

| | | IMPACT GENERATION IN SOURCE ROOM | | |
|--------------------------------------|----------|----------------------------------|--------|------|
| | | LOW | MEDIUM | HIGH |
| Noise tolerance in receiving room | High | 70 | 65 | 60 |
| | Medium | 65 | 60 | 55 |
| | Low | 60 | 55 | 50* |
| | Very Low | 55 | 50* | 45* |

* Where high impact generating activities are to be located above spaces with low noise tolerance, consideration should be given to the relocating of one of the spaces. Specialist advice should be sought where very high impact activities, such as gymnasia, are to occur above a sensitive space.

HEALTH CARE BUILDINGS

Extract from AAAC Guidelines

TABLE B10 RECOMMENDED ACOUSTIC SEPARATION REQUIREMENTS (D_w)

| USAGE | INDICATIVE ACOUSTIC SEPARATION | | USAGE | INDICATIVE ACOUSTIC SEPARATION | |
|---|--------------------------------|------------|--|----------------------------------|------------|
| | ADJACENT* | CORRIDOR** | | ADJACENT* | CORRIDOR** |
| Single bed ward (including Mental Health, Parent Accommodation) | 40 | 25 | PUBLIC AREAS | | |
| Multiple bed ward | 40 | 25 | Corridors and lobby spaces | - | - |
| Ward ensuites | 40, Discont. | 15 | Cafeterias/ dining | 40 | 15 |
| Consulting, examination, interview, counselling/ bereavement | 40 | 25 | Family and parents' lounges | 40 | 20 |
| Treatment, procedures, surgeries | 40 | 25 | Toilets, amenities | 40 | 15 |
| Morgue presentation areas | 45 | 25 | Waiting rooms and Reception areas | 40 | - |
| Birth room/delivery suites | 45 | 25 | Multi-faith, chapel, Lecture theatres, cinemas, multipurpose rooms | Specialist design input required | |
| Laboratories | 40 | 20 | Radio broadcast, interview or audio editing | Specialist design input required | |
| Clean utility/Dirty utility/ drug storage or preparation | 35 | 15 | Outdoor seating or activity areas | - | - |
| Speech and language therapy | 40 | 25 | STAFF AREAS | | |
| Audiology/audiometry | As per AS1269.4 | - | Enclosed nurse stations | 35 | - |
| Dental clinics | 45 | 25 | Boardroom/conference | 45 | 25 |
| Rehabilitation areas | 40 | 25 | Private offices | 35 | 20 |
| Hydrotherapy | 45 | 25 | Executive offices | 40 | 25 |
| General intensive care wards | 45 | 25 | Cellular offices (2-4 desks) | 35 | 20 |
| Neonatal or paediatric ICUs (NICU/PICU) | 45 | 30 | UTILITY ROOMS | | |
| Pharmacy offices | 35 | 20 | Amenities, locker rooms | 40 | - |
| Kitchens, sterilisation and service areas | 40 | - | Morgue - Grossing stations, observation areas | 55, Discont. | - |
| Operating theatres | 40 | 25 | INFRASTRUCTURE | | |
| | | | Engineering, Workshops | 55, Discont. | - |
| | | | Plantrooms, generators | 55, Discont. | - |

NOTE:

* Minimum values to nearby noise-sensitive enclosed rooms where no common door exists – where interconnecting doors are proposed, these criteria are very difficult to achieve without effective spatial planning. Discontinuous walls as defined by the National Construction Code are recommended for impact or wall attached noise sources.

** To circulation corridor, where the intermediate partition is a solid wall with an operable door or air lock. Subtract 5 dB for listening areas with a visual connection (easily visible to the occupants of the space). Note that walls without a door onto a corridor would fall into the "Adjacent" category.

Section C

Steel Stud Walls

10/2025

STEEL STUD WALLS

Click on the links below to navigate to page

- C 2 Introduction
- C 9 Lined One Side
- C 15 Lined Both Sides
- C 35 Quiet Stud
- C 54 Staggered Stud
- C 74 Twin Stud



INTRODUCTION

Description

Knauf Steel Stud Wall systems consist of single or multiple layers of plasterboard, screw fixed to one or both sides of light gauge Rondo C-stud or QUIET STUD® framing.

Design Options

Steel stud wall systems outlined in this manual provide Designers and Builders with a wide range of options to suit project specific requirements in regard to fire rating, acoustic isolation, water resistance and impact resistance. A large number of hybrid systems have been included, providing cost effective solutions when impact and/or water resistance requirements differ on each side of the wall.

The following types of Steel Stud Wall Systems are outlined in this manual:

- Lined One Side
- Lined Both Sides
- QUIET STUD
- Staggered Stud
- Twin Stud.

Materials

Plasterboard Linings

- 10 mm / 13 mm SHEETROCK ONE
- 10 mm SHEETROCK PLUS
- 13 mm WetStop
- 13 mm / 16 mm FireStop
- 13 mm ImpactStop
- 13 mm / 16 mm MultiStop ONE
- 13 mm MultiStop ONE HI
- 13 mm / 16 mm FIBEROCK Aqua-Tough

Other Linings

- 12.5 mm PERMAROCK
- 6 mm VILLABOARD

Insulation

Knauf Insulation Glasswool

- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
- KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density
- KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density

Steel Framing

Knauf steel stud wall systems utilise Rondo framing as outlined below:

Lipped C-studs

Lipped C-studs are available in a number of sizes and Base Metal Thicknesses (BMT):

| TABLE C1: RONDO LIPPED C-STUDS | | | | |
|--------------------------------|-------------------------------|------|------|------|
| STUD SIZE mm | BASE METAL THICKNESS (BMT) mm | | | |
| | 0.50 | 0.55 | 0.75 | 1.15 |
| 51 | ● | | ● | |
| 64 | ● | | ● | ● |
| 76 | | ● | ● | ● |
| 92 | | ● | ● | ● |
| 150 | | | ● | ● |

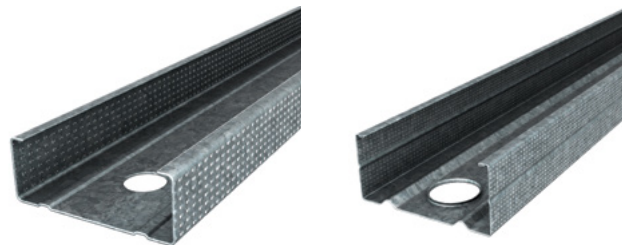


Figure C1: Rondo Lipped C-studs

Quiet Stud®

Rondo QUIET STUD is available in 92 mm size and 0.55 mm or 0.75 mm BMT (lead times apply).



Figure C2: Rondo QUIET STUD®

INTRODUCTION

Wall Tracks

Rondo Wall Tracks are available in the following sizes and Base Metal Thicknesses:

| TABLE C2: RONDO WALL TRACKS | | | |
|-----------------------------|-------------------------------|------|------|
| STUD SIZE mm | BASE METAL THICKNESS (BMT) mm | | |
| | 0.50 | 0.70 | 1.15 |
| 51 | ● | ● | |
| 64 | ● | ● | ● |
| 76 | ● | ● | ● |
| 92 | ● | ● | ● |



Figure C3: Wall Track

Deflection Head Tracks

Deflection head tracks are available in the following sizes and Base Metal Thicknesses:

| TABLE C3: RONDO DEFLECTION HEAD TRACKS | | | | |
|--|-------------------------------|------|------|------|
| STUD SIZE mm | BASE METAL THICKNESS (BMT) mm | | | |
| | 0.50 | 0.70 | 0.75 | 1.15 |
| 51 | | ● | | |
| 64 | ● | ● | | ● |
| 76 | ● | ● | | ● |
| 92 | ● | ● | | ● |
| 150 | | | ● | ● |



Figure C4: Deflection Head Tracks

Screws

For screw types suitable for various lining configurations and steel stud BMT's refer to General Information — Materials.

Design Considerations

Maximum Heights

Wall heights for non load bearing (NLB) walls must be within the maximum heights as set out in the maximum wall height tables for various systems.

Maximum heights for non load bearing (NLB) steel framed walls have been provided for 0.25 kPa lateral serviceability pressures and are based on L/240 deflection criteria set out in the NCC. Refer also to Notes to Maximum Height Tables below

Notes to Maximum Height Tables

General

- Limiting Factor Symbols:
 - s = permissible strength limits
 - d = deflection limits
 - h = head track capacity limits
 - f = fire height limits
 - sl = slenderness ratio limits.
- Where 2d appears, deflection limits the design and 2 rows of equally spaced noggings are required. Similarly 2s means strength controls the design and 2 rows of equally spaced noggings are required.
- Fire height limit (f) does not apply if fire resistant linings are used in non-fire rated walls. Refer Knauf for maximum wall heights in such situations.
- Minimum yield stress of steel sections to be 270 MPa.
- Deflection limit is height/240 to a maximum of 30 mm (for walls generally as per NCC Specification 6).
- Maximum slenderness ratio $l/r = 300$.
- Wall heights tabled are for single piece Rondo lipped C-studs at maximum centres shown. Stud splicing is not permitted in fire-rated applications.
- Wall heights tabled are for non-load bearing walls and account for self weight and lateral pressures stated.
- Shelf loading is not permitted for the tabulated maximum wall heights. Refer to Rondo for maximum heights with shelf loadings.
- Tabulated heights are for internal walls only. Refer to Rondo if walls are subject to external pressures.
- For fire service, 50 Pa pressure assumed. Where pressures are greater than 50 Pa and fire loadings are likely to be coincident, Knauf should be consulted.
- All plasterboard is to be manufactured by Knauf.
- Walls are to be constructed to Knauf standard C-Stud fire rated or screw-fixed non-fire rated wall details as appropriate but with 300 mm maximum screw centres.

INTRODUCTION

Head Track Capacities

Systems Lined Both Sides

- Wall heights tabled are calculated using standard head track reaction capacities as follows:

TABLE C4: STANDARD HEAD TRACK REACTION CAPACITY kN

| TRACK BMT mm | PLASTERBOARD | | | | | |
|-----------------|--------------|------|------|------|------|------|
| | 1x10 | 1x13 | 1x16 | 2x10 | 2x13 | 2x16 |
| 0.55 | 0.40 | 0.60 | 0.90 | 0.40 | 0.60 | 0.90 |
| 0.75 | 0.40 | 0.60 | 0.90 | 0.40 | 0.60 | 0.90 |
| 1.15 | 0.40 | 0.60 | 0.90 | 0.40 | 0.60 | 0.90 |

Notes:

- 10 mm max clearance at top of stud, board
- Wall head to Rondo detail TDS/03-103 dated 20th May 1998.

- The tabulated heights have not been checked for a deflection head track requirements as outlined below.
- Where greater vertical deflection capacity is required, Rondo deflection heads may be used with allowable head track reaction capacities as follows:

TABLE C5: DEFLECTION HEAD TRACK REACTION CAPACITY kN

| TRACK BMT mm | PLASTERBOARD | | | | | |
|-----------------|--------------|------|------|------|------|------|
| | 1x10 | 1x13 | 1x16 | 2x10 | 2x13 | 2x16 |
| 0.75 | 0.40 | 0.44 | 0.44 | 0.40 | 0.44 | 0.44 |
| 1.15 | 0.40 | 0.60 | 0.90 | 0.40 | 1.03 | 1.03 |

Notes:

- 20 mm max clearance at top of stud, board
- Wall head to Rondo detail TDS/03-107 dated 20th May 1998.

- Alternative head track installations must be checked in accordance with Rondo head track capacity tables.
- The allowable head track reactions noted above, rely on the plasterboard for restraint and must be installed strictly in accordance with Rondo details.
- Alternatively – select connections from Rondo tables TDS/03-101 for standard track and TDS/03-105 for deflection head.
- Plasterboard to be fixed to both sides of the wall frame to the full nominal height of the wall exclusive of any allowance for soffit deflection.
- Additional rows of noggings may be included in the wall frame to maintain stability during construction.
- Framing components and connections must be suitably designed by Rondo or the project Structural Engineer in accordance with AS/NZS 1170.4 Earthquake Actions and other relevant Standards for use in seismic applications.

Systems Lined One Side

TABLE C6: WALL HEAD/BASE DESIGN

| WALL CONSTRUCTION | CLEARANCE | REACTION CAPACITY |
|--------------------------|---|--|
| Twin stud, Head track | 10 mm max clearance at top of stud, board | Reaction capacity, refer to Rondo TDS/03-102 |
| | 20 mm max clearance at top of stud, board | Reaction capacity, refer to Rondo TDS/03-106 |
| Twin stud, Base track | (Studs hard down into track) | Reaction capacity, refer to Rondo TDS/03-108 |
| Staggered Stud | 30 mm max clearance at top of stud, board | Reaction capacity at head and base: 0.47 kN |

Notes for staggered stud only:

- Top Hat track to Knauf detail 209710-A
- min 13 mm plasterboard.

For other reaction capacities refer Rondo or Knauf.

Nogged wall frames with board to one side only (ie twin stud walls) require one row of noggings/nogging track 100 mm max below soffit and other noggings as below:

TABLE C7: NOGGINGS FOR SYSTEMS LINED ONE SIDE

| WALL HEIGHT | ROWS OF NOGGINGS |
|----------------------|---|
| Up to 3000 mm | One row noggings/nogging track at mid height |
| 3000 mm to 6000 mm | Two rows noggings/nogging track at third points of height |
| 6000 mm to 8000 mm | Three rows noggings/nogging track at quarter points of height |
| Greater than 8000 mm | Four rows of noggings/nogging track at fifth points of height |

INTRODUCTION

Load Bearing Walls

A load bearing (LB) wall is a wall that is intended to resist vertical forces additional to those due to its own weight.

Maximum loads for load bearing non-fire rated steel stud walls can be determined by the normal structural design. Maximum wall heights for load bearing fire rated steel stud walls can be similarly determined by structural design, however an appropriate lining must be used to provide fire protection to the wall frame as outlined below and where relevant apply an Axial Capacity Reduction (ACR) to achieve the required Fire Resistance Level.

The following wall types with board to each side of single stud or twin stud wall may be used as load-bearing fire rated walls achieving the FRLs stated under the conditions listed below:

| FIRESTOP OR MULTISTOP ONE/ONE HI WALL LINING | | FIRE RESISTANCE LEVEL | FIRE ATTACK DIRECTION |
|--|---------|-----------------------|-----------------------|
| SIDE 1 | SIDE 2 | | |
| 1x13 mm | 1x13 mm | 30/30/30 | Both sides |
| 1x16 mm | 1x16 mm | 60/60/60* | Both sides |
| 2x13 mm | 2x13 mm | 90/90/90 | Both sides |
| 2x16 mm | 2x16 mm | 120/120/120* | Both sides |

* Fire rated load bearing steel design to apply ACR of 20%. Refer to Rondo for design and details.

Conditions:

- All joints to be backed by nogging or studs. Elsewhere nogging to be provided at 1200 mm maximum centres.
- Bracing to be provided within the wall as required by structural design ignoring plasterboard contribution.
- Frame to be designed by an appropriately qualified Structural Engineer and shall comply with AS/NZS 4600: *Cold-formed steel structures*.
- Any structure providing support, including lateral support, to the load bearing fire rated wall must have an FRL of at least that of the wall.
- Stud splicing not allowed.

Shelf Loads

Walls that carry shelf loadings must be designed accordingly. Refer to Rondo Design Manual for permissible shelf loadings for non-fire rated steel stud walls. Refer to Knauf for design of fire rated steel stud walls with shelf loadings.

Penetrations

Penetrations in a fire rated system must be treated strictly in accordance with relevant test reports and approved installation details in order to maintain the system's Fire Resistance Level.

Where components by others are specified in Knauf fire-rated penetration details (ie. dampers, GPOs, fire collars, etc), such components must be installed in accordance with the manufacturer's specifications. It is the responsibility of the component manufacturer to ensure that the fire rating performance of the system is not affected.

INTRODUCTION

Installation

Knauf steel stud wall systems must be assembled strictly in accordance with the details and specifications outlined in this manual in order to achieve stated Fire Resistance Levels and acoustic ratings.

NOTE:

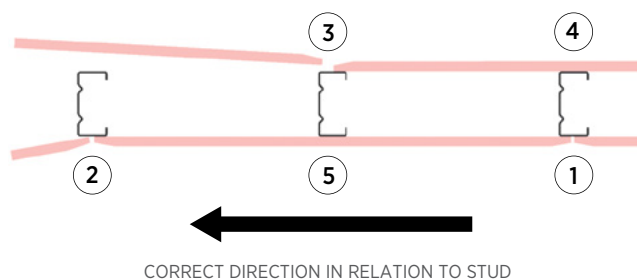
Where proprietary products have been tested in Knauf systems by other manufacturers, reference should be made to the product manufacturer's specifications for details of tested designs and related Standards.

Installation and fastening sequence

Unlike rigid timber framing, light gauge steel studs are prone to flexing and twisting when driving fasteners to secure plasterboard sheets.

The first plasterboard sheet installed at a joint should be fixed to the open side of a stud flange. Additional sheets are then installed in the direction toward the closed side of the stud web.

When installing the first side, screw-fasten the plasterboard sheets to studs at edges only, as illustrated in Figure C5 (positions 1 and 2). Then, on the second side, fasten the edge (position 3) followed by intermediate studs (position 4). Return to the first side and fasten sheets to previously unattached studs (position 5).



CORRECT DIRECTION IN RELATION TO STUD

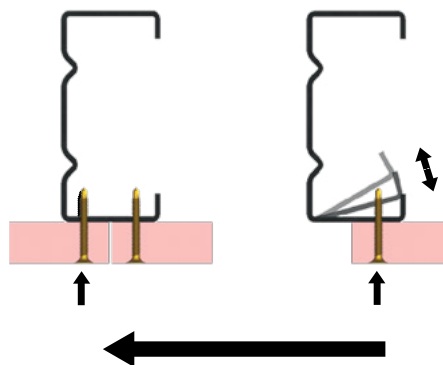
Figure C5: Correct Fastening Sequence

The correct direction of sheet installation is in the direction from the open side of the stud to the closed side of the stud web (Figure C5). The first sheet installed at a joint is screwed to the flange at the open side of the stud. The flange will initially deflect then straighten as the screw pulls tight. Ensure that the stud is adequately supported to avoid twisting, and fully screw this sheet to the stud before continuing.

The next sheet is now screwed to the flange at the closed side of the stud. The deflection on this part of the flange is very small, and the previously installed sheet helps keep the assembly rigid during the installation of the second sheet.

If fixed correctly the result is a flat joint with no lipping. The correct installation sequence is illustrated in Figure C6 below:

Do fix plasterboard sheets in the direction from the open side of the stud to the closed side of the stud:



CORRECT DIRECTION IN RELATION TO STUD

Figure C6: Correct Fastening Sequence Detail

Laying out

- Accurately mark wall layouts.
- Always check individual measurements against overall site dimensions.
- Align the top and bottom tracks accurately according to the plan layout. Attach at ceiling and floor to structural elements.
- Use suitable fasteners for anchoring top and bottom tracks. Locate fasteners at 50 mm from each end and spaced at maximum 600 mm centres along each track.

Framing installation

- For studs in fire rated walls up to 3000 mm high, cut studs nom 15 mm short of the floor-to-ceiling height to allow 15 mm expansion gap at top.
- For studs in walls higher than 3000 mm, allow 5 mm gap per 1000 mm of height for expansion. Allowance should be made for possible deflection of floor/roof structure over walls.
- Studs may be boxed together to provide greater frame strength. Studs are usually boxed to frame door and other openings and to support heavy fixtures on the partition.
- Studs in fire rated partitions are not to be fastened to top and bottom tracks (UNO) except boxed studs at fire door openings which should be pop riveted to the tracks. When framing openings, secure both flanges of boxed studs to the tracks, using pop rivets (refer to Knauf online CAD Finder for details).

INTRODUCTION

- In addition to noggings specified in the maximum heights notes, noggings are required as headers above doorways, for reinforcement behind fixture attachments, and where special circumstances require additional stiffening of the frame. (Noggings are formed from lengths of steel track, approximately 100 mm longer than the stud spacing. Cut the track flanges at approximately 45 degrees and bend the track ends at right angles to fit between the studs. Position and fasten with stud crimper, or with pop rivets for fire door application).

Plasterboard application

- Plasterboard linings can be installed vertically or horizontally in fire rated and non–fire rated wall systems. Refer Knauf online CAD Finder for plasterboard installation and details for steel stud wall systems.
- If no deflection requirement exists, cut plasterboard sheets to provide 10 mm maximum gap at floor and ceiling.
- Centre abutting vertical sheet edges on stud flanges.
- Fasten plasterboard sheets to steel framing with appropriate screws as outlined in General Information section. Place screws 10 mm–16 mm from sheet ends and edges UNO. Do not fasten plasterboard to top and bottom tracks (UNO) in fire rated systems UNO. Sheets should be installed by advancing in the direction of the stud web (refer Figures C5 and C6).
- Offset plasterboard joints on opposite sides in adjacent layers refer to Knauf online CAD Finder for details.
- For maximum screw spacings refer to Knauf online CAD Finder for details.

Installation details

To view the full range of system CAD details, scan QR code below.



INTRODUCTION

Jointing and Finishing

- Finish all joints and internal and external corners in face layers with the appropriate Knauf jointing system (refer to Knauf Plasterboard Installation Manual). Joints and junctions in inner layers of multiple layer systems are not required to be stopped.
- Paper tape must be used in fire rated and wet area systems.
- Stop exposed fasteners on face layers.

Caulking

Caulk perimeter gaps and penetrations in fire rated and acoustic walls with H.B. Fuller Firesound sealant (refer Knauf online CAD Finder for details).

Decorating

Apply paint or other decorative finishes as required. Refer to Knauf Plasterboard Installation Manual for recommendations on decoration of plasterboard.

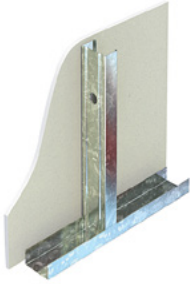
Wall Construction Notes

- Steel stud wall systems are non load bearing (NLB) unless noted otherwise.
- Wall systems should not be used where conditions of constant excessive moisture or humidity are prevalent ie, in excess of 90% relative humidity.
- Movement joints in plasterboard are required at building construction joint locations. Control joints in plasterboard are required at not more than 12 metre maximum centres, at change in framing substrate material and at building structure joint locations e.g. expansion or control joint.
- All fire rated penetrations must be installed in accordance with approved manufacturer's specifications e.g. dampers, pipes and fire doors etc. Refer to Knauf for specific details and information.
- Fire rated systems must be assembled strictly in accordance with relevant test reports, opinions, approved system details and specifications.
- Steel Studs in fire rated partitions are not to be fastened to top and bottom tracks (UNO) except boxed studs facing fire door openings, in which case the boxed studs are pop riveted to the tracks.
- Steel wall framing must be constructed to Rondo specifications and spaced at 600 mm centres maximum.
- Components must not be used if fractured or damaged.
- Butt joints to be backed by stud or nogging for fire rated systems.
- Mid span nogging is recommended for erection purposes for steel stud walls greater than 3600 mm.

LINED ONE SIDE

SO.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: NA

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 10 + STUD |
|--------|------------------------|---------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SO.1A | 1x10 mm SHEETROCK ONE | NA | Nil | 26(23) |
| SO.1E | 1x10 mm SHEETROCK PLUS | NA | Nil | 28(25) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

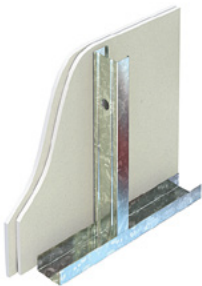
PRESSURE: 0.25 kPa

| BASE METAL THICKNESS mm | 600 (NOGGED) | | | | | |
|-------------------------|-----------------|--------|---------|---------|---------|---------|
| | STUD SPACING mm | 51 | 64 | 76 | 92 | 150 |
| 0.50 | 2320 d | 2720 d | NA | NA | NA | NA |
| 0.55 | NA | NA | 3200 2d | 3610 2s | NA | NA |
| 0.75 | NA | 3130 d | 3580 2d | 4130 2d | 5330 2h | 5330 2h |
| 1.15 | NA | 3530 d | 4050 2d | 4690 2d | 5330 2h | 5330 2h |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2h – head track capacity (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings)

SO.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: NA

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 20 + STUD |
|--------|------------------------|---------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SO.2A | 2x10 mm SHEETROCK ONE | NA | Nil | 32(27) |
| SO.2D | 2x10 mm SHEETROCK PLUS | NA | Nil | 34(31) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

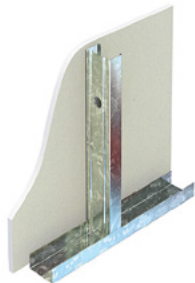
| BASE METAL THICKNESS mm | 600 (NOGGED) | | | | | |
|-------------------------|-----------------|--------|---------|---------|---------|---------|
| | STUD SPACING mm | 51 | 64 | 76 | 92 | 150 |
| 0.50 | 2320 d | 2720 d | NA | NA | NA | NA |
| 0.55 | NA | NA | 3200 2d | 3610 2s | NA | NA |
| 0.75 | NA | 3130 d | 3580 2d | 4130 2d | 5330 2h | 5330 2h |
| 1.15 | NA | 3530 d | 4050 2d | 4690 2d | 5330 2h | 5330 2h |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2h – head track capacity (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings)

LINED ONE SIDE

SO.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: NA

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 13 + STUD |
|--------|-----------------------|---------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SO.3A | 1x13 mm SHEETROCK ONE | NA | Nil | 27(25) |
| SO.3D | 1x13 mm WETSTOP | NA | Nil | 28(26) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2720 d | NA | NA | NA |
| | 0.55 | NA | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | NA | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | NA | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

SO30.2

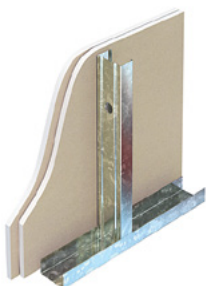
FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM LINED SIDE ONLY

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: NA

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 26 + STUD |
|---------|-----------------------|---------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SO30.2A | 2x13 mm FIRESTOP | NA | Nil | 35(32) |
| SO30.2B | 2x13 mm MULTISTOP ONE | NA | Nil | 35(33) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2720 d | NA | NA | NA |
| | 0.55 | NA | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | NA | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | NA | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum wall heights for load bearing walls

LINED ONE SIDE

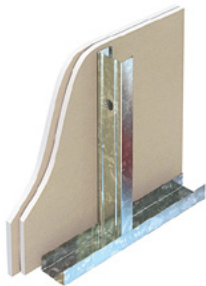
SO60.1**FIRE RESISTANCE LEVEL**

NLB -/60/60

LB 60/60/60

FROM LINED SIDE ONLY

FRL Basis: FC16109, FC15815

**SYSTEM DESCRIPTION**

Side 1: 2x16 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: NA

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 32 + STUD |
|----------------|-----------------------|---------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SO60.1A | 2x16 mm FIRESTOP | NA | Nil | 36(33) |
| SO60.1B | 2x16 mm MULTISTOP ONE | NA | Nil | 36(34) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2750 d | NA | NA | NA |
| | 0.55 | NA | NA | 3250 2d | 3610 2s | NA |
| | 0.75 | NA | 3280 d | 3870 2d | 4200 2d | 5370 2s |
| | 1.15 | NA | 3590 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

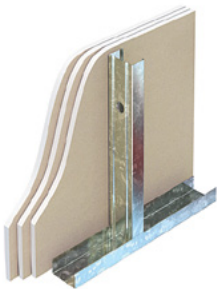
SO90.1**FIRE RESISTANCE LEVEL**

NLB -/90/90

LB 90/90/90

FROM LINED SIDE ONLY

FRL Basis: FC16109, FC15815

**SYSTEM DESCRIPTION**

Side 1: 3x13 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: NA

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 39 + STUD |
|----------------|-----------------------|---------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SO90.1A | 3x13 mm FIRESTOP | NA | Nil | 38(36) |
| SO90.1B | 3x13 mm MULTISTOP ONE | NA | Nil | 39(36) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2720 d | NA | NA | NA |
| | 0.55 | NA | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | NA | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | NA | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

LINED ONE SIDE

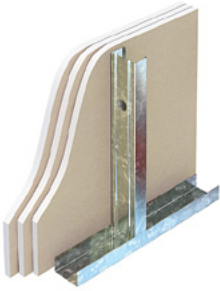
SO120.1**FIRE RESISTANCE LEVEL**

NLB -/120/120

LB 120/120/120

FROM LINED SIDE ONLY

FRL Basis: FC16109, FC15815

**SYSTEM DESCRIPTION****Side 1:** 3x16 mm fire resistant pbd**Framing:** Steel studs**Insulation:** Refer to table**Side 2:** NA**ACOUSTIC RATINGS** BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 48 + STUD |
|-----------------|--------------------------|---------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SO120.1A | 3x16 mm FIRESTOP | NA | Nil | 39(37) |
| SO120.1B | 3x16 mm MULTISTOP ONE | NA | Nil | 40(38) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2750 d | NA | NA | NA |
| | 0.55 | NA | NA | 3250 2d | 3610 2s | NA |
| | 0.75 | NA | 3280 d | 3870 2d | 4200 2d | 5370 2s |
| | 1.15 | NA | 3590 d | 4050 2d | 4690 2d | 6810 3s |

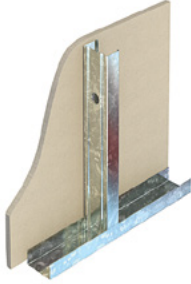
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

FIBEROCK® AQUA-TOUGH™ – LINED ONE SIDE

SOF.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Steel studs
Insulation: Refer to table
Side 2: NA

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 13 + STUD |
|--------|-----------------------------------|------------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SOF.3A | 1x13 mm FIBEROCK AQUA-TOUGH | NA | Nil | 30(27) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

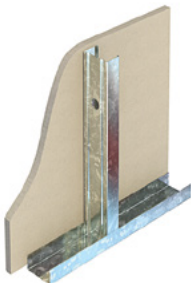
| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2720 d | NA | NA | NA |
| | 0.55 | NA | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | NA | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | NA | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

SOF30.1

FIRE RESISTANCE LEVEL
NLB –/30/30
FROM LINED SIDE ONLY

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK
AQUA-TOUGH
Framing: Steel studs
Insulation: Refer to table
Side 2: NA

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 16 + STUD |
|----------|-----------------------------------|------------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SOF30.1A | 1x16 mm FIBEROCK AQUA-TOUGH | NA | Nil | 30(28) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2750 s | NA | NA | NA |
| | 0.55 | NA | NA | 3250 2d | 3610 2s | NA |
| | 0.75 | NA | 3280 d | 3870 2d | 4200 2d | 5370 2s |
| | 1.15 | NA | 3590 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

FIBEROCK® AQUA-TOUGH™ – LINED ONE SIDE

SOF60.1

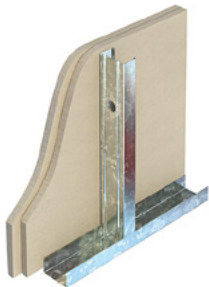
FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

FROM LINED SIDE ONLY

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x16 mm FIBEROCK
AQUA-TOUGH

Framing: Steel studs

Insulation: Refer to table

Side 2: NA

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 32 + STUD |
|----------|-----------------------------------|------------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SOF60.1A | 2x16 mm FIBEROCK AQUA-TOUGH | NA | Nil | 36(33) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2720 d | NA | NA | NA |
| | 0.55 | NA | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | NA | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | NA | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

SOF90.1

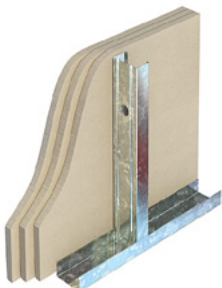
FIRE RESISTANCE LEVEL

NLB -/90/90

LB 90/90/90

FROM LINED SIDE ONLY

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 3x16 mm FIBEROCK
AQUA-TOUGH

Framing: Steel studs

Insulation: Refer to table

Side 2: NA

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 48 + STUD |
|----------|-----------------------------------|------------------|-------------------|-------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SOF90.1A | 3x16 mm FIBEROCK AQUA-TOUGH | NA | Nil | 40(38) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | | |
|-------------------------------|--------------|--------|--------|---------|---------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2750 d | NA | NA | NA |
| | 0.55 | NA | NA | 3250 2d | 3610 2s | NA |
| | 0.75 | NA | 3280 d | 3870 2d | 4200 2d | 5370 2s |
| | 1.15 | NA | 3590 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), s – permissible strength, 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

LINED BOTH SIDES

SB.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x10 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9) & SLR-SR-S-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 71 | 84 | 96 | 112 | 170 |
|--------|------------------------|------------------------|-------------------|-------------------|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | $R_w(R_w+C_{t1})$ | | | | |
| SB.1A | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Nil | 27(18) | 28(19) | 29(20) | 30(21) | 31(25) |
| | | | KI 50G11 | 34(24) | 35(25) | 36(26) | 37(27) | 38(31) |
| | | | KI 75G11 | - | - | 37(27) | 38(28) | 39(32) |
| | | | KI 90G11 | - | - | - | 38(28) | 39(32) |
| SB.1H | 1x10 mm SHEETROCK PLUS | 1x10 mm SHEETROCK PLUS | Nil | 33(25) | 34(26) | 34(26) | 35(27) | 36(30) |
| | | | KI 50G11 | 40(29) | 41(30) | 42(33) | 43(34) | 44(37) |
| | | | KI 75G11 | - | - | 43(34) | 44(35) | 45(38) |
| | | | KI 90G11 | - | - | - | 44(35) | 45(38) |
| SB.1I | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK PLUS | Nil | 30(21) | 31(22) | 32(23) | 33(24) | 34(28) |
| | | | KI 50G11 | 37(27) | 38(28) | 39(29) | 40(30) | 41(34) |
| | | | KI 75G11 | - | - | 40(30) | 41(31) | 42(35) |
| | | | KI 90G11 | - | - | - | 41(31) | 42(35) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

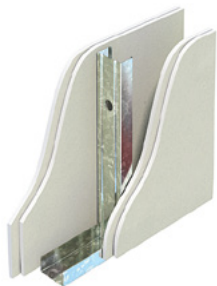
| STUD SPACING mm | | 400 | | | | | 600 | | | | |
|-------------------------|------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3130 d | 3690 d | NA | NA | NA | 2770 d | 3330 d | NA | NA | NA |
| | 0.55 | NA | NA | 4160 d | 4990 d | NA | NA | NA | 3700 d | 4540 d | NA |
| | 0.75 | NA | 4280 d | 4930 d | 5460 d | 7340 2d | NA | 3930 d | 4430 d | 4830 d | 5330 h |
| | 1.15 | NA | 4590 d | 5240 d | 5840 d | 7970 2h | NA | 4170 d | 4650 d | 5110 d | 5330 h |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), h – head track capacity, 2h – head track capacity (2 rows of noggings)

LINED BOTH SIDES

SB.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 2x10 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9) & SLR-SR-S-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 91 | 104 | 116 | 132 | 190 |
|--------|------------------------|------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB.2A | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK ONE | Nil | 34(25) | 35(26) | 36(27) | 37(28) | 38(32) |
| | | | KI 50G11 | 41(31) | 42(32) | 43(33) | 44(34) | 45(38) |
| | | | KI 75G11 | - | - | 44(34) | 45(35) | 46(39) |
| | | | KI 90G11 | - | - | - | 45(35) | 46(39) |
| SB.2H | 2x10 mm SHEETROCK PLUS | 2x10 mm SHEETROCK PLUS | Nil | 39(30) | 39(30) | 40(31) | 41(32) | 42(35) |
| | | | KI 50G11 | 46(36) | 47(38) | 48(39) | 48(41) | 49(44) |
| | | | KI 75G11 | - | - | 49(40) | 49(42) | 50(45) |
| | | | KI 90G11 | - | - | - | 50(43) | 51(46) |
| SB.2I | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK PLUS | Nil | 37(28) | 38(29) | 39(30) | 40(31) | 41(35) |
| | | | KI 50G11 | 44(34) | 45(35) | 46(36) | 47(37) | 48(41) |
| | | | KI 75G11 | - | - | 47(37) | 48(38) | 49(42) |
| | | | KI 90G11 | - | - | - | 48(38) | 49(43) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

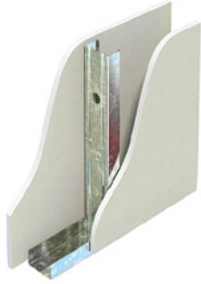
| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3130 d | 3690 d | NA | NA | NA | 2770 d | 3330 d | NA | NA | NA |
| | 0.55 | NA | NA | 4160 d | 4990 d | NA | NA | NA | 3700 d | 4540 d | NA |
| | 0.75 | NA | 4280 d | 4930 d | 5460 d | 7340 2d | NA | 3930 d | 4430 d | 4830 d | 5330 h |
| | 1.15 | NA | 4590 d | 5240 d | 5840 d | 7970 2h | NA | 4170 d | 4650 d | 5110 d | 5330 h |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), h – head track capacity, 2h – head track capacity (2 rows of noggings)

LINED BOTH SIDES

SB.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 77 | 90 | 102 | 118 | 176 |
|--------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Nil | 35(28) | 36(28) | 37(29) | 37(29) | 38(32) |
| | | | KI 50G11 | 40(30) | 41(31) | 43(33) | 44(35) | 45(38) |
| | | | KI 75G11 | - | - | 44(34) | 45(36) | 46(39) |
| | | | KI 90G11 | - | - | - | 45(36) | 46(39) |
| SB.3B | 1x13 mm WETSTOP | 1x13 mm WETSTOP | Nil | 36(29) | 37(30) | 38(30) | 38(31) | 39(34) |
| | | | KI 50G11 | 42(31) | 43(33) | 44(35) | 45(36) | 46(39) |
| | | | KI 75G11 | - | - | 45(36) | 46(37) | 47(40) |
| | | | KI 90G11 | - | - | - | 46(37) | 47(40) |
| SB.3E | 1x13 mm SHEETROCK ONE | 1x13 mm WETSTOP | Nil | 35(28) | 36(29) | 37(29) | 37(30) | 38(33) |
| | | | KI 50G11 | 40(31) | 41(32) | 43(34) | 44(35) | 45(38) |
| | | | KI 75G11 | - | - | 44(35) | 45(36) | 46(39) |
| | | | KI 90G11 | - | - | - | 45(36) | 46(39) |
| SB.3K | 1x13 mm SHEETROCK ONE | 1x13 mm IMPACTSTOP | Nil | 37(29) | 38(30) | 38(30) | 39(31) | 40(34) |
| | | | KI 50G11 | 43(32) | 44(34) | 45(37) | 45(37) | 46(40) |
| | | | KI 75G11 | - | - | 46(38) | 46(38) | 47(41) |
| | | | KI 90G11 | - | - | - | 46(38) | 47(41) |
| SB.3L | 1x13 mm WETSTOP | 1x13 mm IMPACTSTOP | Nil | 37(30) | 38(30) | 39(31) | 40(32) | 41(35) |
| | | | KI 50G11 | 43(32) | 44(35) | 45(37) | 46(38) | 47(41) |
| | | | KI 75G11 | - | - | 46(38) | 47(39) | 48(42) |
| | | | KI 90G11 | - | - | - | 47(39) | 48(42) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 400 | | | | | 600 | | | | |
|-------------------------|------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3510 d | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5450 d | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

LINED BOTH SIDES

SB.4

NON-FIRE RATED



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm non-fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 90 | 103 | 115 | 131 | 189 |
|--------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB.4A | 1x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 37(29) | 39(30) | 39(30) | 40(31) | 41(34) |
| | | | KI 50G11 | 43(31) | 45(34) | 45(34) | 46(35) | 47(38) |
| | | | KI 75G11 | - | - | 46(35) | 47(36) | 48(39) |
| | | | KI 90G11 | - | - | - | 48(37) | 49(40) |
| SB.4B | 1x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 38(29) | 39(30) | 40(31) | 41(31) | 42(34) |
| | | | KI 50G11 | 44(32) | 46(35) | 46(35) | 47(37) | 48(40) |
| | | | KI 75G11 | - | - | 47(36) | 48(38) | 49(41) |
| | | | KI 90G11 | - | - | - | 49(39) | 50(42) |
| SB.4E | 1x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 38(29) | 39(29) | 40(31) | 41(32) | 42(35) |
| | | | KI 50G11 | 43(31) | 45(34) | 46(34) | 47(36) | 48(39) |
| | | | KI 75G11 | - | - | 47(35) | 48(37) | 49(40) |
| | | | KI 90G11 | - | - | - | 49(38) | 50(41) |
| SB.4K | 1x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 40(31) | 41(32) | 42(33) | 43(33) | 44(36) |
| | | | KI 50G11 | 46(34) | 48(37) | 48(38) | 49(39) | 50(42) |
| | | | KI 75G11 | - | - | 49(39) | 50(40) | 51(43) |
| | | | KI 90G11 | - | - | - | 51(41) | 52(44) |
| SB.4L | 1x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 40(31) | 41(32) | 42(33) | 43(33) | 44(36) |
| | | | KI 50G11 | 46(34) | 48(37) | 48(38) | 49(39) | 50(42) |
| | | | KI 75G11 | - | - | 49(39) | 50(40) | 51(43) |
| | | | KI 90G11 | - | - | - | 51(41) | 52(44) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

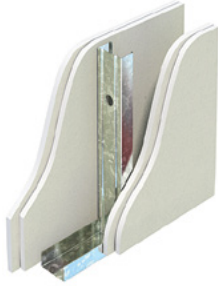
| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3510 d | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5450 d | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

LINED BOTH SIDES

SB.5

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x13 mm non-fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 103 | 116 | 128 | 144 | 202 |
|--------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB.5A | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 42(34) | 43(35) | 44(36) | 45(36) | 46(39) |
| | | | KI 50G11 | 47(36) | 48(39) | 49(40) | 50(41) | 51(44) |
| | | | KI 75G11 | - | - | 50(41) | 51(42) | 52(45) |
| | | | KI 90G11 | - | - | - | 52(43) | 53(46) |
| SB.5B | 2x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 44(36) | 44(36) | 45(36) | 46(37) | 47(40) |
| | | | KI 50G11 | 48(38) | 49(41) | 50(41) | 50(43) | 51(46) |
| | | | KI 75G11 | - | - | 51(42) | 51(44) | 52(47) |
| | | | KI 90G11 | - | - | - | 52(45) | 53(48) |
| SB.5E | 2x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 43(35) | 44(35) | 45(36) | 45(36) | 46(39) |
| | | | KI 50G11 | 47(37) | 49(40) | 49(41) | 50(42) | 51(45) |
| | | | KI 75G11 | - | - | 50(42) | 51(43) | 52(46) |
| | | | KI 90G11 | - | - | - | 52(44) | 53(47) |
| SB.5L | 2x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 45(37) | 45(37) | 46(37) | 47(38) | 48(41) |
| | | | KI 50G11 | 48(39) | 50(42) | 50(42) | 51(44) | 52(47) |
| | | | KI 75G11 | - | - | 51(43) | 52(45) | 53(48) |
| | | | KI 90G11 | - | - | - | 53(46) | 54(49) |
| SB.5I | 2x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 45(37) | 46(37) | 47(38) | 47(38) | 49(41) |
| | | | KI 50G11 | 49(40) | 50(42) | 50(43) | 51(44) | 52(47) |
| | | | KI 75G11 | - | - | 51(44) | 52(45) | 53(48) |
| | | | KI 90G11 | - | - | - | 53(46) | 54(49) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 400 | | | | | 600 | | | | |
|-------------------------|------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3510 d | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5450 d | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

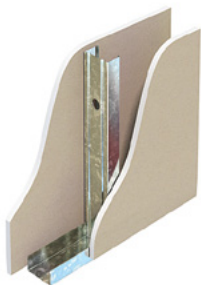
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

LINED BOTH SIDES

SB30.1

FIRE RESISTANCE LEVEL
 NLB -/30/30
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778 01S02(R9)

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 77 | 90 | 102 | 118 | 176 |
|---------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION | R _w (R _w +C _{tr}) | | | | |
| SB30.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 37(29) | 38(30) | 38(30) | 39(31) | 40(34) |
| SB30.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | Nil | 38(30) | 39(31) | 40(32) | 41(33) | 42(36) |
| SB30.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | Nil | 37(30) | 38(30) | 39(31) | 40(32) | 41(35) |
| SB30.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | Nil | 38(30) | 39(31) | 40(32) | 41(33) | 42(36) |
| SB30.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | 37(30) | 38(30) | 39(31) | 40(32) | 41(35) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3500 f | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5300 f | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

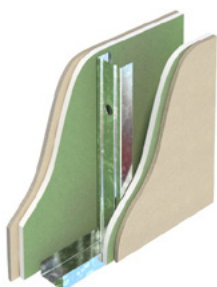
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

SB30.2

FIRE RESISTANCE LEVEL
 NLB -/30/30
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TK778 01S02(R9)

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 89 | 102 | 114 | 130 | 188 |
|---------|---|---|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION | R _w (R _w +C _{tr}) | | | | |
| SB30.2B | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | 44(36) | 45(36) | 46(37) | 47(37) | 48(40) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3500 f | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5300 f | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

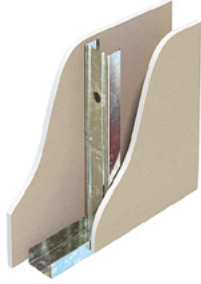
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

LINED BOTH SIDES

SB60.1

FIRE RESISTANCE LEVEL
 NLB -/60/60*
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 77 | 90 | 102 | 118 | 176 |
|---------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB60.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | KI 50G11 | 43(33) | 44(35) | 45(37) | 45(37) | 46(40) |
| | | | KI 75G11 | - | - | 47(38) | 47(38) | 48(41) |
| | | | KI 90G11 | - | - | - | 47(38) | 48(41) |
| SB60.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | KI 50G11 | 44(34) | 45(37) | 46(37) | 47(39) | 48(42) |
| | | | KI 75G11 | - | - | 47(38) | 48(40) | 49(43) |
| | | | KI 90G11 | - | - | - | 48(40) | 49(43) |
| SB60.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 50G11 | 43(34) | 45(36) | 46(37) | 47(38) | 48(41) |
| | | | KI 75G11 | - | - | 47(38) | 48(39) | 49(42) |
| | | | KI 90G11 | - | - | - | 48(39) | 49(42) |
| SB60.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | KI 50G11 | 44(34) | 45(37) | 46(37) | 47(39) | 48(42) |
| | | | KI 75G11 | - | - | 47(38) | 48(40) | 49(43) |
| | | | KI 90G11 | - | - | - | 48(40) | 49(43) |
| SB60.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | KI 50G11 | 43(34) | 45(36) | 46(37) | 47(38) | 48(41) |
| | | | KI 75G11 | - | - | 47(38) | 48(39) | 49(42) |
| | | | KI 90G11 | - | - | - | 48(39) | 49(42) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3500 f | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5300 f | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

LINED BOTH SIDES

SB60.2

FIRE RESISTANCE LEVEL
 NLB **-/60/60***
 LB **30/30/30**
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIRESTOP
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 83 | 96 | 108 | 124 | 182 |
|----------------|------------------|---|-------------------|---|----|-----|--------|-----|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB60.2B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 90G11 | - | - | - | 50(40) | - |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 | |
| BASE METAL THICKNESS mm | 0.50 | 3500 f | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5300 f | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

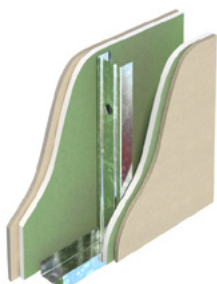
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

SB60.3

FIRE RESISTANCE LEVEL
 NLB **-/60/60***
 LB **30/30/30**
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 89 | 102 | 114 | 130 | 188 |
|----------------|--|--|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB60.3B | 1x13 mm MULTISTOP ONE + 1x16 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x16 mm VILLABOARD | KI 50G11 | 53(43) | 50(39) | 52(42) | 52(42) | 54(46) |
| | | | KI 75G11 | - | - | 53(43) | 54(45) | 55(48) |
| | | | KI 90G11 | - | - | - | 55(46) | 56(49) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 | |
| BASE METAL THICKNESS mm | 0.50 | 3500 f | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5300 f | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

LINED BOTH SIDES

SB60.4

FIRE RESISTANCE LEVEL
 NLB -/60/60
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778 01S02(R9)

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | INSULATION | R _w (R _w +C _{tr}) | | | | | |
|---------|-----------------------|-----------------------|------------|---|--------|--------|--------|--------|-----|
| | | | | NOM WALL WIDTH mm | 90 | 103 | 115 | 131 | 189 |
| | | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| SB60.4A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 39(31) | 40(32) | 41(33) | 41(33) | 42(36) | |
| SB60.4B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | | 40(33) | 42(34) | 42(35) | 43(36) | 44(39) | |
| SB60.4C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | | 40(32) | 41(34) | 42(35) | 43(35) | 44(38) | |
| SB60.4D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | | 40(33) | 42(34) | 42(35) | 43(36) | 44(39) | |
| SB60.4E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | | 40(32) | 41(34) | 42(35) | 43(35) | 44(38) | |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2900 f | 3500 f | NA | NA | NA | 2900 f | 3500 f | NA | NA | NA |
| | 0.55 | NA | NA | 4100 f | 5100 f | NA | NA | NA | 4100 f | 4940 d | NA |
| | 0.75 | NA | 3900 f | 4500 f | 5200 f | 7500 f | NA | 3900 f | 4500 f | 5200 f | 6990 2d |
| | 1.15 | NA | 4300 f | 5000 f | 5800 f | 8190 2d | NA | 4300 f | 5000 f | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls

SB60.5

FIRE RESISTANCE LEVEL
 NLB -/60/60
 LB 60/60/60 ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778 01S02(R9)

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | INSULATION | R _w (R _w +C _{tr}) | | | | | |
|---------|-----------------------|-----------------------|------------|---|--------|--------|--------|--------|-----|
| | | | | NOM WALL WIDTH mm | 83 | 96 | 108 | 124 | 182 |
| | | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| SB60.5A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 38(31) | 39(32) | 40(33) | 41(33) | 42(36) | |
| SB60.5B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | | 38(31) | 39(33) | 40(34) | 41(34) | 42(37) | |
| SB60.5C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | | 38(31) | 39(33) | 40(34) | 41(34) | 42(37) | |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3400 f | 4100 f | NA | NA | NA | 3390 d | 3910 d | NA | NA | NA |
| | 0.55 | NA | NA | 4700 d | 5560 d | NA | NA | NA | 4300 d | 5180 d | NA |
| | 0.75 | NA | 4500 f | 5200 f | 6100 f | 7750 2d | NA | 4350 d | 5260 d | 5710 d | 7190 2d |
| | 1.15 | NA | 4950 d | 5800 f | 6580 d | 8300 2d | NA | 4520 d | 5420 d | 5930 d | 7630 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

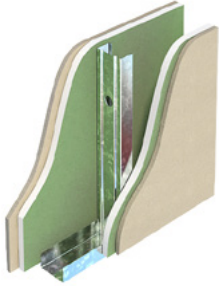
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

LINED BOTH SIDES

SB60.6

FIRE RESISTANCE LEVEL
 NLB **-/60/60**
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TK778 01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 95 | 108 | 120 | 136 | 194 |
|----------------|---|---|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION | R _w (R _w +C _{tr}) | | | | |
| SB60.6B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | 45(37) | 46(38) | 47(38) | 47(39) | 48(42) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3400 f | 4100 f | NA | NA | NA | 3390 d | 3910 d | NA | NA | NA |
| | 0.55 | NA | NA | 4700 d | 5560 d | NA | NA | NA | 4300 d | 5180 d | NA |
| | 0.75 | NA | 4500 f | 5200 f | 6100 f | 7750 2d | NA | 4350 d | 5260 d | 5710 d | 7190 2d |
| | 1.15 | NA | 4950 d | 5800 f | 6580 d | 8300 2d | NA | 4520 d | 5420 d | 5930 d | 7630 2d |

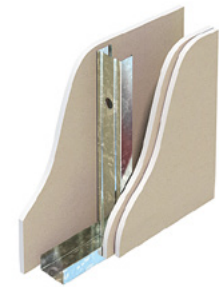
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

SB90.1

FIRE RESISTANCE LEVEL
 NLB **-/90/90***
 LB **30/30/30**
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm fire resistant pbd
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 90 | 103 | 115 | 131 | 189 |
|----------------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB90.1A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | KI 50G11 | 46(36) | 47(37) | 48(39) | 49(40) | 50(43) |
| | | | KI 75G11 | - | - | 49(40) | 50(41) | 51(44) |
| | | | KI 90G11 | - | - | - | 51(42) | 52(45) |
| SB90.1B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | KI 50G11 | 48(40) | 49(40) | 50(42) | 51(43) | 52(46) |
| | | | KI 75G11 | - | - | 51(43) | 52(44) | 53(47) |
| | | | KI 90G11 | - | - | - | 53(45) | 54(48) |
| SB90.1C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | KI 50G11 | 48(39) | 49(39) | 50(41) | 51(42) | 52(45) |
| | | | KI 75G11 | - | - | 51(42) | 52(43) | 53(46) |
| | | | KI 90G11 | - | - | - | 53(44) | 54(47) |
| SB90.1D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | KI 50G11 | 48(40) | 49(40) | 50(42) | 51(43) | 52(46) |
| | | | KI 75G11 | - | - | 51(43) | 52(44) | 53(47) |
| | | | KI 90G11 | - | - | - | 53(45) | 54(48) |
| SB90.1E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | KI 50G11 | 48(39) | 49(39) | 50(41) | 51(42) | 52(45) |
| | | | KI 75G11 | - | - | 51(42) | 52(43) | 53(46) |
| | | | KI 90G11 | - | - | - | 53(44) | 54(47) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2900 f | 3500 f | NA | NA | NA | 2900 f | 3500 f | NA | NA | NA |
| | 0.55 | NA | NA | 4100 f | 5100 f | NA | NA | NA | 4100 f | 4940 d | NA |
| | 0.75 | NA | 3900 f | 4500 f | 5200 f | 7500 f | NA | 3900 f | 4500 f | 5200 f | 6990 2d |
| | 1.15 | NA | 4300 f | 5000 f | 5800 f | 8190 2d | NA | 4300 f | 5000 f | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls

LINED BOTH SIDES

SB90.2

FIRE RESISTANCE LEVEL
 NLB **-/90/90***
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 83 | 96 | 108 | 124 | 182 |
|---------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB90.2A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | KI 50G11 | 44(36) | 45(37) | 46(38) | 47(39) | 48(42) |
| | | | KI 75G11 | - | - | 47(39) | 48(40) | 49(43) |
| | | | KI 90G11 | - | - | - | 48(40) | 49(43) |
| SB90.2B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | KI 50G11 | 45(39) | 46(39) | 47(41) | 47(42) | 48(45) |
| | | | KI 75G11 | - | - | 48(42) | 48(43) | 49(46) |
| | | | KI 90G11 | - | - | - | 48(43) | 49(46) |
| SB90.2C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 50G11 | 45(38) | 45(38) | 46(40) | 47(42) | 48(45) |
| | | | KI 75G11 | - | - | 47(41) | 48(43) | 49(46) |
| | | | KI 90G11 | - | - | - | 48(43) | 49(46) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3400 f | 4100 f | NA | NA | NA | 3390 d | 3910 d | NA | NA | NA |
| | 0.55 | NA | NA | 4700 d | 5560 d | NA | NA | NA | 4300 d | 5180 d | NA |
| | 0.75 | NA | 4500 f | 5200 f | 6100 f | 7750 2d | NA | 4350 d | 5260 d | 5710 d | 7190 2d |
| | 1.15 | NA | 4950 d | 5800 f | 6580 d | 8300 2d | NA | 4520 d | 5420 d | 5930 d | 7630 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

SB90.3

FIRE RESISTANCE LEVEL
 NLB **-/90/90***
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm MULTISTOP ONE
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 89 | 102 | 114 | 130 | 188 |
|---------|------------------|---|-------------------|---|-----|-----|--------|-----|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB90.3B | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | - | - | - | 51(43) | - |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3400 f | 4100 f | NA | NA | NA | 3390 d | 3910 d | NA | NA | NA |
| | 0.55 | NA | NA | 4700 d | 5560 d | NA | NA | NA | 4300 d | 5180 d | NA |
| | 0.75 | NA | 4500 f | 5200 f | 6100 f | 7750 2d | NA | 4350 d | 5260 d | 5710 d | 7190 2d |
| | 1.15 | NA | 4950 d | 5800 f | 6580 d | 8300 2d | NA | 4520 d | 5420 d | 5930 d | 7630 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

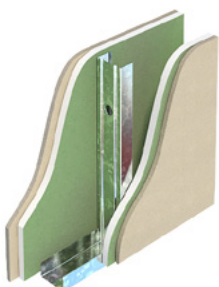
*Refer Rondo for maximum heights for load bearing walls with ACR 20%

LINED BOTH SIDES

SB90.4

FIRE RESISTANCE LEVEL
 NLB **-/90/90⁺**
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD

SB120.1

FIRE RESISTANCE LEVEL
 NLB **-/120/120**
 LB **90/90/90**
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

- Side 1:** 2x13 mm fire resistant pbd
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 95 | 108 | 120 | 136 | 194 |
|---------|---|---|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB90.4B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 51(41) | 52(43) | 52(44) | 53(45) | 54(48) |
| | | | KI 75G11 | - | - | 53(45) | 54(46) | 55(49) |
| | | | KI 90G11 | - | - | - | 55(47) | 56(50) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density
 + Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|---------|
| | STUD SIZE mm | | | | | 51 | 64 | 76 | 92 | 150 |
| | 0.50 | 0.55 | 0.75 | 1.15 | NA | 3390 d | 3910 d | 4300 d | 5180 d | 7190 2d |
| BASE METAL THICKNESS mm | 3400 f | 4100 f | 4700 d | 5200 f | 5800 f | NA | NA | NA | NA | NA |
| | 4100 f | 4500 f | 5200 f | 6100 f | 6580 d | 7750 2d | 4350 d | 5260 d | 5710 d | 7190 2d |
| | NA | 4950 d | 5800 f | 6100 f | 6580 d | 8300 2d | 4520 d | 5420 d | 5930 d | 7630 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 103 | 116 | 128 | 144 | 202 |
|----------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB120.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 44(36) | 45(37) | 46(37) | 47(38) | 48(41) |
| | | | KI 50G11 | 51(41) | 52(43) | 52(44) | 53(45) | 54(48) |
| | | | KI 75G11 | - | - | 53(44) | 54(45) | 55(48) |
| | | | KI 90G11 | - | - | - | 55(46) | 56(49) |
| SB120.1B | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 46(38) | 47(39) | 47(39) | 48(39) | 49(42) |
| | | | KI 50G11 | 52(43) | 53(44) | 53(45) | 54(47) | 55(50) |
| | | | KI 75G11 | - | - | 54(46) | 55(47) | 56(50) |
| | | | KI 90G11 | - | - | - | 56(48) | 57(51) |
| SB120.1C | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 45(38) | 46(38) | 47(38) | 47(39) | 48(37) |
| | | | KI 50G11 | 51(42) | 52(43) | 53(44) | 53(45) | 54(45) |
| | | | KI 75G11 | - | - | 54(45) | 54(46) | 55(46) |
| | | | KI 90G11 | - | - | - | 55(47) | 56(47) |
| SB120.1D | 2x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 46(38) | 47(39) | 47(39) | 48(39) | 49(42) |
| | | | KI 50G11 | 52(43) | 53(44) | 53(45) | 54(47) | 55(50) |
| | | | KI 75G11 | - | - | 54(46) | 55(47) | 56(50) |
| | | | KI 90G11 | - | - | - | 56(48) | 57(51) |
| SB120.1E | 2x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 45(38) | 46(38) | 47(38) | 47(39) | 48(37) |
| | | | KI 50G11 | 51(42) | 52(43) | 53(44) | 53(45) | 54(45) |
| | | | KI 75G11 | - | - | 54(45) | 54(46) | 55(46) |
| | | | KI 90G11 | - | - | - | 55(47) | 56(47) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | |
|-------------------------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | | | | | 51 | 64 | 76 | 92 | 150 |
| | 0.50 | 0.55 | 0.75 | 1.15 | NA | 2600 f | 3100 f | 3700 f | 4600 f | 6700 f |
| BASE METAL THICKNESS mm | 2600 f | 3100 f | 3700 f | 4600 f | 6700 f | NA | NA | NA | NA | NA |
| | NA | NA | 3700 f | 4600 f | 6700 f | NA | NA | 3700 f | 4600 f | 6700 f |
| | NA | 3500 f | 4000 f | 4700 f | 6700 f | NA | 3500 f | 4000 f | 4700 f | 6700 f |
| | NA | 3900 f | 4500 f | 5200 f | 7700 f | NA | 3900 f | 4500 f | 5200 f | 7520 2d |

Height Limiting Factor: 2d – deflection (2 rows noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls

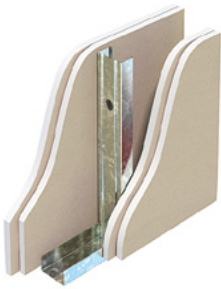
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector

LINED BOTH SIDES

SB120.2

FIRE RESISTANCE LEVEL
 NLB **-/120/120**
 LB **120/120/120** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815

**SYSTEM DESCRIPTION**

Side 1: 2x16 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 2x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TK778-01S02(R9)

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 115 | 128 | 140 | 156 | 214 |
|----------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SB120.2 | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | 45(38) | 46(38) | 47(39) | 48(39) | 49(42) |
| | | | KI 50G11 | 52(42) | 53(44) | 53(45) | 54(46) | 55(49) |
| | | | KI 75G11 | - | - | 54(45) | 55(46) | 56(49) |
| | | | KI 90G11 | - | - | - | 56(47) | 57(50) |
| SB120.2B | 2x16 mm MULTISTOP ONE | 2x16 mm MULTISTOP ONE | Nil | 47(39) | 48(40) | 48(40) | 49(41) | 50(44) |
| | | | KI 50G11 | 53(44) | 54(45) | 54(46) | 55(47) | 56(50) |
| | | | KI 75G11 | - | - | 55(47) | 56(48) | 57(51) |
| | | | KI 90G11 | - | - | - | 57(49) | 58(52) |
| SB120.2C | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | Nil | 46(38) | 47(39) | 48(39) | 49(40) | 50(43) |
| | | | KI 50G11 | 52(43) | 53(45) | 54(45) | 54(46) | 55(49) |
| | | | KI 75G11 | - | - | 55(46) | 55(47) | 56(50) |
| | | | KI 90G11 | - | - | - | 56(48) | 57(51) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3620 d | 4220 d | NA | NA | NA | 3380 d | 3910 d | NA | NA | NA |
| | 0.55 | NA | NA | 4700 d | 5560 d | NA | NA | NA | 4300 d | 5180 d | NA |
| | 0.75 | 3750 d | 4710 d | 5710 d | 6280 d | 7750 2d | 3520 d | 4350 d | 5250 d | 5710 d | 7190 2d |
| | 1.15 | NA | 4950 d | 5950 d | 6580 d | 8300 2d | NA | 4520 d | 5420 d | 5920 d | 7650 2d |

Height Limiting Factor: d – deflection 2d – deflection (2 rows nogging)

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

LINED BOTH SIDES

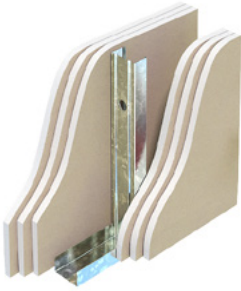
SB180.4**FIRE RESISTANCE LEVEL**

NLB -/180/180

LB 120/120/120

FROM BOTH SIDES

FRL Basis: FC16109, FC15815

**ACOUSTIC RATINGS** BASIS: RT&A TK778-15F01Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | - | 142 | 154 | 170 | 228 |
|----------|--------------------------|--------------------------|-------------------|-------------------|--------|--------|--------|--------|
| | | | STUD SIZE mm | - | 64 | 76 | 92 | 150 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | | |
| SB180.4A | 3x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | - | 52(44) | 52(45) | 53(46) | 54(48) |
| | | | KI 50G11 | - | 57(49) | 57(50) | 58(52) | 59(54) |
| | | | KI 75G11 | - | - | 58(51) | 58(52) | 59(54) |
| | | | KI 90G11 | - | - | - | 58(52) | 59(54) |
| SB180.4B | 3x16 mm MULTISTOP ONE | 3x16 mm MULTISTOP ONE | Nil | - | 53(45) | 53(46) | 54(47) | 55(49) |
| | | | KI 50G11 | - | 58(50) | 58(51) | 59(53) | 60(55) |
| | | | KI 75G11 | - | - | 59(52) | 59(53) | 60(55) |
| | | | KI 90G11 | - | - | - | 59(53) | 60(55) |
| SB180.4C | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | Nil | - | 52(44) | 52(45) | 53(46) | 54(48) |
| | | | KI 50G11 | - | 57(49) | 57(50) | 58(52) | 59(54) |
| | | | KI 75G11 | - | - | 58(51) | 58(52) | 59(54) |
| | | | KI 90G11 | - | - | - | 58(52) | 59(54) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd

Framing: Steel studs

Insulation: Refer to table

Side 2: 3x16 mm fire resistant pbd

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|------|----|--------|--------|--------|--------|----|--------|--------|--------|--------|
| | NA | 64 | 76 | 92 | 150 | NA | 64 | 76 | 92 | 150 | |
| BASE METAL THICKNESS mm | 0.50 | NA | 2300 f | NA | NA | NA | NA | 2300 f | NA | NA | NA |
| | 0.55 | NA | NA | 2700 f | 3500 f | NA | NA | NA | 2700 f | 3500 f | NA |
| | 0.75 | NA | 2700 f | 3000 f | 3500 f | 5000 f | NA | 2700 f | 3000 f | 3500 f | 5000 f |
| | 1.15 | NA | 3000 f | 3500 f | 4000 f | 5900 f | NA | 3000 f | 3500 f | 4000 f | 5900 f |

Height Limiting Factor: f – fire height

*Refer Rondo for maximum heights for load bearing walls

FIBEROCK® AQUA-TOUGH™ – LINED BOTH SIDES

SBF30.1

FIRE RESISTANCE LEVEL

NLB **-/30/30**

LB **30/30/30**

FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK AQUA-TOUGH

Framing: Steel studs

Insulation: Refer to table

Side 2: 1x13 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 77 | 90 | 102 | 118 | 176 |
|----------|-----------------------------|-----------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SBF30.1A | 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 38(31) | 39(31) | 40(32) | 41(33) | 41(34) |
| | | | KI 50G11 | 41(35) | 42(36) | 43(37) | 46(39) | 46(41) |
| | | | KI 75G11 | - | - | 46(39) | 47(41) | 47(42) |
| | | | KI 90G11 | - | - | - | 48(41) | 48(42) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3510 d | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5450 d | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

SBF30.2

FIRE RESISTANCE LEVEL

NLB **-/30/30**

LB **30/30/30**

FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK AQUA-TOUGH

Framing: Steel studs

Insulation: Refer to table

Side 2: 2x13 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 90 | 103 | 115 | 131 | 189 |
|----------|-----------------------------|-----------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SBF30.2A | 1x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 41(33) | 43(34) | 44(35) | 45(37) | 46(38) |
| | | | KI 50G11 | 46(38) | 46(39) | 47(39) | 49(42) | 49(43) |
| | | | KI 75G11 | - | - | 50(41) | 50(43) | 50(43) |
| | | | KI 90G11 | - | - | - | 52(44) | 52(45) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3510 d | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5450 d | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

FIBEROCK® AQUA-TOUGH™ – LINED BOTH SIDES

SBF60.1

FIRE RESISTANCE LEVEL
 NLB **-/60/60**
 LB **60/60/60**
 FROM BOTH SIDES

FRL Basis: Conatct Knauf



SYSTEM DESCRIPTION

- Side 1:** 1x16 mm FIBEROCK AQUA-TOUGH
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 1x16 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 83 | 96 | 108 | 124 | 182 |
|----------|-----------------------------|-----------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SBF60.1A | 1x16 mm FIBEROCK AQUA-TOUGH | 1x16 mm FIBEROCK AQUA-TOUGH | Nil | 40(32) | 41(33) | 42(34) | 43(35) | 42(35) |
| | | | KI 50G11 | 45(37) | 45(38) | 46(40) | 47(41) | 47(42) |
| | | | KI 75G11 | - | - | 48(42) | 48(42) | 48(43) |
| | | | KI 90G11 | - | - | - | 49(43) | 49(44) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3620 d | 4220 d | NA | NA | NA | 3390 d | 3910 d | NA | NA | NA |
| | 0.55 | NA | NA | 4700 d | 5560 d | NA | NA | NA | 4300 d | 5180 d | NA |
| | 0.75 | NA | 4710 d | 5710 d | 6280 d | 7750 2d | NA | 4350 d | 5260 d | 5710 d | 7190 2d |
| | 1.15 | NA | 4950 d | 5950 d | 6580 d | 8300 2d | NA | 4520 d | 5420 d | 5930 d | 7630 2d |

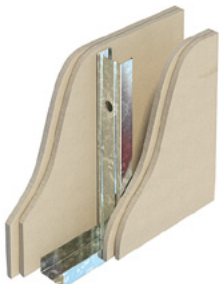
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls

SBF90.1[^]

FIRE RESISTANCE LEVEL
 NLB **-/90/90**
 FROM BOTH SIDES

FRL Basis: Conatct Knauf



SYSTEM DESCRIPTION

- Side 1:** 2x13 mm FIBEROCK AQUA-TOUGH
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 2x13 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 103 | 116 | 128 | 144 | 202 |
|----------|-----------------------------|-----------------------------|-------------------|---|--------|--------|-----|-----|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SBF90.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | - | 48(36) | 49(38) | - | - |
| | | | KI 50G11 | - | 51(41) | 51(41) | - | - |
| | | | KI 75G11 | - | - | 53(42) | - | - |
| | | | KI 90G11 | - | - | - | - | - |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|----|--------|--------|----|-----|----|--------|--------|----|-----|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | NA | 4020 d | NA | NA | NA | NA | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | NA | NA | NA | NA | 4130 d | NA | NA |
| | 0.75 | NA | 4530 d | 5450 d | NA | NA | NA | 4220 d | 5020 d | NA | NA |
| | 1.15 | NA | 4810 d | 5720 d | NA | NA | NA | 4430 d | 5220 d | NA | NA |

Height Limiting Factor: d – deflection

[^]System SBF90.1 must utilise 64 mm or 76 mm studs only.

FIBEROCK® AQUA-TOUGH™ – LINED BOTH SIDES

SBF120.1[^]

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

- Side 1:** 2x13 mm FIBEROCK AQUA-TOUGH
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 2x13 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 103 | 116 | 128 | 144 | 202 |
|-----------|-----------------------------|-----------------------------|-------------------|---|-----|-----|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SBF120.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | - | - | - | 50(40) | 50(41) |
| | | | KI 50G11 | - | - | - | 52(43) | 52(45) |
| | | | KI 75G11 | - | - | - | 54(44) | 53(46) |
| | | | KI 90G11 | - | - | - | 55(45) | 55(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| BASE METAL THICKNESS mm | STUD SPACING mm | 400 | | | | | 600 | | | | |
|-------------------------|-----------------|-----|----|--------|--------|-----|-----|----|--------|---------|-----|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| | 0.50 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 0.55 | NA | NA | NA | 4600 f | NA | NA | NA | NA | 4600 f | NA | |
| 0.75 | NA | NA | NA | 4700 f | 6700 f | NA | NA | NA | 4700 f | 6700 f | |
| 1.15 | NA | NA | NA | 5200 f | 7700 f | NA | NA | NA | 5200 f | 7520 2d | |

Height Limiting Factor: **d** – deflection, **2d** – deflection (2 rows of noggings)

[^]System SBF120.1 must utilise 92 mm or 150 mm studs only.

SBF120.2

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

- Side 1:** 2x16 mm FIBEROCK AQUA-TOUGH
- Framing:** Steel studs
- Insulation:** Refer to table
- Side 2:** 2x16 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 115 | 128 | 140 | 156 | 214 |
|-----------|-----------------------------|-----------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| SBF120.2A | 2x16 mm FIBEROCK AQUA-TOUGH | 2x16 mm FIBEROCK AQUA-TOUGH | Nil | 49(37) | 50(39) | 51(41) | 51(42) | 50(42) |
| | | | KI 50G11 | 51(43) | 52(44) | 53(45) | 53(46) | 52(46) |
| | | | KI 75G11 | - | - | 54(47) | 54(48) | 53(48) |
| | | | KI 90G11 | - | - | - | 55(49) | 54(49) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

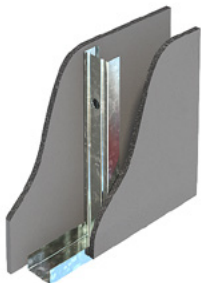
| BASE METAL THICKNESS mm | STUD SPACING mm | 400 | | | | | 600 | | | | |
|-------------------------|-----------------|--------|--------|--------|---------|-----|--------|--------|--------|---------|-----|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| | 0.50 | 3620 d | 4220 d | NA | NA | NA | 3390 d | 3910 d | NA | NA | NA |
| 0.55 | NA | NA | 4700 d | 5560 d | NA | NA | NA | 4300 d | 5180 d | NA | |
| 0.75 | NA | 4710 d | 5710 d | 6280 d | 7750 2d | NA | 4350 d | 5260 d | 5710 d | 7190 2d | |
| 1.15 | NA | 4950 d | 5950 d | 6580 d | 8300 2d | NA | 4520 d | 5420 d | 5930 d | 7630 2d | |

Height Limiting Factor: **d** – deflection, **2d** – deflection (2 rows of noggings)

PERMAROCK® – LINED BOTH SIDES

SBP.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: Non-fire resistant lining
Framing: Steel studs
Insulation: Refer to table
Side 2: Non-fire resistant lining

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Studs @ 600 mm ctrs (BMT 0.5 mm / 0.7 mm)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 89.5 | 101.5 | 117.5 |
|--------|---------------------|-----------------------|-------------------|---|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| SBP.1A | 1x12.5 mm PERMAROCK | 1x12.5 mm PERMAROCK | Nil | 39(30) | 40(32) | 41(33) |
| | | | KI 50G11 | 45(35) | 46(37) | 47(38) |
| | | | KI 75G11 | - | 47(38) | 48(39) |
| | | | KI 90G11 | - | - | 48(39) |
| SBP.1B | 1x12.5 mm PERMAROCK | 1x13 mm SHEETROCK ONE | Nil | 37(27) | 38(29) | 39(30) |
| | | | KI 50G11 | 43(32) | 44(34) | 45(35) |
| | | | KI 75G11 | - | 45(35) | 46(36) |
| | | | KI 90G11 | - | - | 46(36) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

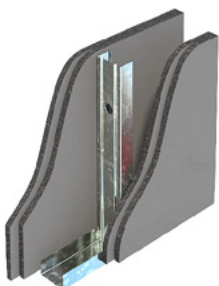
SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3510 d | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5450 d | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

SBP.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2 x Non-fire resistant lining
Framing: Steel studs
Insulation: Refer to table
Side 2: 2 x Non-fire resistant lining

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Studs @ 600 mm ctrs (BMT 0.5 mm / 0.7 mm)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 115 | 127 | 143 |
|--------|---------------------|-----------------------|-------------------|---|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| SBP.2A | 2x12.5 mm PERMAROCK | 2x12.5 mm PERMAROCK | Nil | 46(38) | 47(40) | 48(41) |
| | | | KI 50G11 | 52(43) | 53(45) | 54(46) |
| | | | KI 75G11 | - | 54(46) | 55(47) |
| | | | KI 90G11 | - | - | 55(47) |
| SBP.2B | 2x12.5 mm PERMAROCK | 2x13 mm SHEETROCK ONE | Nil | 44(35) | 45(37) | 46(38) |
| | | | KI 50G11 | 50(40) | 51(42) | 52(43) |
| | | | KI 75G11 | - | 52(43) | 53(44) |
| | | | KI 90G11 | - | - | 53(44) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3510 d | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5450 d | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

PERMAROCK® – LINED BOTH SIDES

SBP60.1

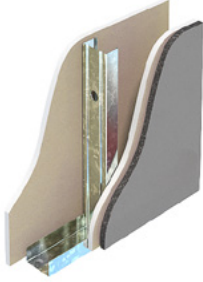
FIRE RESISTANCE LEVEL

NLB –/60/60*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Steel studs
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Studs @ 600 mm ctrs (BMT 0.5 mm / 0.7 mm)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 102.5, 115 | 114.5, 127 | 130.5, 143 |
|----------|---|---|-------------------|---|------------|------------|
| | | | STUD SIZE mm | 64 | 76 | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| SBP60.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP+ 1x12.5 mm PERMAROCK | KI 50G11 | 49(38) | 50(40) | 51(42) |
| | | | KI 75G11 | - | 51(41) | 52(43) |
| | | | KI 90G11 | - | - | 52(43) |
| SBP60.1B | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 51(43) | 52(44) | 53(45) |
| | | | KI 75G11 | - | 53(45) | 54(46) |
| | | | KI 90G11 | - | - | 54(46) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

In wet areas use MULTISTOP ONE or MULTISTOP ONE HI in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3500 f | 4020 d | NA | NA | NA | 3200 d | 3720 d | NA | NA | NA |
| | 0.55 | NA | NA | 4530 d | 5330 d | NA | NA | NA | 4130 d | 4940 d | NA |
| | 0.75 | NA | 4530 d | 5300 f | 6050 d | 7610 2d | NA | 4220 d | 5020 d | 5500 d | 6990 2d |
| | 1.15 | NA | 4810 d | 5720 d | 6380 d | 8190 2d | NA | 4430 d | 5220 d | 5750 d | 7520 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

SBP90.1

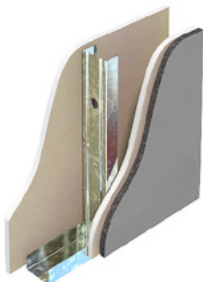
FIRE RESISTANCE LEVEL

NLB –/90/90*

LB 60/60/60 ACR 20%

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Steel studs
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Studs @ 600 mm ctrs (BMT 0.5 mm / 0.7 mm)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 108.5, 121 | 120.5, 133 | 136.5, 149 |
|----------|---|---|-------------------|---|------------|------------|
| | | | STUD SIZE mm | 64 | 76 | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| SBP90.1A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP+ 1x12.5 mm PERMAROCK | KI 50G11 | 51(40) | 52(42) | 53(44) |
| | | | KI 75G11 | - | 53(43) | 54(45) |
| | | | KI 90G11 | - | - | 54(45) |
| SBP90.1B | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 52(44) | 53(45) | 54(46) |
| | | | KI 75G11 | - | 54(46) | 55(47) |
| | | | KI 90G11 | - | - | 55(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

In wet areas use MULTISTOP ONE in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 3400 f | 4100 f | NA | NA | NA | 3390 d | 3910 d | NA | NA | NA |
| | 0.55 | NA | NA | 4700 d | 5560 d | NA | NA | NA | 4300 d | 5180 d | NA |
| | 0.75 | NA | 4500 f | 5200 f | 6100 f | 7750 2d | NA | 4350 d | 5260 d | 5710 d | 7190 2d |
| | 1.15 | NA | 4950 d | 5800 f | 6580 d | 8300 2d | NA | 4520 d | 5420 d | 5930 d | 7630 2d |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

PERMAROCK® – LINED BOTH SIDES

SBP120.1

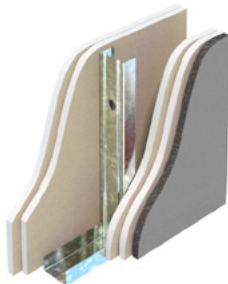
FIRE RESISTANCE LEVEL

NLB –/120/120

LB 90/90/90

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Steel studs
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: SLR-FB-S-S-01

Studs @ 600 mm ctrs (BMT 0.5 mm / 0.7 mm)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 128.5, 141 | 140.5, 153 | 156.5, 169 |
|-----------|--|--|-------------------|-------------------|------------|------------|
| | | | STUD SIZE mm | 64 | 76 | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | |
| SBF120.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | Nil | 46(37) | 47(39) | 48(41) |
| | | | KI 50G11 | 53(44) | 54(46) | 55(48) |
| | | | KI 75G11 | - | 55(47) | 56(49) |
| | | | KI 90G11 | - | - | 56(49) |
| SBF120.1B | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | Nil | 48(42) | 49(43) | 50(44) |
| | | | KI 50G11 | 54(48) | 55(49) | 56(50) |
| | | | KI 75G11 | - | 56(50) | 57(51) |
| | | | KI 90G11 | - | - | 57(51) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

In wet areas use MULTISTOP ONE or MULTISTOP ONE HI in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 400 | | | | | 600 | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 | 150 | 51 | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2600 f | 3100 f | NA | NA | NA | 2600 f | 3100 f | NA | NA | NA |
| | 0.55 | NA | NA | 3700 f | 4600 f | NA | NA | NA | 3700 f | 4600 f | NA |
| | 0.75 | NA | 3500 f | 4000 f | 4700 f | 6700 f | NA | 3500 f | 4000 f | 4700 f | 6700 f |
| | 1.15 | NA | 3900 f | 4500 f | 5200 f | 7700 f | NA | 3900 f | 4500 f | 5200 f | 7520 2d |

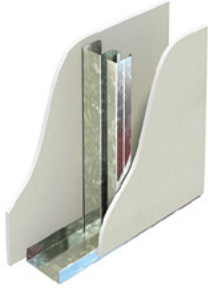
Height Limiting Factor: 2d – deflection (2 rows noggings), f – fire height

*Refer Rondo for maximum heights for load bearing walls

QUIET STUD®

SQ.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x10 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03, SLR-SR-S-QS-01

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 112 |
|--------|------------------------|------------------------|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQ.1A | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Nil | 31(23) |
| | | | KI 50G11 | 37(29) |
| | | | KI 75G11 | 38(30) |
| | | | KI 90G11 | 38(30) |
| SQ.1H | 1x10 mm SHEETROCK PLUS | 1x10 mm SHEETROCK PLUS | Nil | 39(31) |
| | | | KI 50G11 | 46(36) |
| | | | KI 75G11 | 47(37) |
| | | | KI 90G11 | 47(37) |
| SQ.1I | 10 mm SHEETROCK ONE | 1x10 mm SHEETROCK PLUS | Nil | 32(24) |
| | | | KI 50G11 | 38(30) |
| | | | KI 75G11 | 39(31) |
| | | | KI 90G11 | 39(31) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

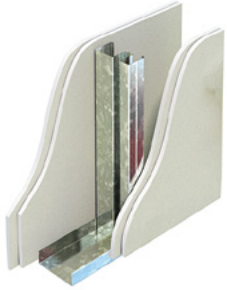
| MAX WALL HEIGHTS NON-LOAD BEARING WALLS | | SERVICEABILITY PRESSURE: 0.25 kPa | |
|---|------|-----------------------------------|------|
| STUD SPACING mm | | 450 | 600 |
| STUD SIZE mm | | 92 | |
| BASE METAL THICKNESS mm | 0.55 | 4020 | 3700 |
| | 0.75 | 4780 | 4430 |

Source: Rondo Building Systems

QUIET STUD®

SQ.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd

Framing: Rondo QUIET STUD

Insulation: Refer to table

Side 2: 2x10 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03, SLR-SR-S-QS-01

Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 132 |
|--------|---------------------------|---------------------------|----------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQ.2A | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK ONE | Nil | 41(32) |
| | | | KI 50G11 | 49(40) |
| | | | KI 75G11 | 50(41) |
| | | | KI 90G11 | 50(41) |
| SQ.2H | 2x10 mm SHEETROCK PLUS | 2x10 mm SHEETROCK PLUS | Nil | 47(39) |
| | | | KI 50G11 | 53(45) |
| | | | KI 75G11 | 54(46) |
| | | | KI 90G11 | 55(47) |
| SQ.2I | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK PLUS | Nil | 42(33) |
| | | | KI 50G11 | 50(41) |
| | | | KI 75G11 | 51(42) |
| | | | KI 90G11 | 51(42) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

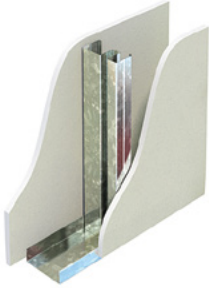
| STUD SPACING mm | | 450 | 600 |
|-------------------------|------|------|------|
| STUD SIZE mm | | 92 | |
| BASE METAL THICKNESS mm | 0.55 | 4020 | 3700 |
| | 0.75 | 4780 | 4430 |

Source: Rondo Building Systems

QUIET STUD®

SQ.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 118 |
|--------|-----------------------|-----------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Nil | 39(31) |
| | | | KI 50G11 | 46(38) |
| | | | KI 75G11 | 48(39) |
| | | | KI 90G11 | 48(39) |
| SQ.3B | 1x13 mm WETSTOP | 1x13 mm WETSTOP | Nil | 40(32) |
| | | | KI 50G11 | 47(37) |
| | | | KI 75G11 | 48(38) |
| | | | KI 90G11 | 48(38) |
| SQ.3E | 1x13 mm SHEETROCK ONE | 1x13 mm WETSTOP | Nil | 40(32) |
| | | | KI 50G11 | 46(36) |
| | | | KI 75G11 | 48(38) |
| | | | KI 90G11 | 48(37) |
| SQ.3K | 1x13 mm SHEETROCK ONE | 1x13 mm IMPACTSTOP | Nil | 42(34) |
| | | | KI 50G11 | 49(39) |
| | | | KI 75G11 | 50(40) |
| | | | KI 90G11 | 50(40) |
| SQ.3L | 1x13 mm WETSTOP | 1x13 mm IMPACTSTOP | Nil | 42(34) |
| | | | KI 50G11 | 49(39) |
| | | | KI 75G11 | 50(40) |
| | | | KI 90G11 | 50(40) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

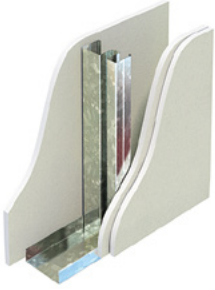
| STUD SPACING mm | STUD SIZE mm | 450 | 600 |
|-------------------------|--------------|------|------|
| | | 92 | |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 |
| | 0.75 | 5330 | 5020 |

Source: Rondo Building Systems

QUIET STUD®

SQ.4

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 131 |
|--------|-----------------------|-----------------------|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQ.4A | 1x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 45(37) |
| | | | KI 50G11 | 50(42) |
| | | | KI 75G11 | 52(43) |
| | | | KI 90G11 | 53(44) |
| SQ.4B | 1x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 46(37) |
| | | | KI 50G11 | 52(44) |
| | | | KI 75G11 | 53(45) |
| | | | KI 90G11 | 54(46) |
| SQ.4E | 1x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 46(38) |
| | | | KI 50G11 | 51(43) |
| | | | KI 75G11 | 52(44) |
| | | | KI 90G11 | 53(45) |
| SQ.4K | 1x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 47(38) |
| | | | KI 50G11 | 53(45) |
| | | | KI 75G11 | 54(46) |
| | | | KI 90G11 | 55(47) |
| SQ.4L | 1x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 47(39) |
| | | | KI 50G11 | 53(46) |
| | | | KI 75G11 | 54(47) |
| | | | KI 90G11 | 55(48) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

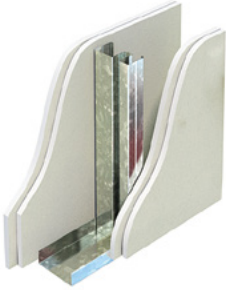
| STUD SPACING mm | STUD SIZE mm | 450 | 600 |
|-------------------------|--------------|------|------|
| | | 92 | |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 |
| | 0.75 | 5330 | 5020 |

Source: Rondo Building Systems

QUIET STUD®

SQ.5

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x13 mm non-fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 |
|--------|-----------------------|-----------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ.5A | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 45(38) |
| | | | KI 50G11 | 53(46) |
| | | | KI 75G11 | 54(47) |
| | | | KI 90G11 | 55(48) |
| SQ.5B | 2x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 46(39) |
| | | | KI 50G11 | 54(47) |
| | | | KI 75G11 | 55(48) |
| | | | KI 90G11 | 56(49) |
| SQ.5E | 2x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 46(38) |
| | | | KI 50G11 | 53(47) |
| | | | KI 75G11 | 54(48) |
| | | | KI 90G11 | 55(49) |
| SQ.5K | 2x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 49(41) |
| | | | KI 50G11 | 54(48) |
| | | | KI 75G11 | 55(50) |
| | | | KI 90G11 | 56(51) |
| SQ.5L | 2x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 48(40) |
| | | | KI 50G11 | 54(49) |
| | | | KI 75G11 | 56(50) |
| | | | KI 90G11 | 57(51) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

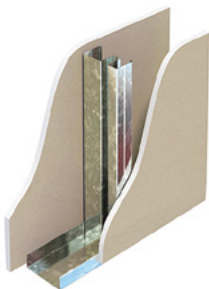
| STUD SPACING mm | STUD SIZE mm | 450 | 600 |
|-----------------|--------------|-------------------------|------|
| | | BASE METAL THICKNESS mm | |
| | | 0.55 | 0.75 |
| | | 4410 | 4130 |
| | | 5330 | 5020 |

Source: Rondo Building Systems

SQ30.1

FIRE RESISTANCE LEVEL
 NLB -/30/30
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Steel studs
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 118 |
|---------|-----------------------|-----------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION | R _w (R _w +C _{tr}) |
| SQ30.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 42(31) |
| SQ30.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | | 43(35) |
| SQ30.1C | 1x13mm FIRESTOP | 1x13mm MULTISTOP ONE | | 42(35) |
| SQ30.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | | 43(35) |
| SQ30.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | | 42(35) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | STUD SIZE mm | 450 | 600 |
|-----------------|--------------|-------------------------|------|
| | | BASE METAL THICKNESS mm | |
| | | 0.55 | 0.75 |
| | | 4410 | 4130 |
| | | 5330 | 5020 |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

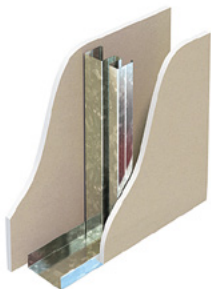
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

QUIET STUD®

SQ60.1

FIRE RESISTANCE LEVEL
 NLB -/60/60*
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 118 |
|---------|--------------------------|--------------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ60.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | KI 50G11 | 48(39) |
| | | | KI 75G11 | 49(40) |
| | | | KI 90G11 | 49(40) |
| SQ60.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | KI 50G11 | 50(42) |
| | | | KI 75G11 | 51(43) |
| | | | KI 90G11 | 51(43) |
| SQ60.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 50G11 | 49(40) |
| | | | KI 75G11 | 50(41) |
| | | | KI 90G11 | 50(41) |
| SQ60.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | KI 50G11 | 50(42) |
| | | | KI 75G11 | 51(43) |
| | | | KI 90G11 | 51(43) |
| SQ60.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | KI 50G11 | 49(40) |
| | | | KI 75G11 | 50(41) |
| | | | KI 90G11 | 50(41) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|--|
| | STUD SIZE mm | | | |
| | 92 | | | |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 | |
| | 0.75 | 5330 | 5020 | |

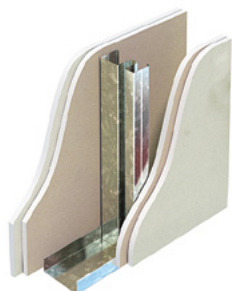
Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

SQ60.2

FIRE RESISTANCE LEVEL
 NLB -/60/60*
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
 + 1x13 mm non-fire
 resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd
 + 1x13 mm non-fire
 resistant pbd

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 |
|---------|---|---|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ60.2A | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | KI 90G11 | 56(50) |
| | | | KI 90G11 | 57(50) |
| SQ60.2B | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | KI 90G11 | 57(50) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|--|
| | STUD SIZE mm | | | |
| | 92 | | | |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 | |
| | 0.75 | 5330 | 5020 | |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

QUIET STUD®

SQ60.3

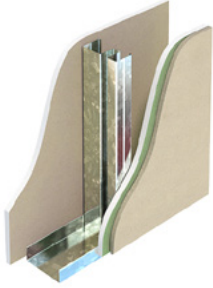
FIRE RESISTANCE LEVEL

NLB -/60/60*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIRESTOP
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE
 + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 124 |
|----------------|------------------|---|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQ60.3B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 53(46) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | STUD SIZE mm | BASE METAL THICKNESS mm | |
|-----------------|--------------|-------------------------|------|
| | | 0.55 | 0.75 |
| 450 | 92 | 4410 | 4130 |
| 600 | 92 | 5330 | 5020 |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

SQ60.4

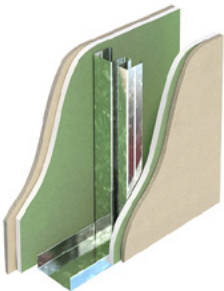
FIRE RESISTANCE LEVEL

NLB -/60/60*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm MULTISTOP ONE
 + 1x6 mm VILLABOARD
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE
 + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 130 |
|----------------|---|---|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQ60.4B | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 75G11 | 56(50) |
| | | | KI 90G11 | 57(51) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | STUD SIZE mm | BASE METAL THICKNESS mm | |
|-----------------|--------------|-------------------------|------|
| | | 0.55 | 0.75 |
| 450 | 92 | 4410 | 4130 |
| 600 | 92 | 5330 | 5020 |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

QUIET STUD®

SQ60.5

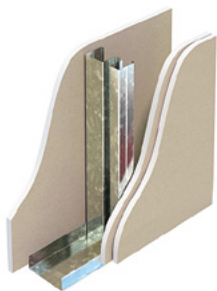
FIRE RESISTANCE LEVEL

NLB -/60/60

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd

Framing: Rondo QUIET STUD

Insulation: Refer to table

Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 131 |
|---------|--------------------------|--------------------------|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SQ60.5A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 46(38) |
| SQ60.5B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 48(40) |
| SQ60.5C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 47(39) |
| SQ60.5D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 47(39) |
| SQ60.5E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 48(40) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | 600 |
|-------------------------|--------------|------|
| | STUD SIZE mm | |
| | 92 | |
| BASE METAL THICKNESS mm | 0.55 | 4410 |
| | 0.75 | 5330 |
| | | 4130 |
| | | 5020 |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

SQ60.6

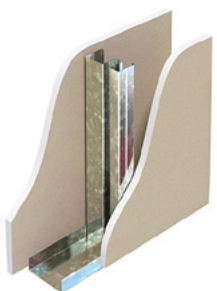
FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60 ACR 20%

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd

Framing: Rondo QUIET STUD

Insulation: Refer to table

Side 2: 1x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 124 |
|---------|--------------------------|--------------------------|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION | $R_w(R_w+C_{tr})$ |
| SQ60.6A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 43(36) |
| SQ60.6B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | Nil | 43(37) |
| SQ90.3C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | Nil | 43(37) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | 600 |
|-------------------------|--------------|------|
| | STUD SIZE mm | |
| | 92 | |
| BASE METAL THICKNESS mm | 0.55 | 4580 |
| | 0.75 | 5580 |
| | | 4300 |
| | | 5250 |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

QUIET STUD®

SQ90.1

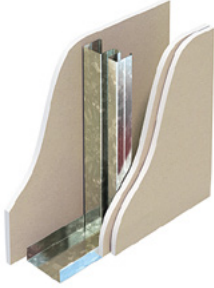
FIRE RESISTANCE LEVEL

NLB -/90/90*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 131 |
|---------|-----------------------|-----------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ90.1A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | KI 50G11 | 53(46) |
| | | | KI 75G11 | 54(47) |
| | | | KI 90G11 | 55(48) |
| SQ90.1B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | KI 50G11 | 54(47) |
| | | | KI 75G11 | 55(48) |
| | | | KI 90G11 | 56(49) |
| SQ90.1C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | KI 50G11 | 53(46) |
| | | | KI 75G11 | 54(47) |
| | | | KI 90G11 | 56(49) |
| SQ90.1D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | KI 50G11 | 54(47) |
| | | | KI 75G11 | 55(48) |
| | | | KI 90G11 | 56(49) |
| SQ90.1E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | KI 50G11 | 53(46) |
| | | | KI 75G11 | 54(47) |
| | | | KI 90G11 | 56(49) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | STUD SIZE mm | 450 | 600 |
|-----------------|--------------|-------------------------|------|
| | | BASE METAL THICKNESS mm | |
| | 0.55 | 4410 | 4130 |
| | 0.75 | 5330 | 5020 |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

SQ90.2

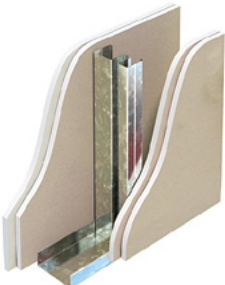
FIRE RESISTANCE LEVEL

NLB -/90/90*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm fire resistant pbd + 1x13 mm non-fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TE504-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 |
|---------|--|-----------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ90.2A | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | 2x13 mm FIRESTOP | KI 90G11 | 56(50) |
| | | | | |
| SQ90.2B | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | 2x13 mm MULTISTOP ONE | KI 90G11 | 56(50) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | STUD SIZE mm | 450 | 600 |
|-----------------|--------------|-------------------------|------|
| | | BASE METAL THICKNESS mm | |
| | 0.55 | 4410 | 4130 |
| | 0.75 | 5330 | 5020 |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

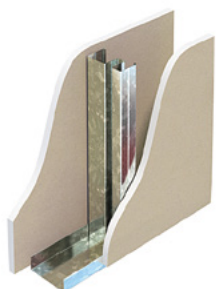
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

QUIET STUD®

SQ90.3

FIRE RESISTANCE LEVEL
 NLB **-/90/90⁺**
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 124 |
|---------|--------------------------|--------------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ90.3A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | KI 50G11 | 49(40) |
| | | | KI 75G11 | 50(43) |
| | | | KI 90G11 | 50(43) |
| SQ90.3B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | KI 50G11 | 50(42) |
| | | | KI 75G11 | 51(43) |
| | | | KI 90G11 | 51(43) |
| SQ90.3C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 50G11 | 49(42) |
| | | | KI 75G11 | 50(43) |
| | | | KI 90G11 | 50(43) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|--|
| | STUD SIZE mm | | | |
| | 92 | | | |
| BASE METAL THICKNESS mm | 0.55 | 4580 | 4300 | |
| | 0.75 | 5580 | 5250 | |

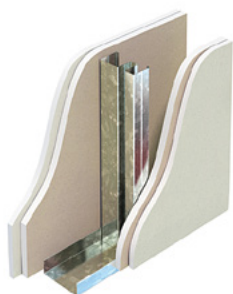
Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

SQ90.4

FIRE RESISTANCE LEVEL
 NLB **-/90/90⁺**
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
 + 1x13 mm non-fire
 resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x16 mm fire resistant
 + 1x13 mm non-fire
 resistant pbd

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 150 |
|---------|---|---|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ90.4A | 1x16 mm FIRESTOP + 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP + 1x13 mm SHEETROCK ONE | KI 75G11 | 55(50) |
| | | | KI 75G11 | 55(50) |
| SQ90.4B | 1x16 mm MULTISTOP ONE + 1x13 mm WETSTOP | 1x16 mm MULTISTOP ONE + 1x13 mm WETSTOP | KI 75G11 | 55(50) |

* KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|--|
| | STUD SIZE mm | | | |
| | 92 | | | |
| BASE METAL THICKNESS mm | 0.55 | 4580 | 4300 | |
| | 0.75 | 5580 | 5250 | |

Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

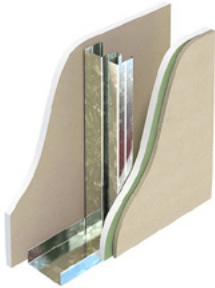
QUIET STUD®

SQ90.5

FIRE RESISTANCE LEVEL

NLB -/90/90⁺
LB 60/60/60 ACR 20%
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIRESTOP
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 130 |
|----------------|------------------|---|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ90.5B | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 54(48) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|--|
| | STUD SIZE mm | | | |
| BASE METAL THICKNESS mm | 0.55 | 4580 | 4300 | |
| | 0.75 | 5580 | 5250 | |

Source: Rondo Building Systems

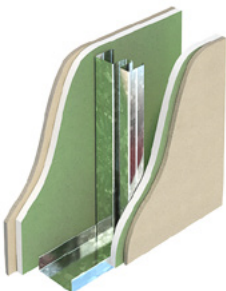
*Refer Rondo for maximum heights for load bearing walls with ACR 20%

SQ90.6

FIRE RESISTANCE LEVEL

NLB -/90/90⁺
LB 60/60/60 ACR 20%
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 136 |
|----------------|---|---|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ90.6B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 54(50) |
| | | | KI 75G11 | 56(51) |
| | | | KI 90G11 | 57(52) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density
+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|--|
| | STUD SIZE mm | | | |
| BASE METAL THICKNESS mm | 0.55 | 4580 | 4300 | |
| | 0.75 | 5580 | 5250 | |

Source: Rondo Building Systems

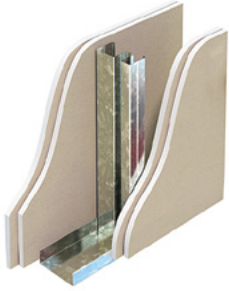
*Refer Rondo for maximum heights for load bearing walls with ACR 20%

QUIET STUD®

SQ120.1

FIRE RESISTANCE LEVEL
 NLB -/120/120
 LB 90/90/90
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 |
|----------|-----------------------|-----------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ120.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 47(40) |
| | | | KI 50G11 | 54(49) |
| | | | KI 75G11 | 55(50) |
| | | | KI 90G11 | 57(52) |
| SQ120.1B | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 49(41) |
| | | | KI 50G11 | 55(51) |
| | | | KI 75G11 | 56(52) |
| | | | KI 90G11 | 57(53) |
| SQ120.1C | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 48(41) |
| | | | KI 50G11 | 55(50) |
| | | | KI 75G11 | 56(51) |
| | | | KI 90G11 | 57(52) |
| SQ120.1D | 2x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 49(41) |
| | | | KI 50G11 | 55(51) |
| | | | KI 75G11 | 56(52) |
| | | | KI 90G11 | 57(53) |
| SQ120.1E | 2x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 48(41) |
| | | | KI 50G11 | 55(50) |
| | | | KI 75G11 | 56(51) |
| | | | KI 90G11 | 57(52) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | STUD SIZE mm | 450 | 600 |
|-------------------------|--------------|------|------|
| | | 4410 | 4130 |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 |
| | 0.75 | 5330 | 5020 |

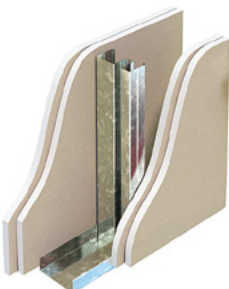
Source: Rondo Building Systems

*Refer Rondo for maximum heights for load bearing walls

SQ120.2

FIRE RESISTANCE LEVEL
 NLB -/120/120
 LB 120/120/120 ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 2x16 mm fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: TE405-20S03

Based on studs @ 600 mm ctrs and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 156 |
|----------|-----------------------|-----------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ120.2A | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | 49(41) |
| | | | KI 50G11 | 57(50) |
| | | | KI 75G11 | 58(51) |
| | | | KI 90G11 | 59(52) |
| SQ120.2B | 2x16 mm MULTISTOP ONE | 2x16 mm MULTISTOP ONE | Nil | 50(42) |
| | | | KI 50G11 | 57(52) |
| | | | KI 75G11 | 58(53) |
| | | | KI 90G11 | 59(54) |
| SQ120.2C | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | Nil | 49(41) |
| | | | KI 50G11 | 57(51) |
| | | | KI 75G11 | 58(52) |
| | | | KI 90G11 | 59(53) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | STUD SIZE mm | 450 | 600 |
|-------------------------|--------------|------|------|
| | | 4580 | 4300 |
| BASE METAL THICKNESS mm | 0.55 | 4580 | 4300 |
| | 0.75 | 5580 | 5250 |

Source: Rondo Building Systems

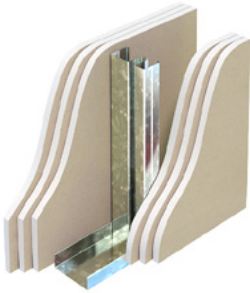
*Refer Rondo for maximum heights for load bearing walls with ACR 20%.

QUIET STUD®

SQ180.3

FIRE RESISTANCE LEVEL
 NLB -/180/180
 LB 120/120/120
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 3x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-15F01

Based on studs @ 600 mm ctrs
 and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 188 |
|----------|--------------------------|--------------------------|----------------------|---|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | R _w (R _w +C _{tr}) |
| SQ180.3A | 3x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | 55(47) |
| | | | KI 50G11 | 61(55) |
| | | | KI 75G11 | 61(55) |
| | | | KI 90G11 | 62(56) |
| SQ180.3B | 3x16 mm MULTISTOP ONE | 3x16 mm MULTISTOP ONE | Nil | 56(48) |
| | | | KI 50G11 | 62(56) |
| | | | KI 75G11 | 62(56) |
| | | | KI 90G11 | 63(57) |
| SQ180.3C | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | Nil | 55(47) |
| | | | KI 50G11 | 61(55) |
| | | | KI 75G11 | 61(55) |
| | | | KI 90G11 | 62(56) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 |
|-------------------------|--------------|------|------|
| | STUD SIZE mm | | |
| BASE METAL THICKNESS mm | 0.55 | 4580 | 4300 |
| | 0.75 | 5100 | 4600 |

Source: Rondo Building Systems

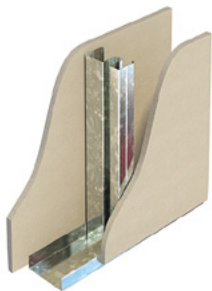
*Refer Rondo for maximum heights for load bearing walls.

FIBEROCK® AQUA-TOUGH™ – QUIET STUD

SQF30.1

FIRE RESISTANCE LEVEL
NLB -/30/30
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-QS-01

Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 118 |
|----------|-----------------------------------|-----------------------------------|----------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQF30.1A | 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 40(33) |
| | | | KI 50G11 | 48(41) |
| | | | KI 75G11 | 50(43) |
| | | | KI 90G11 | 51(44) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

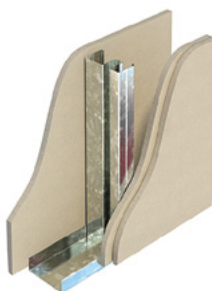
| BASE METAL THICKNESS mm | STUD SPACING mm | | STUD SIZE mm | |
|-------------------------|-----------------|------|--------------|------|
| | 450 | 600 | 450 | 600 |
| 0.55 | 4410 | 4130 | 5330 | 5020 |
| 0.75 | 4410 | 4130 | 5330 | 5020 |

Source: Rondo Building Systems

SQF30.2

FIRE RESISTANCE LEVEL
NLB -/30/30
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-QS-01

Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 131 |
|----------|-----------------------------------|-----------------------------------|----------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQF30.2A | 1x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 44(38) |
| | | | KI 50G11 | 54(47) |
| | | | KI 75G11 | 55(48) |
| | | | KI 90G11 | 56(49) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| BASE METAL THICKNESS mm | STUD SPACING mm | | STUD SIZE mm | |
|-------------------------|-----------------|------|--------------|------|
| | 450 | 600 | 450 | 600 |
| 0.55 | 4410 | 4130 | 5330 | 5020 |
| 0.75 | 4410 | 4130 | 5330 | 5020 |

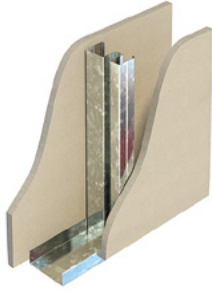
Source: Rondo Building Systems

FIBEROCK® AQUA-TOUGH™ – QUIET STUD

SQF60.1

FIRE RESISTANCE LEVEL
NLB –/60/60
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK
AQUA-TOUGH
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 1x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-QS-01

Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 124 |
|----------|-----------------------------------|-----------------------------------|----------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQF60.1A | 1x16 mm FIBEROCK AQUA-TOUGH | 1x16 mm FIBEROCK AQUA-TOUGH | Nil | 43(37) |
| | | | KI 50G11 | 52(45) |
| | | | KI 75G11 | 53(46) |
| | | | KI 90G11 | 54(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

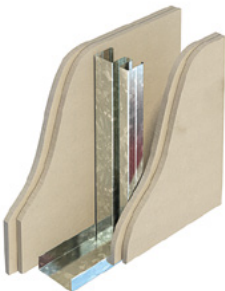
| STUD SPACING mm | 450 | 600 | |
|-------------------------|--------------|------|------|
| | STUD SIZE mm | | |
| BASE METAL THICKNESS mm | 0.55 | 4580 | 4300 |
| | 0.75 | 5580 | 5250 |

Source: Rondo Building Systems

SQF90.1

FIRE RESISTANCE LEVEL
NLB –/90/90
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK
AQUA-TOUGH
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-QS-01

Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 |
|----------|-----------------------------------|-----------------------------------|----------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQF90.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 50(43) |
| | | | KI 50G11 | 57(49) |
| | | | KI 75G11 | 59(51) |
| | | | KI 90G11 | 60(52) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | 600 | |
|-------------------------|--------------|------|------|
| | STUD SIZE mm | | |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 |
| | 0.75 | 5330 | 5020 |

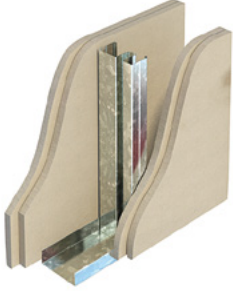
Source: Rondo Building Systems

FIBEROCK® AQUA-TOUGH™ – QUIET STUD

SQF120.1

FIRE RESISTANCE LEVEL
NLB -/120/120
 FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x16 mm
FIBEROCK AQUA-TOUGH
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2x16 mm
FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-QS-01

Based on studs @ 600 mm ctrs
and thinnest available stud gauge

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 156 |
|-----------|-----------------------------------|-----------------------------------|-------------------|---|
| | | | STUD SIZE mm | 92 |
| SQF120.1A | 2x16 mm FIBEROCK AQUA-TOUGH | 2x16 mm FIBEROCK AQUA-TOUGH | INSULATION* | R _w (R _w +C _{tr}) |
| | | | Nil | 52(44) |
| | | | KI 50G11 | 58(54) |
| | | | KI 75G11 | 60(56) |
| KI 90G11 | 61(57) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

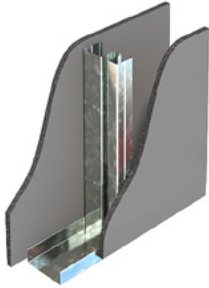
| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|--|------|--|
| | STUD SIZE mm | | | |
| BASE METAL THICKNESS mm | 0.55 | | 4300 | |
| | 0.75 | | 5250 | |

Source: Rondo Building Systems

PERMAROCK® – QUIET STUD

SQP.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: Non-fire resistant lining
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: Non-fire resistant lining

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Quietstuds
@ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 117.5 |
|--------|------------------------|--------------------------|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQP.1A | 1x12.5 mm PERMAROCK | 1x12.5 mm PERMAROCK | Nil | 43(34) |
| | | | KI 50G11 | 50(41) |
| | | | KI 75G11 | 51(42) |
| | | | KI 90G11 | 51(42) |
| SQP.1B | 1x12.5 mm PERMAROCK | 1x13 mm SHEETROCK ONE | Nil | 43(33) |
| | | | KI 50G11 | 49(39) |
| | | | KI 75G11 | 50(40) |
| | | | KI 90G11 | 50(40) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

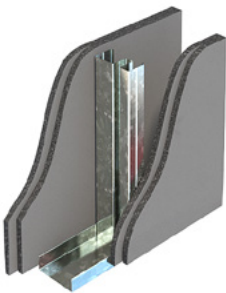
SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | 600 | |
|-------------------------|--------------|------|------|
| | STUD SIZE mm | | |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 |
| | 0.75 | 5330 | 5020 |

Source: Rondo Building Systems

SQP.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2 x Non-fire resistant lining
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: 2 x Non-fire resistant lining

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Quietstuds
@ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 143 |
|--------|------------------------|--------------------------|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQP.2A | 2x12.5 mm PERMAROCK | 2x12.5 mm PERMAROCK | Nil | 49(44) |
| | | | KI 50G11 | 55(50) |
| | | | KI 75G11 | 56(51) |
| | | | KI 90G11 | 57(52) |
| SQP.2B | 2x12.5 mm PERMAROCK | 2x13 mm SHEETROCK ONE | Nil | 47(41) |
| | | | KI 50G11 | 53(47) |
| | | | KI 75G11 | 54(48) |
| | | | KI 90G11 | 55(49) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | 600 | |
|-------------------------|--------------|------|------|
| | STUD SIZE mm | | |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 |
| | 0.75 | 5330 | 5020 |

Source: Rondo Building Systems

PERMAROCK® – QUIET STUD

SQP60.1

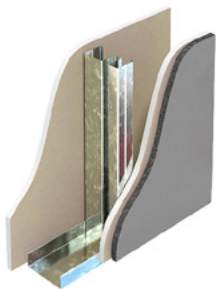
FIRE RESISTANCE LEVEL

NLB –/60/60*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Quietstuds
@ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 130.5, 143 |
|----------|---|---|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQP60.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 53(45) |
| | | | KI 75G11 | 54(46) |
| | | | KI 90G11 | 55(47) |
| SQP60.1B | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 54(48) |
| | | | KI 75G11 | 55(49) |
| | | | KI 90G11 | 56(50) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL
 In wet areas use MULTISTOP ONE or MULTISTOP ONE HI in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|----|
| | STUD SIZE mm | | | |
| | | | | 92 |
| BASE METAL THICKNESS mm | 0.55 | 4410 | 4130 | |
| | 0.75 | 5330 | 5020 | |

Source: Rondo Building Systems

* Refer Rondo for maximum heights for load bearing walls

SQP90.1

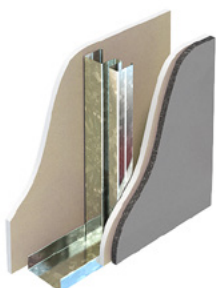
FIRE RESISTANCE LEVEL

NLB –/90/90*

LB 60/60/60 ACR 20%

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Quietstuds
@ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 136.5, 149 |
|----------|---|---|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQP90.1A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 55(47) |
| | | | KI 75G11 | 56(48) |
| | | | KI 90G11 | 57(49) |
| SQP90.1B | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 55(49) |
| | | | KI 75G11 | 56(50) |
| | | | KI 90G11 | 57(51) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL
 In wet areas use MULTISTOP ONE in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|----|
| | STUD SIZE mm | | | |
| | | | | 92 |
| BASE METAL THICKNESS mm | 0.55 | 4580 | 4300 | |
| | 0.75 | 5580 | 5250 | |

Source: Rondo Building Systems

* Refer Rondo for maximum heights for load bearing walls within ACR 20%.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

PERMAROCK® – QUIET STUD

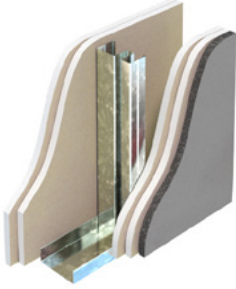
SQP120.1**FIRE RESISTANCE LEVEL**

NLB –/120/120

LB 90/90/90

FROM BOTH SIDES

FRL Basis: FC16109

**SYSTEM DESCRIPTION**

Side 1: Refer to table
Framing: Rondo QUIET STUD
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS RT&A TK778-16F02Quietstuds
@ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 156.5, 169 |
|------------------|---|---|-------------------|-------------------|
| | | | STUD SIZE mm | 92 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ |
| SQP120.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | Nil | 50(44) |
| | | | KI 50G11 | 57(51) |
| | | | KI 75G11 | 58(52) |
| | | | KI 90G11 | 59(53) |
| SQP120.1B | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | Nil | 51(47) |
| | | | KI 50G11 | 57(53) |
| | | | KI 75G11 | 58(54) |
| | | | KI 90G11 | 59(55) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

In wet areas use MULTISTOP ONE or MULTISTOP ONE HI in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 450 | | 600 | |
|-------------------------|--------------|------|------|------|
| | STUD SIZE mm | | | |
| BASE METAL THICKNESS mm | 92 | | 92 | |
| | 0.55 | 0.75 | 4410 | 4130 |
| | | | 5330 | 5020 |

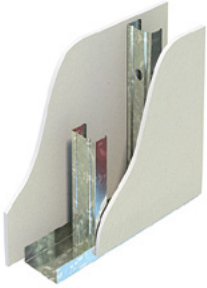
Source: Rondo Building Systems

* Refer Rondo for maximum heights for load bearing walls.

STAGGERED STUD

SS.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x10 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S01(R9), SLR-SR-S-SS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 112 | 170 |
|--------|------------------------|------------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS.1A | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Nil | 29(20) | 33(24) |
| | | | KI 50G11 | 35(27) | 39(31) |
| | | | KI 75G11 | 36(27) | 40(31) |
| | | | KI 90G11 | 37(29) | 41(33) |
| SS.1H | 1x10 mm SHEETROCK PLUS | 1x10 mm SHEETROCK PLUS | Nil | 39(32) | 41(33) |
| | | | KI 50G11 | 46(36) | 49(40) |
| | | | KI 75G11 | 47(37) | 50(41) |
| | | | KI 90G11 | 47(37) | 50(41) |
| SS.1I | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK PLUS | Nil | 34(25) | 38(29) |
| | | | KI 50G11 | 40(31) | 44(36) |
| | | | KI 75G11 | 41(32) | 45(36) |
| | | | KI 90G11 | 42(33) | 46(38) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | | |
|-------------------------|------|--------|--------|--------|----|
| | 51 | 64 | 76 | 92 | |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| 0.55 | NA | NA | 2610 s | 2740 s | |
| 0.75 | NA | 2830 s | 3000 s | 3190 s | |
| 1.15 | NA | 3510 s | 3600 s | 3750 s | |

Height Limiting Factor: d – deflection, s – permissible strength

STAGGERED STUD

SS.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x10 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S01(R9), SLR-SR-S-SS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 132 | 190 |
|--------|------------------------|------------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS.2A | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK ONE | Nil | 38(29) | 41(32) |
| | | | KI 50G11 | 46(36) | 49(39) |
| | | | KI 75G11 | 47(36) | 50(39) |
| | | | KI 90G11 | 48(38) | 51(41) |
| SS.2H | 2x10 mm SHEETROCK PLUS | 2x10 mm SHEETROCK PLUS | Nil | 46(38) | 48(39) |
| | | | KI 50G11 | 55(46) | 57(50) |
| | | | KI 75G11 | 56(47) | 58(51) |
| | | | KI 90G11 | 57(48) | 59(52) |
| SS.2I | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK PLUS | Nil | 42(32) | 46(35) |
| | | | KI 50G11 | 51(40) | 53(43) |
| | | | KI 75G11 | 52(41) | 55(44) |
| | | | KI 90G11 | 53(43) | 56(46) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

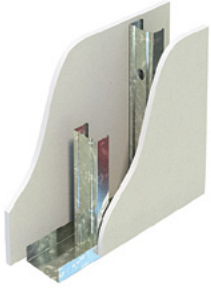
| STUD SPACING mm | 600 | | | | |
|-------------------------|------|--------|--------|--------|--------|
| | 51 | 64 | 76 | 92 | |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

STAGGERED STUD

SS.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 118 | 176 |
|--------|-----------------------|-----------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Nil | 38(32) | 40(33) |
| | | | KI 50G11 | 46(36) | 48(39) |
| | | | KI 75G11 | 47(37) | 49(40) |
| | | | KI 90G11 | 47(37) | 50(40) |
| SS.3B | 1x13 mm WETSTOP | 1x13 mm WETSTOP | Nil | 39(33) | 41(34) |
| | | | KI 50G11 | 47(37) | 49(40) |
| | | | KI 75G11 | 48(38) | 50(41) |
| | | | KI 90G11 | 48(38) | 51(41) |
| SS.3E | 1x13 mm SHEETROCK ONE | 1x13 mm WETSTOP | Nil | 39(33) | 41(34) |
| | | | KI 50G11 | 46(37) | 49(39) |
| | | | KI 75G11 | 47(38) | 50(40) |
| | | | KI 90G11 | 47(38) | 50(40) |
| SS.3K | 1x13 mm SHEETROCK ONE | 1x13 mm IMPACTSTOP | Nil | 40(34) | 42(35) |
| | | | KI 50G11 | 48(38) | 50(43) |
| | | | KI 75G11 | 49(39) | 51(44) |
| | | | KI 90G11 | 49(40) | 52(44) |
| SS.3L | 1x13 mm WETSTOP | 1x13 mm IMPACTSTOP | Nil | 41(35) | 43(37) |
| | | | KI 50G11 | 48(39) | 51(44) |
| | | | KI 75G11 | 49(40) | 52(45) |
| | | | KI 90G11 | 49(41) | 52(45) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

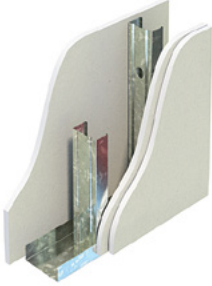
| STUD SPACING mm | 600 | | | | |
|-------------------------|--------------|--------|--------|--------|--------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

STAGGERED STUD

SS.4

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 131 | 189 |
|--------|-----------------------|-----------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS.4A | 1x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 42(35) | 44(36) |
| | | | KI 50G11 | 50(40) | 53(44) |
| | | | KI 75G11 | 51(41) | 54(45) |
| | | | KI 90G11 | 52(42) | 55(46) |
| SS.4B | 1x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 43(35) | 45(37) |
| | | | KI 50G11 | 51(42) | 54(46) |
| | | | KI 75G11 | 52(43) | 55(47) |
| | | | KI 90G11 | 54(44) | 56(48) |
| SS.4E | 1x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 43(36) | 45(36) |
| | | | KI 50G11 | 51(41) | 53(45) |
| | | | KI 75G11 | 52(42) | 54(46) |
| | | | KI 90G11 | 53(43) | 56(47) |
| SS.4K | 1x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 44(36) | 46(38) |
| | | | KI 50G11 | 52(43) | 55(47) |
| | | | KI 75G11 | 54(44) | 56(48) |
| | | | KI 90G11 | 55(46) | 57(49) |
| SS.4L | 1x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 44(37) | 47(38) |
| | | | KI 50G11 | 53(44) | 55(47) |
| | | | KI 75G11 | 54(45) | 56(48) |
| | | | KI 90G11 | 55(46) | 57(50) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

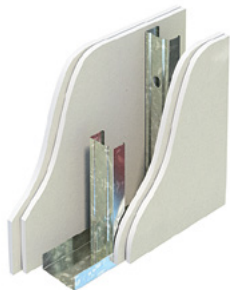
MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | |
|-------------------------|--------|--------|--------|--------|
| | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | | | | |
| 0.50 | 2320 d | 2375 s | NA | NA |
| 0.55 | NA | NA | 2610 s | 2740 s |
| 0.75 | NA | 2830 s | 3000 s | 3190 s |
| 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

STAGGERED STUD

SS.5**NON-FIRE RATED****SYSTEM DESCRIPTION**

Side 1: 2x13 mm non-fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 | 202 |
|--------|-----------------------|-----------------------|-------------------|-------------------|--------|
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | |
| SS.5A | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 45(39) | 47(40) |
| | | | KI 50G11 | 54(46) | 57(50) |
| | | | KI 75G11 | 55(47) | 58(51) |
| | | | KI 90G11 | 56(48) | 59(52) |
| SS.5B | 2x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 46(40) | 49(41) |
| | | | KI 50G11 | 55(47) | 58(51) |
| | | | KI 75G11 | 57(49) | 59(52) |
| | | | KI 90G11 | 58(50) | 60(53) |
| SS.5E | 2x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 46(39) | 48(41) |
| | | | KI 50G11 | 55(47) | 57(50) |
| | | | KI 75G11 | 56(48) | 58(52) |
| | | | KI 90G11 | 57(49) | 59(53) |
| SS.5K | 2x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 47(41) | 50(42) |
| | | | KI 50G11 | 56(49) | 58(52) |
| | | | KI 75G11 | 57(50) | 59(53) |
| | | | KI 90G11 | 58(51) | 60(54) |
| SS.5L | 2x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 48(41) | 50(43) |
| | | | KI 50G11 | 57(49) | 58(53) |
| | | | KI 75G11 | 58(50) | 60(54) |
| | | | KI 90G11 | 59(52) | 61(55) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | | |
|-------------------------|--------------|--------|--------|--------|--------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

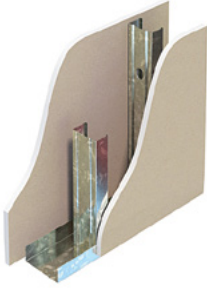
Height Limiting Factor: d – deflection, s – permissible strength

STAGGERED STUD

SS30.1

FIRE RESISTANCE LEVEL
NLB **-/30/30**
FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 118 | 176 |
|---------|-----------------------|-----------------------|-------------------|-------------------|--------|
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION | $R_w(R_w+C_{tr})$ | |
| SS30.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 40(35) | 42(35) |
| SS30.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | | 42(36) | 44(37) |
| SS30.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | | 41(36) | 43(36) |
| SS30.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | | 42(36) | 44(37) |
| SS30.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | | 41(36) | 43(36) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

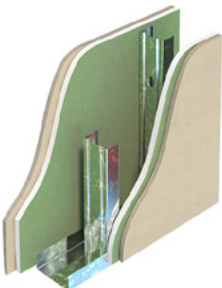
| STUD SPACING mm | 600 | | | | |
|-------------------------|------|--------|--------|--------|--------|
| | 51 | 64 | 76 | 92 | |
| STUD SIZE mm | 51 | 64 | 76 | 92 | |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SS30.2

FIRE RESISTANCE LEVEL
NLB **-/30/30**
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 130 | 188 |
|---------|---|---|-------------------|-------------------|--------|
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION | $R_w(R_w+C_{tr})$ | |
| SS30.2B | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | 47(40) | 40(42) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | | |
|-------------------------|------|--------|--------|--------|--------|
| | 51 | 64 | 76 | 92 | |
| STUD SIZE mm | 51 | 64 | 76 | 92 | |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

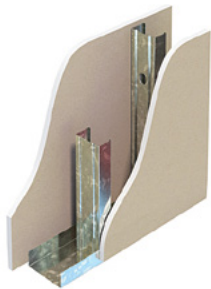
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

STAGGERED STUD

SS60.1

FIRE RESISTANCE LEVEL
NLB **-/60/60***
FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 118 | 176 |
|---------|-----------------------|-----------------------|-------------------|-------------------|--------|
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | |
| SS60.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | KI 50G11 | 48(39) | 50(42) |
| | | | KI 75G11 | 49(40) | 51(44) |
| | | | KI 90G11 | 49(40) | 52(44) |
| SS60.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | KI 50G11 | 49(41) | 52(44) |
| | | | KI 75G11 | 50(42) | 53(45) |
| | | | KI 90G11 | 51(42) | 53(46) |
| SS60.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 50G11 | 49(40) | 51(43) |
| | | | KI 75G11 | 50(41) | 52(45) |
| | | | KI 90G11 | 50(41) | 52(45) |
| SS60.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | KI 50G11 | 49(41) | 52(44) |
| | | | KI 75G11 | 50(42) | 53(45) |
| | | | KI 90G11 | 51(42) | 53(46) |
| SS60.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | KI 50G11 | 49(40) | 51(43) |
| | | | KI 75G11 | 50(41) | 52(45) |
| | | | KI 90G11 | 50(41) | 52(45) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

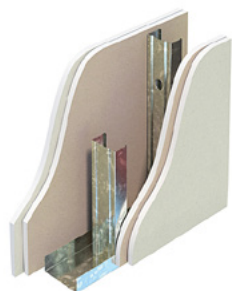
| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SS60.2

FIRE RESISTANCE LEVEL
NLB **-/60/60***
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd + 1x13 mm non-fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd + 1x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 | 202 |
|---------|--|--|-------------------|-------------------|--------|
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | |
| SS60.2A | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | KI 50G11 | - | 57(51) |
| | | | KI 90G11 | 57(50) | - |
| SS60.2B | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | KI 50G11 | - | 57(51) |
| | | | KI 90G11 | 57(50) | - |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

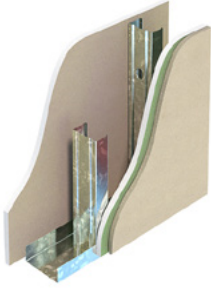
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

STAGGERED STUD

SS60.3

FIRE RESISTANCE LEVEL
NLB **-/60/60***
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIRESTOP
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 124 | 182 |
|----------------|------------------|---|-------------------|---|-----|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS60.3B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 53(44) | - |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

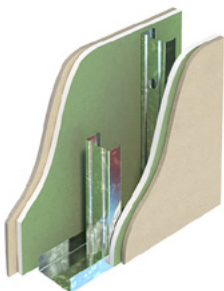
| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SS60.4

FIRE RESISTANCE LEVEL
NLB **-/60/60***
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 130 | 188 |
|----------------|---|---|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS60.4B | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 56(48) | 58(52) |
| | | | KI 75G11 | 57(49) | 59(53) |
| | | | KI 90G11 | 58(50) | 60(54) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

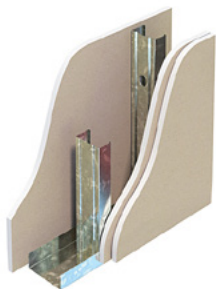
Height Limiting Factor: d – deflection, s – permissible strength

STAGGERED STUD

SS60.5

FIRE RESISTANCE LEVEL
NLB -/60/60
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm fire resistant pbd
- Framing:** Staggered steel studs
- Insulation:** Refer to table
- Side 2:** 2x13 mm fire resistant pbd

| ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9) Based on studs @ 600 mm ctrs | | | | | |
|--|-----------------------|-----------------------|-------------------|---|--------|
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 131 | 189 |
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION | R _w (R _w +C _{tr}) | |
| SS60.5A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 43(36) | 46(38) |
| SS60.5B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | | 45(38) | 48(39) |
| SS60.5C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | | 44(37) | 47(39) |
| SS60.5D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | | 45(38) | 48(39) |
| SS60.5E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | | 44(37) | 47(39) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

| MAX WALL HEIGHTS NON-LOAD BEARING WALLS | | | SERVICEABILITY PRESSURE: 0.25 kPa | | | |
|---|------|--------|-----------------------------------|--------|--------|--|
| STUD SPACING mm | | 600 | | | | |
| STUD SIZE mm | | 51 | 64 | 76 | 92 | |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA | |
| | 0.55 | NA | NA | 2610 s | 2740 s | |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s | |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s | |

Height Limiting Factor: d – deflection, s – permissible strength

SS60.6

FIRE RESISTANCE LEVEL
NLB -/60/60
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

- Side 1:** 1x16 mm fire resistant pbd
- Framing:** Staggered steel studs
- Insulation:** Refer to table
- Side 2:** 1x16 mm fire resistant pbd

| ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9) Based on studs @ 600 mm ctrs | | | | | |
|--|-----------------------|-----------------------|-------------------|---|--------|
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 124 | 182 |
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION | R _w (R _w +C _{tr}) | |
| SS60.5A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 43(36) | 46(39) |
| SS60.5B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | | 44(38) | 46(40) |
| SS60.5C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | | 44(38) | 47(40) |

| MAX WALL HEIGHTS NON-LOAD BEARING WALLS | | | SERVICEABILITY PRESSURE: 0.25 kPa | | | |
|---|------|--------|-----------------------------------|--------|--------|--|
| STUD SPACING mm | | 600 | | | | |
| STUD SIZE mm | | 51 | 64 | 76 | 92 | |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA | |
| | 0.55 | NA | NA | 2610 s | 2740 s | |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s | |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s | |

Height Limiting Factor: d – deflection, s – permissible strength

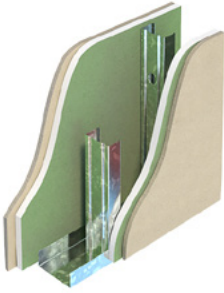
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

STAGGERED STUD

SS60.7

FIRE RESISTANCE LEVEL
NLB **-/60/60**
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 136 | 194 |
|----------------|--|--|-------------------|---|--------|
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION | R _w (R _w +C _{tr}) | |
| SS60.7B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | 48(42) | 50(43) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

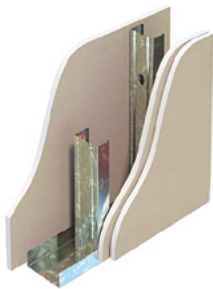
| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SS90.1

FIRE RESISTANCE LEVEL
NLB **-/90/90⁺**
FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 131 | 189 |
|----------------|-----------------------|-----------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS90.1A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | KI 50G11 | 53(44) | 55(47) |
| | | | KI 75G11 | 54(45) | 56(48) |
| | | | KI 90G11 | 55(46) | 57(49) |
| SS90.1B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | KI 50G11 | 54(45) | 56(49) |
| | | | KI 75G11 | 55(47) | 57(50) |
| | | | KI 90G11 | 56(48) | 58(51) |
| SS90.1C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | KI 50G11 | 53(45) | 55(48) |
| | | | KI 75G11 | 54(46) | 56(49) |
| | | | KI 90G11 | 55(47) | 58(50) |
| SS90.1D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | KI 50G11 | 54(45) | 56(49) |
| | | | KI 75G11 | 55(47) | 57(50) |
| | | | KI 90G11 | 56(48) | 58(51) |
| SS90.1E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | KI 50G11 | 53(45) | 55(48) |
| | | | KI 75G11 | 54(46) | 56(49) |
| | | | KI 90G11 | 55(47) | 58(50) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

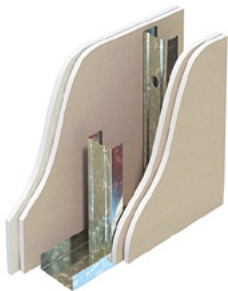
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

STAGGERED STUD

SS90.2

FIRE RESISTANCE LEVEL
NLB **-/90/90***
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
+ 1x13 mm non-fire
resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 | 202 |
|---------|--|---------------------|----------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS90.2A | 1x13 mm FIRESTOP + 13 mm SHEETROCK ONE | 2x13 mm FIRESTOP | KI 50G11 | - | 58(52) |
| | | | KI 75G11 | 57(50) | - |
| SS90.2C | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | 2x13 mm FIRESTOP | KI 50G11 | - | 59(53) |
| | | | KI 75G11 | 58(50) | - |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

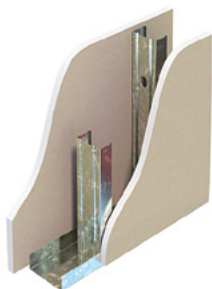
| STUD SPACING mm | | 600 | | | |
|-------------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SS90.3

FIRE RESISTANCE LEVEL
NLB **-/90/90***
FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 124 | 182 |
|---------|--------------------------|--------------------------|----------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS90.3A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | KI 50G11 | 51(43) | 53(46) |
| | | | KI 75G11 | 52(44) | 55(47) |
| | | | KI 90G11 | 53(44) | 55(47) |
| SS90.3B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | KI 50G11 | 52(44) | 54(47) |
| | | | KI 75G11 | 53(45) | 55(49) |
| | | | KI 90G11 | 54(45) | 56(49) |
| SS90.3C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 50G11 | 52(44) | 54(47) |
| | | | KI 75G11 | 53(45) | 55(48) |
| | | | KI 90G11 | 53(45) | 55(48) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

STAGGERED STUD

SS90.4

FIRE RESISTANCE LEVEL
NLB **-/90/90⁺**
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
+ 1x13 mm non-fire
resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd
+ 1x13 mm non-fire
resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 150 | 208 |
|---------|---|---|----------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS90.4A | 1x16 mm FIRESTOP + 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP + 1x13 mm SHEETROCK ONE | KI 50G11 | - | 58(52) |
| | | | KI 75G11 | 57(50) | - |
| SS90.4B | 1x16 mm MULTISTOP ONE + 1x13 mm WETSTOP | 1x16 mm MULTISTOP ONE + 1x13 mm WETSTOP | KI 50G11 | - | 58(52) |
| | | | KI 75G11 | 57(50) | - |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

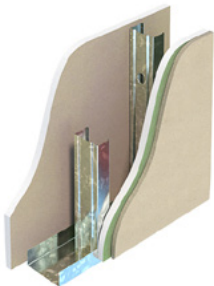
| STUD SPACING mm | 600 | | | | |
|-------------------------------|--------------|--------|--------|--------|--------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SS90.5

FIRE RESISTANCE LEVEL
NLB **-/90/90⁺**
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIRESTOP
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 130 | 188 |
|---------|---------------------|--|----------------------|---|-----|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS90.5B | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 59(51) | - |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | | |
|-------------------------------|--------------|--------|--------|--------|--------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

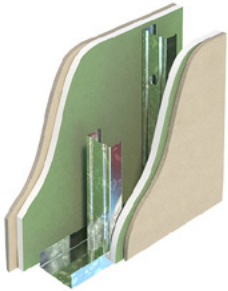
Height Limiting Factor: d – deflection, s – permissible strength

STAGGERED STUD

SS90.6

FIRE RESISTANCE LEVEL
NLB **-/90/90***
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIRESTOP
+ 1x6 mm VILLABOARD

Framing: Staggered steel studs

Insulation: Refer to table

Side 2: 1x16 mm FIRESTOP
+ 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 136 | 194 |
|---------|--|--|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS90.6B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 57(50) | 58(54) |
| | | | KI 75G11 | 58(51) | 60(55) |
| | | | KI 90G11 | 59(52) | 61(56) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density* KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density* KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

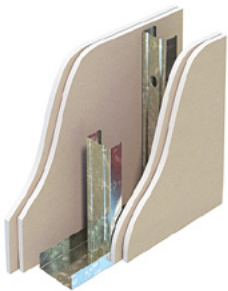
| STUD SPACING mm | 600 | | | | |
|-------------------------|--------------|--------|--------|--------|--------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SS120.1

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd

Framing: Staggered steel studs

Insulation: Refer to table

Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 | 202 |
|----------|--------------------------|--------------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS120.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 47(41) | 50(43) |
| | | | KI 50G11 | 56(49) | 58(53) |
| | | | KI 75G11 | 57(50) | 59(54) |
| | | | KI 90G11 | 58(51) | 60(55) |
| SS120.1B | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 49(42) | 51(44) |
| | | | KI 50G11 | 58(51) | 59(55) |
| | | | KI 75G11 | 59(52) | 60(56) |
| | | | KI 90G11 | 60(53) | 61(57) |
| SS120.1C | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 48(42) | 51(44) |
| | | | KI 50G11 | 57(50) | 58(53) |
| | | | KI 75G11 | 58(51) | 60(55) |
| | | | KI 90G11 | 59(52) | 61(56) |
| SS120.1D | 2x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 49(42) | 51(44) |
| | | | KI 50G11 | 58(51) | 59(55) |
| | | | KI 75G11 | 59(52) | 60(56) |
| | | | KI 90G11 | 60(53) | 61(57) |
| SS120.1E | 2x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 48(42) | 51(44) |
| | | | KI 50G11 | 57(50) | 58(53) |
| | | | KI 75G11 | 58(51) | 60(55) |
| | | | KI 90G11 | 59(52) | 61(56) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density* KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density* KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | | |
|-------------------------|--------------|--------|--------|--------|--------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

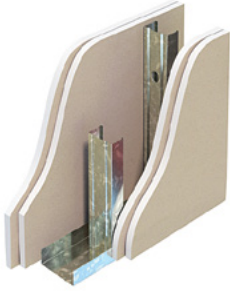
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

STAGGERED STUD

SS120.2

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 2x16 mm fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-01S02(R9)

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 154 | 214 |
|----------|-----------------------|-----------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS120.2A | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | 48(41) | 51(42) |
| | | | KI 50G11 | 57(52) | 59(55) |
| | | | KI 75G11 | 58(53) | 60(56) |
| | | | KI 90G11 | 59(54) | 61(57) |
| SS120.2B | 2x16 mm MULTISTOP ONE | 2x16 mm MULTISTOP ONE | Nil | 49(42) | 52(44) |
| | | | KI 50G11 | 58(53) | 59(56) |
| | | | KI 75G11 | 59(54) | 60(57) |
| | | | KI 90G11 | 60(55) | 61(58) |
| SS120.2C | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | Nil | 49(41) | 52(43) |
| | | | KI 50G11 | 58(52) | 59(55) |
| | | | KI 75G11 | 59(53) | 60(56) |
| | | | KI 90G11 | 60(55) | 61(58) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

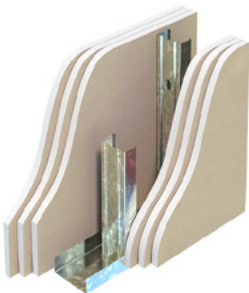
| STUD SPACING mm | 600 | | | | |
|-------------------------|--------------|--------|--------|--------|--------|
| | STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 s | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: s – permissible strength

SS180.3

FIRE RESISTANCE LEVEL
NLB **-/180/180**
FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 3x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-15F01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 188 | 246 |
|----------|-----------------------|-----------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SS180.3A | 3x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | 54(47) | 56(51) |
| | | | KI 50G11 | 63(57) | 65(61) |
| | | | KI 75G11 | 63(57) | 65(61) |
| | | | KI 90G11 | 64(58) | 66(62) |
| SS180.3B | 3x16 mm MULTISTOP ONE | 3x16 mm MULTISTOP ONE | Nil | 55(48) | 57(52) |
| | | | KI 50G11 | 64(58) | 66(62) |
| | | | KI 75G11 | 64(58) | 66(62) |
| | | | KI 90G11 | 65(59) | 67(63) |
| SS180.3C | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | Nil | 54(47) | 56(51) |
| | | | KI 50G11 | 63(57) | 65(61) |
| | | | KI 75G11 | 63(57) | 65(61) |
| | | | KI 90G11 | 64(58) | 66(62) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | | |
|-------------------------|--------------|----|--------|--------|--------|
| | STUD SIZE mm | NA | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | NA | 2300 f | NA | NA |
| | 0.55 | NA | NA | 2610 f | 2740 s |
| | 0.75 | NA | 2700 f | 3000 f | 3190 s |
| | 1.15 | NA | 3000 f | 3500 f | 3750 s |

Height Limiting Factor: f – fire height, s – permissible strength

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector.
Blue text indicates systems and products suitable for wet areas.

FIBEROCK® AQUA-TOUGH™ – STAGGERED STUD

SSF30.1

FIRE RESISTANCE LEVEL
NLB **-/30/30**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-SS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 118 | 176 |
|----------|-----------------------------------|-----------------------------------|----------------------|-------------------|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | |
| SSF30.1A | 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 41(33) | 44(36) |
| | | | KI 50G11 | 51(42) | 52(44) |
| | | | KI 75G11 | 53(44) | 54(45) |
| | | | KI 90G11 | 54(45) | 55(46) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SSF30.2

FIRE RESISTANCE LEVEL
NLB **-/30/30**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: BASIS: SLR-FB-S-SS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 131 | 189 |
|----------|-----------------------------------|-----------------------------------|----------------------|-------------------|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | |
| SSF30.2A | 1x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 46(38) | 49(41) |
| | | | KI 50G11 | 56(47) | 57(48) |
| | | | KI 75G11 | 57(48) | 58(49) |
| | | | KI 90G11 | 58(49) | 59(50) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

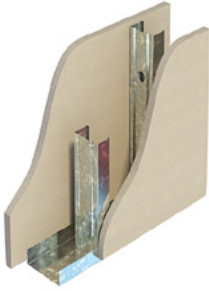
Height Limiting Factor: d – deflection, s – permissible strength

FIBEROCK® AQUA-TOUGH™ – STAGGERED STUD

SSF60.1

FIRE RESISTANCE LEVEL
NLB **-/60/60**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK AQUA-TOUGH
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 1x16 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-SS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 124 | 182 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSF60.1A | 1x16 mm FIBEROCK AQUA-TOUGH | 1x16 mm FIBEROCK AQUA-TOUGH | Nil | 45(37) | 48(40) |
| | | | KI 50G11 | 55(46) | 56(47) |
| | | | KI 75G11 | 57(48) | 58(49) |
| | | | KI 90G11 | 58(49) | 59(50) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SSF90.1

FIRE RESISTANCE LEVEL
NLB **-/90/90**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK AQUA-TOUGH
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-SS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 | 202 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSF90.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 52(43) | 55(47) |
| | | | KI 50G11 | 60(49) | 63(53) |
| | | | KI 75G11 | 62(51) | 64(54) |
| | | | KI 90G11 | 63(52) | 65(55) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|----|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | NA |
| | 0.75 | NA | 2830 s | 3000 s | NA |
| | 1.15 | NA | 3510 s | 3600 s | NA |

Height Limiting Factor: d – deflection, s – permissible strength

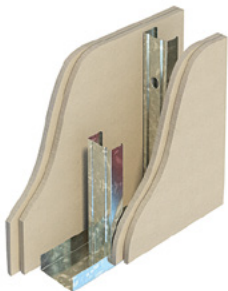
[^]System SSF90.1 must utilise 51 mm, 64 mm or 76 mm studs only.

FIBEROCK® AQUA-TOUGH™ – STAGGERED STUD

SSF120.1[^]

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK
AQUA-TOUGH
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-SS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 144 | 202 |
|-----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSF120.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | - | 55(47) |
| | | | KI 50G11 | - | 63(53) |
| | | | KI 75G11 | - | 64(54) |
| | | | KI 90G11 | - | 65(55) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | |
|-------------------------|--------------|----|----|--------|
| | 51 | 64 | 76 | 92 |
| STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | NA | NA | NA |
| | 0.55 | NA | NA | 2740 s |
| | 0.75 | NA | NA | 3190 s |
| | 1.15 | NA | NA | 3750 s |

Height Limiting Factor: s – permissible strength

[^]System SSF120.1 must utilise 92 mm studs only.

SSF120.2

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x16 mm FIBEROCK
AQUA-TOUGH
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-SS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 156 | 214 |
|-----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | TRACK SIZE | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSF120.2A | 2x16 mm FIBEROCK AQUA-TOUGH | 2x16 mm FIBEROCK AQUA-TOUGH | Nil | 54(44) | 58(48) |
| | | | KI 50G11 | 62(56) | 62(58) |
| | | | KI 75G11 | 64(58) | 64(59) |
| | | | KI 90G11 | 65(59) | 65(60) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

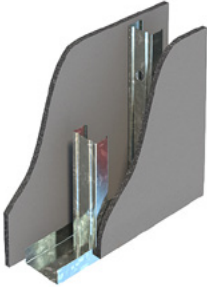
| STUD SPACING mm | 600 (NOGGED) | | | |
|-------------------------|--------------|--------|--------|--------|
| | 51 | 64 | 76 | 92 |
| STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA |
| | 0.55 | NA | NA | 2610 s |
| | 0.75 | NA | 2830 s | 3000s |
| | 1.15 | NA | 3510 s | 3600 s |

Height Limiting Factor: d – deflection, s – permissible strength

PERMAROCK® – STAGGERED STUD

SSP.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: Non-fire resistant lining
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: Non-fire resistant lining

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 117.5 | 175.5 |
|--------|---------------------|-----------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSP.1A | 1x12.5 mm PERMAROCK | 1x12.5 mm PERMAROCK | Nil | 41(34) | 42(36) |
| | | | KI 50G11 | 48(39) | 49(41) |
| | | | KI 75G11 | 49(40) | 50(42) |
| | | | KI 90G11 | 50(41) | 51(43) |
| SSP.1B | 1x12.5 mm PERMAROCK | 1x13 mm SHEETROCK ONE | Nil | 40(32) | 41(34) |
| | | | KI 50G11 | 47(37) | 48(39) |
| | | | KI 75G11 | 48(38) | 49(40) |
| | | | KI 90G11 | 49(39) | 50(41) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

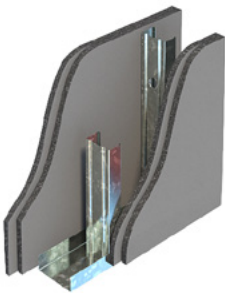
SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | |
|-------------------------|------|--------|--------|--------|
| | 51 | 64 | 76 | 92 |
| STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA |
| | 0.55 | NA | NA | 2610 s |
| | 0.75 | NA | 2830 s | 3000 s |
| | 1.15 | NA | 3510 s | 3600 s |

Height Limiting Factor: d – deflection, s – permissible strength

SSP.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2 x Non-fire resistant lining
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: 2 x Non-fire resistant lining

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 143 | 201 |
|--------|---------------------|-----------------------|-------------------|---|--------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSP.2A | 2x12.5 mm PERMAROCK | 2x12.5 mm PERMAROCK | Nil | 48(42) | 49(44) |
| | | | KI 50G11 | 57(50) | 58(52) |
| | | | KI 75G11 | 58(51) | 59(53) |
| | | | KI 90G11 | 59(52) | 60(54) |
| SSP.2B | 2x12.5 mm PERMAROCK | 2x13 mm SHEETROCK ONE | Nil | 47(40) | 48(42) |
| | | | KI 50G11 | 56(48) | 57(50) |
| | | | KI 75G11 | 57(49) | 58(51) |
| | | | KI 90G11 | 58(50) | 59(52) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | |
|-------------------------|------|--------|--------|--------|
| | 51 | 64 | 76 | 92 |
| STUD SIZE mm | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA |
| | 0.55 | NA | NA | 2610 s |
| | 0.75 | NA | 2830 s | 3000 s |
| | 1.15 | NA | 3510 s | 3600 s |

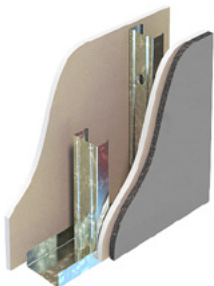
Height Limiting Factor: d – deflection, s – permissible strength

PERMAROCK® – STAGGERED STUD

SSP60.1

FIRE RESISTANCE LEVEL
NLB **-/60/60⁺**
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 130.5, 143 | 188.5, 201 |
|----------|---|---|-------------------|---|------------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSP60.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 53(44) | 55(47) |
| | | | KI 75G11 | 54(45) | 56(48) |
| | | | KI 90G11 | 55(46) | 57(49) |
| SSP60.1B | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 56(49) | 58(52) |
| | | | KI 75G11 | 57(50) | 59(53) |
| | | | KI 90G11 | 58(51) | 60(54) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL
In wet areas use MULTISTOP ONE or MULTISTOP ONE HI in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

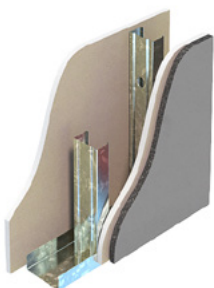
| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

SSP90.1

FIRE RESISTANCE LEVEL
NLB **-/90/90⁺**
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 136.5, 149 | 194.5, 207 |
|----------|---|---|-------------------|---|------------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSP90.1A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 55(46) | 57(49) |
| | | | KI 75G11 | 56(47) | 58(50) |
| | | | KI 90G11 | 57(48) | 59(51) |
| SSP90.1B | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | KI 50G11 | 57(50) | 59(53) |
| | | | KI 75G11 | 58(51) | 60(54) |
| | | | KI 90G11 | 59(52) | 61(55) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL
In wet areas use MULTISTOP ONE in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 | | | |
|-------------------------|------|--------|--------|--------|--------|
| STUD SIZE mm | | 51 | 64 | 76 | 92 |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| | 0.55 | NA | NA | 2610 s | 2740 s |
| | 0.75 | NA | 2830 s | 3000 s | 3190 s |
| | 1.15 | NA | 3510 s | 3600 s | 3750 s |

Height Limiting Factor: d – deflection, s – permissible strength

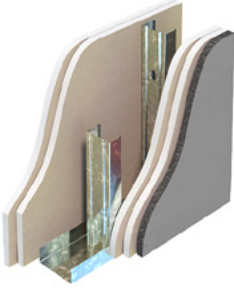
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

PERMAROCK® – STAGGERED STUD

SSP120.1

FIRE RESISTANCE LEVEL
NLB -/120/120
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Staggered steel studs
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 156.5, 169 | 214.5, 227 |
|-----------|---|---|-------------------|---|------------|
| | | | TRACK SIZE mm | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| SSP120.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | Nil | 50(45) | 52(48) |
| | | | KI 50G11 | 57(50) | 59(53) |
| | | | KI 75G11 | 58(51) | 60(54) |
| | | | KI 90G11 | 59(52) | 61(55) |
| SSP120.1B | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | Nil | 50(46) | 52(49) |
| | | | KI 50G11 | 59(54) | 61(57) |
| | | | KI 75G11 | 60(55) | 62(58) |
| | | | KI 90G11 | 61(56) | 63(59) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

In wet areas use MULTISTOP ONE or MULTISTOP ONE HI in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 | | | | |
|-------------------------|------|--------|--------|--------|----|
| | 51 | 64 | 76 | 92 | |
| BASE METAL THICKNESS mm | 0.50 | 2320 d | 2375 s | NA | NA |
| 0.55 | NA | NA | 2610 s | 2740 s | |
| 0.75 | NA | 2830 s | 3000 s | 3190 s | |
| 1.15 | NA | 3510 s | 3600 s | 3750 s | |

Height Limiting Factor: d – deflection, s – permissible strength

TWIN STUD

ST.1

NON-FIRE RATED



SYSTEM DESCRIPTION

- Side 1:** 1x10 mm non-fire resistant pbd
- Framing:** Twin steel studs
- Gap:** 20 mm
- Insulation:** Refer to table
- Side 2:** 1x10 mm non-fire resistant pbd

| ACOUSTIC RATINGS | | BASIS: RT&A TE405-20S03, SLR-SR-S-DS-01 | | Based on studs @ 600 mm ctrs | | | | | |
|------------------|------------------------|---|-------------------|---|----------|--------|--------|--------|--------|
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 168 | 192 | 224 | 340 | | |
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | | |
| ST.1A | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Nil | 33(25) | 34(26) | 35(27) | 37(29) | | |
| | | | KI 50G11 | One Side | KI 50G11 | 39(32) | 40(33) | 41(34) | 43(36) |
| | | | | | KI 75G11 | - | 41(33) | 42(34) | 44(36) |
| | | | | | KI 90G11 | - | - | 43(36) | 45(38) |
| | | | KI 50G11 | Both Sides | KI 50G11 | 41(34) | 42(35) | 43(36) | 45(38) |
| | | | | | KI 75G11 | - | 43(35) | 44(36) | 46(38) |
| KI 90G11 | - | - | | | 45(38) | 47(40) | | | |
| ST.1H | 1x10 mm SHEETROCK PLUS | 1x10 mm SHEETROCK PLUS | Nil | 41(34) | 42(35) | 43(35) | 45(37) | | |
| | | | KI 50G11 | One Side | KI 50G11 | 50(40) | 50(41) | 51(42) | 51(45) |
| | | | | | KI 75G11 | - | 51(41) | 51(42) | 52(45) |
| | | | | | KI 90G11 | - | - | 51(42) | 52(45) |
| | | | KI 50G11 | Both Sides | KI 50G11 | 53(43) | 53(44) | 54(45) | 54(48) |
| | | | | | KI 75G11 | - | 54(44) | 54(45) | 55(48) |
| KI 90G11 | - | - | | | 54(45) | 55(48) | | | |
| ST.1I | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK PLUS | Nil | 41(34) | 42(35) | 43(35) | 45(37) | | |
| | | | KI 50G11 | One Side | KI 50G11 | 49(39) | 50(41) | 51(42) | 51(44) |
| | | | | | KI 75G11 | - | 51(41) | 51(42) | 52(44) |
| | | | | | KI 90G11 | - | - | 51(42) | 52(45) |
| | | | KI 50G11 | Both Sides | KI 50G11 | 52(42) | 53(44) | 54(45) | 54(47) |
| | | | | | KI 75G11 | - | 54(44) | 54(45) | 55(47) |
| KI 90G11 | - | - | | | 54(45) | 55(48) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

| MAX WALL HEIGHTS | | NON-LOAD BEARING WALLS | | SERVICEABILITY PRESSURE: 0.25 kPa | | |
|-------------------------|------|------------------------|---------|-----------------------------------|---------|--|
| STUD SPACING mm | | 600 (NOGGED) | | | | |
| STUD SIZE mm | | 64 | 76 | 92 | 150 | |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA | |
| | 0.55 | NA | 3200 2d | 3610 2s | NA | |
| | 0.75 | 3130 d | 3580 2d | 4130 2d | 5330 2h | |
| | 1.15 | 3530 d | 4050 2d | 4690 2d | 5330 2h | |

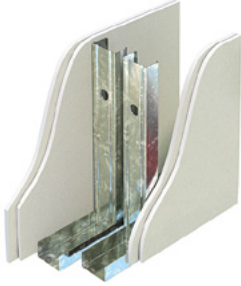
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2h – head track capacity (2 rows of noggings), 2s – strength (2 rows of noggings)

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

TWIN STUD

ST.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x10 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03, SLR-SR-S-DS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 188 | 212 | 244 | 360 | | |
|----------|------------------------|------------------------|-------------------|---------------------|----------|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | | |
| | | | INSULATION* | $R_w(R_w + C_{tr})$ | | | | | |
| ST.2A | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK ONE | Nil | 41(33) | 42(34) | 43(35) | 45(37) | | |
| | | | KI 50G11 | One Side | 47(40) | 48(41) | 49(42) | 51(44) | |
| | | | | | KI 75G11 | - | 49(41) | 50(42) | 52(44) |
| | | | | | KI 90G11 | - | - | 51(44) | 53(46) |
| | | | KI 50G11 | Both Sides | 49(42) | 50(43) | 51(44) | 53(46) | |
| | | | | | KI 75G11 | - | 51(43) | 52(44) | 54(46) |
| KI 90G11 | - | - | | | 53(46) | 55(48) | | | |
| ST.2H | 2x10 mm SHEETROCK PLUS | 2x10 mm SHEETROCK PLUS | Nil | 49(41) | 50(42) | 51(43) | 54(45) | | |
| | | | KI 50G11 | One Side | 58(47) | 58(49) | 59(50) | 59(52) | |
| | | | | | KI 75G11 | - | 58(49) | 59(50) | 60(53) |
| | | | | | KI 90G11 | - | - | 59(50) | 60(53) |
| | | | KI 50G11 | Both Sides | 61(50) | 61(52) | 62(53) | 62(55) | |
| | | | | | KI 75G11 | - | 62(52) | 62(53) | 63(56) |
| KI 90G11 | - | - | | | 62(53) | 63(56) | | | |
| ST.2I | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK PLUS | Nil | 49(41) | 50(42) | 51(43) | 54(45) | | |
| | | | KI 50G11 | One Side | 57(47) | 58(48) | 58(49) | 59(52) | |
| | | | | | KI 75G11 | - | 58(48) | 59(49) | 59(52) |
| | | | | | KI 90G11 | - | - | 59(49) | 60(52) |
| | | | KI 50G11 | Both Sides | 60(50) | 61(51) | 61(52) | 62(55) | |
| | | | | | KI 75G11 | - | 61(51) | 62(52) | 62(56) |
| KI 90G11 | - | - | | | 62(53) | 63(56) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3200 2d | 3610 2s | NA |
| | 0.75 | 3130 d | 3580 2d | 4130 2d | 5330 2h |
| | 1.15 | 3530 d | 4050 2d | 4690 2d | 5330 2h |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2h – head track capacity (2 rows of noggings), 2s – strength (2 rows of noggings)

TWIN STUD

ST.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 174 | 198 | 230 | 346 | |
|----------|--------------------------|--------------------------|----------------------|-------------------|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | | |
| ST.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Nil | 41(35) | 42(35) | 43(35) | 45(37) | |
| | | | KI 50G11 | One Side | 51(40) | 51(41) | 52(42) | 52(44) |
| | | | KI 75G11 | | - | 51(41) | 52(42) | 53(45) |
| | | | KI 90G11 | | - | - | 52(42) | 53(45) |
| | | | KI 50G11 | Both Sides | 54(43) | 54(44) | 55(45) | 55(47) |
| | | | KI 75G11 | | - | 54(44) | 55(45) | 56(48) |
| KI 90G11 | - | - | 55(45) | | 56(48) | | | |
| ST.3B | 1x13 mm WETSTOP | 1x13 mm WETSTOP | Nil | 42(36) | 43(36) | 44(36) | 46(38) | |
| | | | KI 50G11 | One Side | 52(41) | 53(42) | 53(43) | 54(46) |
| | | | KI 75G11 | | - | 53(42) | 53(44) | 54(46) |
| | | | KI 90G11 | | - | - | 53(44) | 54(46) |
| | | | KI 50G11 | Both Sides | 55(44) | 56(45) | 56(46) | 57(49) |
| | | | KI 75G11 | | - | 56(45) | 56(47) | 57(49) |
| KI 90G11 | - | - | 56(47) | | 57(49) | | | |
| ST.3K | 1x13 mm SHEETROCK ONE | 1x13 mm IMPACTSTOP | Nil | 43(36) | 44(37) | 45(37) | 47(39) | |
| | | | KI 50G11 | One Side | 53(42) | 54(43) | 54(45) | 55(47) |
| | | | KI 75G11 | | - | 54(43) | 54(45) | 55(47) |
| | | | KI 90G11 | | - | - | 55(45) | 55(47) |
| | | | KI 50G11 | Both Sides | 56(45) | 57(46) | 57(48) | 58(50) |
| | | | KI 75G11 | | - | 57(46) | 57(48) | 58(50) |
| KI 90G11 | - | - | 58(48) | | 58(50) | | | |
| ST.3L | 1x13 mm WETSTOP | 1x13 mm IMPACTSTOP | Nil | 44(37) | 45(37) | 46(38) | 48(39) | |
| | | | KI 50G11 | One Side | 54(43) | 54(44) | 55(45) | 55(48) |
| | | | KI 75G11 | | - | 55(44) | 55(45) | 56(48) |
| | | | KI 90G11 | | - | - | 55(46) | 56(48) |
| | | | KI 50G11 | Both Sides | 57(46) | 57(47) | 58(48) | 58(51) |
| | | | KI 75G11 | | - | 58(47) | 58(48) | 59(51) |
| KI 90G11 | - | - | 58(49) | | 59(51) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

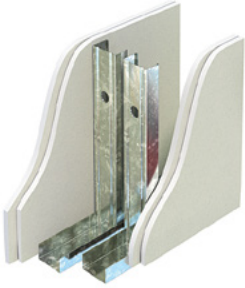
| MAX WALL HEIGHTS NON-LOAD BEARING WALLS | | SERVICEABILITY PRESSURE: 0.25 kPa | | | |
|---|------|-----------------------------------|---------|---------|---------|
| STUD SPACING mm | | 600 (NOGGED) | | | |
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

TWIN STUD

ST.4

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x13 mm non-fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 200 | 224 | 256 | 372 | |
|----------|-----------------------|-----------------------|-------------------|-------------------|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | | |
| ST.4A | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 50(42) | 51(43) | 52(44) | 55(45) | |
| | | | KI 50G11 | One Side | 57(47) | 58(49) | 58(49) | 58(52) |
| | | | KI 75G11 | | - | 59(50) | 59(50) | 59(53) |
| | | | KI 90G11 | | - | - | 60(51) | 60(54) |
| | | | KI 50G11 | Both Sides | 60(50) | 61(52) | 61(52) | 61(55) |
| | | | KI 75G11 | | - | 62(53) | 62(53) | 62(56) |
| KI 90G11 | - | - | 63(54) | | 63(57) | | | |
| ST.4B | 2x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 52(44) | 53(44) | 54(45) | 57(47) | |
| | | | KI 50G11 | One Side | 58(48) | 59(49) | 59(51) | 58(51) |
| | | | KI 75G11 | | - | 60(50) | 60(52) | 59(52) |
| | | | KI 90G11 | | - | - | 61(53) | 60(53) |
| | | | KI 50G11 | Both Sides | 61(51) | 62(52) | 62(54) | 61(54) |
| | | | KI 75G11 | | - | 63(53) | 63(55) | 62(55) |
| KI 90G11 | - | - | 64(56) | | 63(56) | | | |
| ST.4K | 2x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 53(44) | 54(45) | 55(46) | 58(48) | |
| | | | KI 50G11 | One Side | 59(49) | 60(51) | 60(52) | 61(54) |
| | | | KI 75G11 | | - | 61(52) | 61(53) | 62(55) |
| | | | KI 90G11 | | - | - | 62(54) | 63(56) |
| | | | KI 50G11 | Both Sides | 62(52) | 63(54) | 63(55) | 64(57) |
| | | | KI 75G11 | | - | 64(55) | 64(56) | 65(58) |
| KI 90G11 | - | - | 65(57) | | 66(59) | | | |
| ST.4L | 2x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 53(45) | 54(46) | 55(46) | 58(49) | |
| | | | KI 50G11 | One Side | 60(50) | 60(51) | 61(53) | 61(55) |
| | | | KI 75G11 | | - | 61(52) | 62(54) | 62(56) |
| | | | KI 90G11 | | - | - | 63(55) | 63(57) |
| | | | KI 50G11 | Both Sides | 63(53) | 63(54) | 64(56) | 64(58) |
| | | | KI 75G11 | | - | 64(55) | 65(57) | 65(59) |
| KI 90G11 | - | - | 66(58) | | 66(60) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

TWIN STUD

ST30.1

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 174 | 198 | 230 | 346 |
|---------|-----------------------|-----------------------|-------------------|-------------------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 |
| | | | INSULATION | $R_w(R_w+C_{tr})$ | | | |
| ST30.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 43(36) | 44(37) | 46(39) | 47(39) |
| ST30.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | Nil | 45(38) | 45(38) | 46(39) | 49(41) |
| ST30.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | Nil | 44(37) | 45(38) | 45(38) | 48(40) |
| ST30.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | Nil | 45(38) | 45(38) | 46(39) | 49(41) |
| ST30.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | 44(37) | 45(38) | 45(38) | 48(40) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

ST30.2

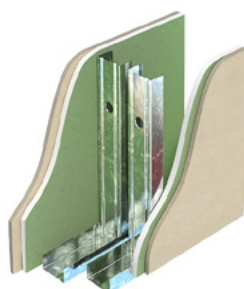
FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 186 | 210 | 242 | 358 |
|---------|---|---|-------------------|-------------------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 |
| | | | INSULATION | $R_w(R_w+C_{tr})$ | | | |
| ST30.2B | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | 50(42) | 51(42) | 54(45) | 49(41) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

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 Blue text indicates systems and products suitable for wet areas.

TWIN STUD

ST60.1

FIRE RESISTANCE LEVEL

NLB -/60/60*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | | | | | |
|---------|-----------------------|-----------------------|-------------------|------------|----------|--------|--------|--------|--------|
| | | | 174 | 198 | 230 | 346 | | | |
| | | | STUD SIZE mm | | | | | | |
| | | | 64 | 76 | 92 | 150 | | | |
| | | | INSULATION* | | | | | | |
| | | | $R_w(R_w+C_{tr})$ | | | | | | |
| ST60.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | KI 50G11 | One Side | 53(43) | 54(44) | 54(45) | 55(48) | |
| | | | | | KI 75G11 | - | 54(44) | 54(45) | 55(48) |
| | | | | | KI 90G11 | - | - | 55(46) | 55(48) |
| | | | KI 50G11 | Both Sides | 56(46) | 57(47) | 57(48) | 58(51) | |
| | | | | | KI 75G11 | - | 57(47) | 57(48) | 58(51) |
| | | | | | KI 90G11 | - | - | 58(49) | 58(51) |
| ST60.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | KI 50G11 | One Side | 55(45) | 55(46) | 56(47) | 56(49) | |
| | | | | | KI 75G11 | - | 56(46) | 56(47) | 56(49) |
| | | | | | KI 90G11 | - | - | 56(47) | 56(49) |
| | | | KI 50G11 | Both Sides | 58(48) | 58(49) | 59(50) | 59(52) | |
| | | | | | KI 75G11 | - | 59(49) | 59(50) | 59(52) |
| | | | | | KI 90G11 | - | - | 59(50) | 59(52) |
| ST60.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 50G11 | One Side | 54(44) | 55(45) | 55(46) | 56(49) | |
| | | | | | KI 75G11 | - | 55(45) | 55(46) | 56(49) |
| | | | | | KI 90G11 | - | - | 56(46) | 56(49) |
| | | | KI 50G11 | Both Sides | 57(47) | 58(48) | 58(49) | 59(52) | |
| | | | | | KI 75G11 | - | 58(48) | 58(49) | 59(52) |
| | | | | | KI 90G11 | - | - | 59(49) | 59(52) |
| ST60.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | KI 50G11 | One Side | 55(45) | 55(46) | 56(47) | 56(49) | |
| | | | | | KI 75G11 | - | 56(46) | 56(47) | 56(49) |
| | | | | | KI 90G11 | - | - | 56(47) | 56(49) |
| | | | KI 50G11 | Both Sides | 58(48) | 58(49) | 59(50) | 59(52) | |
| | | | | | KI 75G11 | - | 59(49) | 59(50) | 59(52) |
| | | | | | KI 90G11 | - | - | 59(50) | 59(52) |
| ST60.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | KI 50G11 | One Side | 54(44) | 55(45) | 55(46) | 56(49) | |
| | | | | | KI 75G11 | - | 55(45) | 55(46) | 56(49) |
| | | | | | KI 90G11 | - | - | 56(46) | 56(49) |
| | | | KI 50G11 | Both Sides | 57(47) | 58(48) | 58(49) | 59(52) | |
| | | | | | KI 75G11 | - | 58(48) | 58(49) | 59(52) |
| | | | | | KI 90G11 | - | - | 59(49) | 59(52) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

TWIN STUD

ST60.2

FIRE RESISTANCE LEVEL
 NLB **-/60/60***
 LB **30/30/30**
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIRESTOP
- Framing:** Twin steel studs
- Gap:** 20 mm
- Insulation:** Refer to table
- Side 2:** 1x13 mm fire resistant pbd + 1x13 mm non-fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 187 | 211 | 243 | 359 |
|---------|------------------|--|-------------------|------------|---|--------|--------|--------|
| | | | STUD SIZE mm | | 64 | 76 | 92 | 150 |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | | |
| ST60.2A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | KI 50G11 | Both Sides | 59(49) | 59(50) | 60(51) | 60(54) |
| | | | KI 75G11 | Both Sides | 60(50) | 61(51) | 61(53) | 62(55) |
| ST60.2B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | KI 50G11 | Both Sides | 59(49) | 60(50) | 60(52) | 61(54) |
| | | | KI 75G11 | Both Sides | 60(50) | 61(52) | 62(53) | 62(55) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

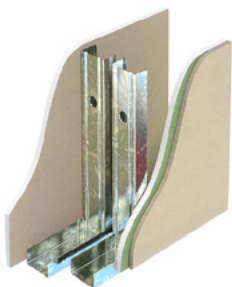
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

ST60.3

FIRE RESISTANCE LEVEL
 NLB **-/60/60***
 LB **30/30/30**
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIRESTOP
- Framing:** Twin steel studs
- Gap:** 20 mm
- Insulation:** Refer to table
- Side 2:** 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 180 | 204 | 236 | 352 |
|---------|------------------|---|-------------------|------------|---|--------|--------|--------|
| | | | STUD SIZE mm | | 64 | 76 | 92 | 150 |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | | |
| ST60.3B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | Both Sides | 59(49) | 60(51) | 60(52) | 61(54) |
| | | | KI 75G11 | Both Sides | 61(51) | 61(52) | 62(53) | 62(56) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

TWIN STUD

ST60.4

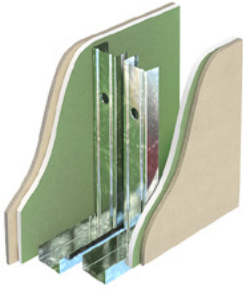
FIRE RESISTANCE LEVEL

NLB -/60/60*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x13 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD

Framing: Twin steel studs

Gap: 20 mm

Insulation: Refer to table

Side 2: 1x13 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 186 | 210 | 242 | 358 |
|---------|--|--|----------------------|---|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | |
| ST60.4B | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | One Side KI 50G11 | 58(48) | 59(49) | 59(50) | 60(53) |
| | | | KI 75G11 | - | 60(50) | 60(51) | 61(54) |
| | | | KI 90G11 | - | - | 62(52) | 62(55) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| BASE METAL THICKNESS mm | STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|-----------------|---------|--------------|---------|----|-----|
| | STUD SIZE mm | | 64 | 76 | 92 | 150 |
| | 0.50 | 2720 d | NA | NA | NA | |
| 0.55 | NA | 3240 2d | 3610 2s | NA | | |
| 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s | | |
| 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s | | |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

ST60.5

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd

Framing: Twin steel studs

Gap: 20 mm

Insulation: Refer to table

Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 187 | 211 | 243 | 359 |
|---------|--------------------------|--------------------------|-------------------|---|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 |
| | | | INSULATION | R _w (R _w +C _{tr}) | | | |
| ST60.5A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 48(41) | 49(42) | 50(42) | 52(44) |
| ST60.5B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 50(42) | 51(43) | 52(44) | 55(46) |
| ST60.5C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 50(42) | 50(42) | 51(43) | 54(45) |
| ST60.5D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | Nil | 50(42) | 51(43) | 52(44) | 55(46) |
| ST60.5E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | 50(42) | 50(42) | 51(43) | 54(45) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| BASE METAL THICKNESS mm | STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|-----------------|---------|--------------|---------|----|-----|
| | STUD SIZE mm | | 64 | 76 | 92 | 150 |
| | 0.50 | 2720 d | NA | NA | NA | |
| 0.55 | NA | 3240 2d | 3610 2s | NA | | |
| 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s | | |
| 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s | | |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

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Blue text indicates systems and products suitable for wet areas.

TWIN STUD

ST60.6

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60 ACR 20%
FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 180 | 204 | 236 | 352 |
|---------|-----------------------|-----------------------|-------------------|-------------------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 |
| | | | INSULATION | $R_w(R_w+C_{tr})$ | | | |
| ST60.6A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 46(39) | 47(40) | 48(40) | 51(42) |
| ST60.6B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | Nil | 48(41) | 48(41) | 49(42) | 52(44) |
| ST60.6C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | Nil | 47(40) | 48(40) | 49(41) | 51(43) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

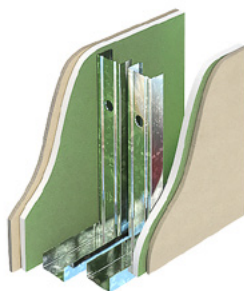
ST60.7

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60 ACR 20%
FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: 1x16 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 192 | 216 | 248 | 364 |
|---------|---|---|-------------------|-------------------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 |
| | | | INSULATION | $R_w(R_w+C_{tr})$ | | | |
| ST60.7B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | 51(43) | 52(43) | 54(44) | 57(46) |

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

TWIN STUD

ST90.1

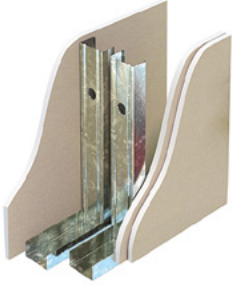
FIRE RESISTANCE LEVEL

NLB -/90/90*

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | | | | | |
|---------|-----------------------|-----------------------|-------------------|------------|---|--------|--------|--------|--------|
| | | | 187 | 211 | 243 | 359 | | | |
| | | | STUD SIZE mm | | | | | | |
| | | | 64 | 76 | 92 | 150 | | | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | | | |
| ST90.1A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | KI 50G11 | One Side | 57(47) | 58(48) | 58(49) | 59(52) | |
| | | | | | KI 75G11 | - | 59(49) | 59(50) | 60(53) |
| | | | | | KI 90G11 | - | - | 60(51) | 61(54) |
| | | | KI 50G11 | Both Sides | 60(50) | 61(51) | 61(52) | 62(55) | |
| | | | | | KI 75G11 | 61(51) | 62(52) | 62(53) | 63(56) |
| | | | | | KI 90G11 | - | - | 63(54) | 64(57) |
| ST90.1B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | KI 50G11 | One Side | 60(49) | 60(50) | 61(51) | 61(54) | |
| | | | | | KI 75G11 | - | 61(51) | 62(52) | 62(55) |
| | | | | | KI 90G11 | - | - | 63(53) | 63(56) |
| | | | KI 50G11 | Both Sides | 63(52) | 63(53) | 64(54) | 64(57) | |
| | | | | | KI 75G11 | 64(53) | 64(54) | 65(55) | 65(58) |
| | | | | | KI 90G11 | - | - | 66(56) | 66(59) |
| ST90.1C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | KI 50G11 | One Side | 58(48) | 59(49) | 59(50) | 60(53) | |
| | | | | | KI 75G11 | - | 60(50) | 60(51) | 61(54) |
| | | | | | KI 90G11 | - | - | 61(52) | 62(55) |
| | | | KI 50G11 | Both Sides | 61(51) | 62(52) | 62(53) | 63(56) | |
| | | | | | KI 75G11 | 62(52) | 63(53) | 63(54) | 64(57) |
| | | | | | KI 90G11 | - | - | 64(55) | 65(58) |
| ST90.1D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | KI 50G11 | One Side | 60(49) | 60(50) | 61(51) | 61(54) | |
| | | | | | KI 75G11 | - | 61(51) | 62(52) | 62(55) |
| | | | | | KI 90G11 | - | - | 63(53) | 63(56) |
| | | | KI 50G11 | Both Sides | 63(52) | 63(53) | 64(54) | 64(57) | |
| | | | | | KI 75G11 | 64(53) | 64(54) | 65(55) | 65(58) |
| | | | | | KI 90G11 | - | - | 66(56) | 66(59) |
| ST90.1E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | KI 50G11 | One Side | 58(48) | 59(49) | 59(50) | 60(53) | |
| | | | | | KI 75G11 | - | 60(50) | 60(51) | 61(54) |
| | | | | | KI 90G11 | - | - | 61(52) | 62(55) |
| | | | KI 50G11 | Both Sides | 61(51) | 62(52) | 62(53) | 63(56) | |
| | | | | | KI 75G11 | 62(52) | 63(53) | 63(54) | 64(57) |
| | | | | | KI 90G11 | - | - | 64(55) | 65(58) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls

TWIN STUD

ST90.2

FIRE RESISTANCE LEVEL
 NLB **-/90/90+**
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | | | | |
|---------|-----------------------|-----------------------|---|----------|--------|--------|--------|--------|
| | | | 180 | 204 | 236 | 352 | | |
| | | | STUD SIZE mm | | | | | |
| | | | 64 | 76 | 92 | 150 | | |
| | | | INSULATION* | | | | | |
| | | | R _w (R _w +C _{tr}) | | | | | |
| ST90.2A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | One Side | KI 50G11 | 55(46) | 55(47) | 56(49) | 56(51) |
| | | | | KI 75G11 | - | 56(48) | 57(50) | 57(52) |
| | | | | KI 90G11 | - | - | 58(51) | 58(53) |
| | | | Both Sides | KI 50G11 | 58(49) | 58(50) | 59(52) | 59(54) |
| | | | | KI 75G11 | 59(50) | 59(51) | 60(53) | 60(55) |
| ST90.2B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | One Side | KI 50G11 | 57(48) | 58(49) | 58(51) | 59(53) |
| | | | | KI 75G11 | - | 59(50) | 59(52) | 60(54) |
| | | | | KI 90G11 | - | - | 60(53) | 61(55) |
| | | | Both Sides | KI 50G11 | 60(51) | 61(52) | 61(54) | 62(56) |
| | | | | KI 75G11 | 61(52) | 62(53) | 62(55) | 63(57) |
| ST90.2C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | One Side | KI 50G11 | 56(47) | 57(48) | 57(50) | 58(52) |
| | | | | KI 75G11 | - | 58(49) | 58(51) | 59(53) |
| | | | | KI 90G11 | - | - | 59(52) | 60(54) |
| | | | Both Sides | KI 50G11 | 59(50) | 60(51) | 60(53) | 61(55) |
| | | | | KI 75G11 | 60(51) | 61(52) | 61(54) | 62(56) |
| | | | | | | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | |
|-------------------------|--------------|---------|---------|---------|
| | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | | | | |
| 0.50 | 2720 d | NA | NA | NA |
| 0.55 | NA | 3240 2d | 3610 2s | NA |
| 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

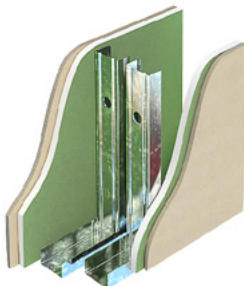
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

ST90.3

FIRE RESISTANCE LEVEL
 NLB **-/90/90+**
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109,



SYSTEM DESCRIPTION

Side 1: 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | | | | |
|---------|---|---|---|----------|--------|--------|--------|--------|
| | | | 192 | 216 | 248 | 364 | | |
| | | | STUD SIZE mm | | | | | |
| | | | 64 | 76 | 92 | 150 | | |
| | | | INSULATION* | | | | | |
| | | | R _w (R _w +C _{tr}) | | | | | |
| ST90.3B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | One Side | KI 50G11 | 60(50) | 61(51) | 61(52) | 62(54) |
| | | | | KI 75G11 | - | 62(52) | 63(53) | 63(56) |
| | | | | KI 90G11 | - | - | 64(54) | 64(57) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

+ Must include specified minimum KI 50G11 in cavity to achieve FRL

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | |
|-------------------------|--------------|---------|---------|---------|
| | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | | | | |
| 0.50 | 2720 d | NA | NA | NA |
| 0.55 | NA | 3240 2d | 3610 2s | NA |
| 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

TWIN STUD

ST120.1

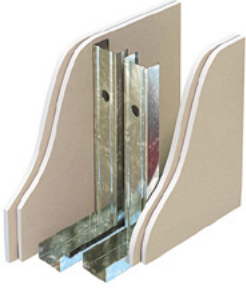
FIRE RESISTANCE LEVEL

NLB -/120/120

LB 90/90/90

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 200 | 224 | 256 | 372 | |
|----------|-----------------------|-----------------------|-------------------|-------------------|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | | |
| ST120.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 53(45) | 54(45) | 55(46) | 58(49) | |
| | | | KI 50G11 | One Side | 59(50) | 60(51) | 60(51) | 61(55) |
| | | | KI 75G11 | | - | 61(52) | 61(52) | 62(56) |
| | | | KI 90G11 | | - | - | 62(53) | 63(57) |
| | | | KI 50G11 | Both Sides | 62(53) | 63(54) | 63(54) | 64(58) |
| | | | KI 75G11 | | - | 64(55) | 64(55) | 65(59) |
| KI 90G11 | - | - | 65(56) | | 66(60) | | | |
| ST120.1B | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 55(46) | 56(47) | 57(48) | 60(50) | |
| | | | KI 50G11 | One Side | 61(52) | 62(53) | 62(54) | 63(57) |
| | | | KI 75G11 | | - | 63(54) | 63(55) | 64(58) |
| | | | KI 90G11 | | - | - | 64(56) | 65(59) |
| | | | KI 50G11 | Both Sides | 64(55) | 65(56) | 65(57) | 66(60) |
| | | | KI 75G11 | | - | 66(57) | 66(58) | 67(61) |
| KI 90G11 | - | - | 67(59) | | 68(62) | | | |
| ST120.1C | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 54(46) | 55(46) | 56(47) | 59(50) | |
| | | | KI 50G11 | One Side | 60(51) | 61(52) | 61(53) | 62(56) |
| | | | KI 75G11 | | - | 62(53) | 62(54) | 63(57) |
| | | | KI 90G11 | | - | - | 63(55) | 64(58) |
| | | | KI 50G11 | Both Sides | 63(54) | 64(55) | 64(56) | 65(59) |
| | | | KI 75G11 | | - | 65(56) | 65(57) | 66(60) |
| KI 90G11 | - | - | 66(58) | | 67(61) | | | |
| ST120.1D | 2x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 55(46) | 56(47) | 57(48) | 60(50) | |
| | | | KI 50G11 | One Side | 61(52) | 62(53) | 62(54) | 63(57) |
| | | | KI 75G11 | | - | 63(54) | 63(55) | 64(58) |
| | | | KI 90G11 | | - | - | 64(56) | 65(59) |
| | | | KI 50G11 | Both Sides | 64(55) | 65(56) | 65(57) | 66(60) |
| | | | KI 75G11 | | - | 66(57) | 66(58) | 67(61) |
| KI 90G11 | - | - | 67(59) | | 68(62) | | | |
| ST120.1E | 2x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 54(46) | 55(46) | 56(47) | 59(50) | |
| | | | KI 50G11 | One Side | 60(51) | 61(52) | 61(53) | 62(56) |
| | | | KI 75G11 | | - | 62(53) | 62(54) | 63(57) |
| | | | KI 90G11 | | - | - | 63(55) | 64(58) |
| | | | KI 50G11 | Both Sides | 63(54) | 64(55) | 64(56) | 65(59) |
| | | | KI 75G11 | | - | 65(56) | 65(57) | 66(60) |
| KI 90G11 | - | - | 66(58) | | 67(61) | | | |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 – 75 mm glasswool insulation 11 kg/m³ densityKI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

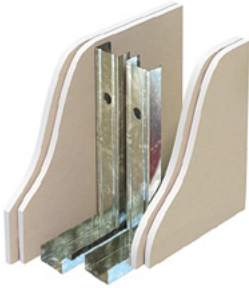
*Refer Rondo for maximum heights for load bearing walls

TWIN STUD

ST120.2

FIRE RESISTANCE LEVEL
 NLB **-/120/120**
 LB **120/120/120** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 2x16 mm fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S03

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 212 | 236 | 268 | 384 | |
|----------|-----------------------|-----------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| ST120.2A | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | 52(44) | 53(45) | 54(46) | 58(49) | |
| | | | KI 50G11 | One Side | 61(51) | 61(52) | 62(53) | 62(55) |
| | | | KI 75G11 | | - | 62(53) | 63(54) | 63(56) |
| | | | KI 90G11 | | - | - | 64(55) | 64(57) |
| | | | KI 50G11 | Both Sides | 64(54) | 64(55) | 65(56) | 65(58) |
| | | | KI 75G11 | | - | 65(56) | 66(57) | 66(59) |
| KI 90G11 | - | - | 67(58) | | 67(60) | | | |
| ST120.2B | 2x16 mm MULTISTOP ONE | 2x16 mm MULTISTOP ONE | Nil | 53(46) | 54(47) | 55(48) | 59(51) | |
| | | | KI 50G11 | One Side | 61(53) | 62(54) | 62(55) | 63(57) |
| | | | KI 75G11 | | - | 63(55) | 63(56) | 64(58) |
| | | | KI 90G11 | | - | - | 64(57) | 65(59) |
| | | | KI 50G11 | Both Sides | 64(56) | 65(57) | 65(58) | 66(60) |
| | | | KI 75G11 | | - | 66(58) | 66(59) | 67(61) |
| KI 90G11 | - | - | 67(60) | | 68(62) | | | |
| ST120.2C | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | Nil | 53(45) | 54(46) | 55(47) | 59(50) | |
| | | | KI 50G11 | One Side | 61(52) | 61(53) | 62(54) | 62(56) |
| | | | KI 75G11 | | - | 62(54) | 63(55) | 63(57) |
| | | | KI 90G11 | | - | - | 64(56) | 64(58) |
| | | | KI 50G11 | Both Sides | 64(55) | 64(56) | 65(57) | 65(59) |
| | | | KI 75G11 | | - | 65(57) | 66(58) | 66(60) |
| KI 90G11 | - | - | 67(59) | | 67(61) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2750 d | NA | NA | NA |
| | 0.55 | NA | 3250 2d | 3610 2s | NA |
| | 0.75 | 3280 2d | 3870 2d | 4200 2d | 5370 2s |
| | 1.15 | 3590 2d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

TWIN STUD

ST180.4

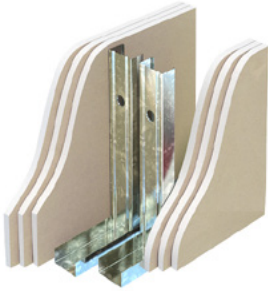
FIRE RESISTANCE LEVEL

NLB -/180/180

LB 120/120/120

FROM BOTH SIDES

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 3x16 mm fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TK778-15F01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 244 | 268 | 300 | 416 | |
|----------|-----------------------|-----------------------|-------------------|-------------------|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | | |
| ST180.4A | 3x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | 57(52) | 58(53) | 59(54) | 61(58) | |
| | | | KI 50G11 | One Side | 65(58) | 66(59) | 67(60) | 69(64) |
| | | | KI 75G11 | | 65(58) | 66(59) | 67(60) | 69(64) |
| | | | KI 90G11 | | 65(58) | 66(59) | 67(60) | 69(64) |
| | | | KI 50G11 | Both Sides | 68(61) | 69(62) | 70(63) | 72(67) |
| | | | KI 75G11 | | - | 69(62) | 70(63) | 72(67) |
| | | | KI 90G11 | | - | - | 70(63) | 72(67) |
| ST180.4B | 3x16 mm MULTISTOP ONE | 3x16 mm MULTISTOP ONE | Nil | 58(53) | 59(54) | 60(55) | 62(59) | |
| | | | KI 50G11 | One Side | 66(59) | 67(60) | 68(61) | 70(65) |
| | | | KI 75G11 | | 66(59) | 67(60) | 68(61) | 70(65) |
| | | | KI 90G11 | | 66(59) | 67(60) | 68(61) | 70(65) |
| | | | KI 50G11 | Both Sides | 69(62) | 70(63) | 71(64) | 73(68) |
| | | | KI 75G11 | | - | 70(63) | 71(64) | 73(68) |
| | | | KI 90G11 | | - | - | 71(64) | 73(68) |
| ST180.4C | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | Nil | 57(52) | 58(53) | 59(54) | 61(58) | |
| | | | KI 50G11 | One Side | 65(58) | 66(59) | 67(60) | 69(64) |
| | | | KI 75G11 | | 65(58) | 66(59) | 67(60) | 69(64) |
| | | | KI 90G11 | | 65(58) | 66(59) | 67(60) | 69(64) |
| | | | KI 50G11 | Both Sides | 68(61) | 69(62) | 70(63) | 72(67) |
| | | | KI 75G11 | | - | 69(62) | 70(63) | 72(67) |
| | | | KI 90G11 | | - | - | 70(63) | 72(67) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|--------|--------|--------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2300 f | NA | NA | NA |
| | 0.55 | NA | 2700 f | 3500 f | NA |
| | 0.75 | 2700 f | 3000 f | 3500 f | 5000 f |
| | 1.15 | 3000 f | 3500 f | 4000 f | 5900 f |

Height Limiting Factor: f – fire height

*Refer Rondo for maximum heights for load bearing walls

FIBEROCK® AQUA-TOUGH™ – TWIN STUD

STF.3

NON-FIRE RATED



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIBEROCK AQUA-TOUGH
- Framing:** Twin steel studs
- Gap:** 20 mm
- Insulation:** Refer to table
- Side 2:** 1x13 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-DS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 174 | 198 | 230 | 346 | |
|--------|-----------------------------|-----------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| STF.3A | 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 45(38) | 45(39) | 46(40) | 47(42) | |
| | | | KI 50G11 | One Side | 53(43) | 54(44) | 55(45) | 56(48) |
| | | | | | - | 55(45) | 56(46) | 57(49) |
| | | | | | - | - | 56(46) | 57(49) |
| | | | KI 50G11 | Both Sides | 55(45) | 56(46) | 57(47) | 58(50) |
| | | | | | - | 57(47) | 58(48) | 59(51) |
| - | - | 59(50) | | | 60(53) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

STF30.1

FIRE RESISTANCE LEVEL
 NLB -/30/30
 FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIBEROCK AQUA-TOUGH
- Framing:** Twin steel studs
- Gap:** 20 mm
- Insulation:** Refer to table
- Side 2:** 2x13 mm FIBEROCK AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-DS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 187 | 211 | 243 | 359 | |
|----------|-----------------------------|-----------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| STF30.1A | 1x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 49(41) | 50(42) | 51(43) | 52(48) | |
| | | | KI 50G11 | One Side | 58(48) | 59(50) | 60(51) | 61(54) |
| | | | | | - | 60(51) | 61(52) | 62(55) |
| | | | | | - | - | 61(52) | 62(55) |
| | | | KI 50G11 | Both Sides | 60(50) | 61(51) | 62(52) | 63(56) |
| | | | | | 61(51) | 62(52) | 63(53) | 64(57) |
| - | - | 64(54) | | | 65(58) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

FIBEROCK® AQUA-TOUGH™ – TWIN STUD

STF60.1

FIRE RESISTANCE LEVEL
NLB –/60/60
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK
AQUA-TOUGH
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-DS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 180 | 204 | 236 | 352 | | |
|----------|-----------------------------------|-----------------------------------|-------------------|-------------------|----------|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | | |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | | | |
| STF60.1A | 1x16 mm FIBEROCK AQUA-TOUGH | 1x16 mm FIBEROCK AQUA-TOUGH | Nil | 48(40) | 48(41) | 49(42) | 50(46) | | |
| | | | KI 50G11 | One Side | 57(47) | 58(49) | 59(50) | 60(53) | |
| | | | | | - | 59(50) | 60(51) | 61(54) | |
| | | | | | - | - | 60(51) | 61(54) | |
| | | | KI 50G11 | Both Sides | 59(49) | 60(50) | 61(51) | 62(55) | |
| | | | | | KI 75G11 | 60(50) | 61(51) | 62(52) | 63(56) |
| | | | | | KI 90G11 | - | - | 63(53) | 64(57) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2750 s | NA | NA | NA |
| | 0.55 | NA | 3250 2d | 3610 2s | NA |
| | 0.75 | 3280 d | 3870 2d | 4200 2d | 5370 2s |
| | 1.15 | 3590 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, s – permissible strength, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

STF90.1[^]

FIRE RESISTANCE LEVEL
NLB –/90/90
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK
AQUA-TOUGH
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-DS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 200 | 224 | 256 | 372 | | |
|----------|-----------------------------------|-----------------------------------|-------------------|-------------------|----------|--------|--------|---|---|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | | |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | | | |
| STF90.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 56(47) | 57(48) | - | - | | |
| | | | KI 50G11 | One Side | 65(54) | 66(55) | - | - | |
| | | | | | - | 67(56) | - | - | |
| | | | | | - | - | - | - | |
| | | | KI 50G11 | Both Sides | 67(56) | 68(57) | - | - | |
| | | | | | KI 75G11 | - | 69(58) | - | - |
| | | | | | KI 90G11 | - | - | - | - |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|----|-----|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | NA | NA |
| | 0.75 | 3250 d | 3820 2d | NA | NA |
| | 1.15 | 3580 d | 4050 2d | NA | NA |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings)

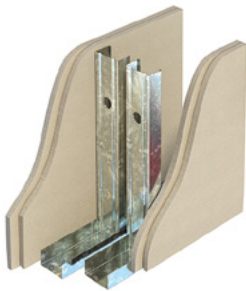
[^]System STF90.1 must utilise 64 mm or 76 mm studs only.

FIBEROCK® AQUA-TOUGH™ – TWIN STUD

STF120.1[^]

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK
AQUA-TOUGH
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-DS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 200 | 224 | 256 | 372 | |
|-----------|-----------------------------------|-----------------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| STF120.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | - | - | 57(51) | 58(52) | |
| | | | KI 50G11 | One Side | - | - | 67(58) | 68(60) |
| | | | | | - | - | 68(59) | 69(61) |
| | | | | | - | - | 68(59) | 69(61) |
| | | | KI 50G11 | Both Sides | - | - | 69(60) | 70(62) |
| | | | | | - | - | 70(61) | 71(63) |
| - | - | 71(62) | | | 72(64) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|----|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | NA | NA | NA | NA |
| | 0.55 | NA | NA | 3610 2s | NA |
| | 0.75 | NA | NA | 4810 2d | 5370 2s |
| | 1.15 | NA | NA | 4690 2d | 6810 3s |

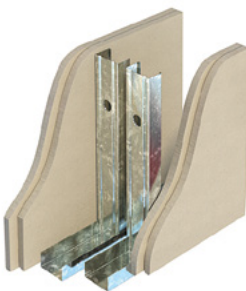
Height Limiting Factor: **2d** – deflection (2 rows of noggings), **2s** – strength (2 rows of noggings),
3s – strength (3 rows of noggings)

*System STF120.1 must utilise 92 mm or 150 mm studs only.

STF120.2

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x16 mm FIBEROCK
AQUA-TOUGH
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-S-DS-01

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 212 | 236 | 268 | 384 | |
|-----------|-----------------------------------|-----------------------------------|-------------------|---|--------|--------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | 150 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| STF120.2A | 2x16 mm FIBEROCK AQUA-TOUGH | 2x16 mm FIBEROCK AQUA-TOUGH | Nil | 58(49) | 59(50) | 60(53) | 61(54) | |
| | | | KI 50G11 | One Side | 67(56) | 68(57) | 69(60) | 70(62) |
| | | | | | - | 69(58) | 70(61) | 71(63) |
| | | | | | - | - | 70(61) | 71(63) |
| | | | KI 50G11 | Both Sides | 69(58) | 70(59) | 71(62) | 72(64) |
| | | | | | - | 71(60) | 72(63) | 73(65) |
| - | - | 73(64) | | | 74(66) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

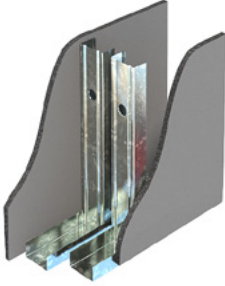
| STUD SPACING mm | | 600 (NOGGED) | | | |
|-------------------------|------|--------------|---------|---------|---------|
| STUD SIZE mm | | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2750 d | NA | NA | NA |
| | 0.55 | NA | 3250 2d | 3610 2s | NA |
| | 0.75 | 3280 d | 3870 2d | 4200 2d | 5370 2s |
| | 1.15 | 3590 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: **d** – deflection, **s** – permissible strength, **2d** – deflection (2 rows of noggings), **2s** – strength (2 rows of noggings),
3s – strength (3 rows of noggings)

PERMAROCK® – TWIN STUD

STP.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: Non-fire resistant lining
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: Non-fire resistant lining

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | | 173.5 | 197.5 | 229.5 |
|----------|------------------------|--------------------------|-------------------|----------|---|--------|--------|
| | | | STUD SIZE mm | | 64 | 76 | 92 |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | |
| STP.1A | 1x12.5 mm PERMAROCK | 1x12.5 mm PERMAROCK | Nil | | 44(36) | 44(37) | 45(38) |
| | | | One Side | KI 50G11 | 54(44) | 54(45) | 55(46) |
| | | | | KI 75G11 | - | 54(45) | 55(46) |
| | | | | KI 90G11 | - | - | 55(46) |
| | | | Both Sides | KI 50G11 | 57(48) | 57(48) | 58(49) |
| | | | | KI 75G11 | - | 57(48) | 58(49) |
| KI 90G11 | - | - | | 58(49) | | | |
| STP.1B | 1x12.5 mm PERMAROCK | 1x13 mm SHEETROCK ONE | Nil | | 43(34) | 43(35) | 44(36) |
| | | | One Side | KI 50G11 | 53(42) | 53(43) | 54(44) |
| | | | | KI 75G11 | - | 53(43) | 54(44) |
| | | | | KI 90G11 | - | - | 54(44) |
| | | | Both Sides | KI 50G11 | 56(46) | 56(46) | 57(47) |
| | | | | KI 75G11 | - | 56(46) | 57(47) |
| KI 90G11 | - | - | | 57(47) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

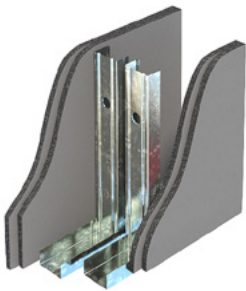
SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

STP.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2 x Non-fire resistant lining
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2 x Non-fire resistant lining

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | | 199 | 223 | 255 |
|----------|------------------------|--------------------------|-------------------|----------|---|--------|--------|
| | | | STUD SIZE mm | | 64 | 76 | 92 |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | |
| STP.2A | 2x12.5 mm PERMAROCK | 2x12.5 mm PERMAROCK | Nil | | 55(47) | 56(48) | 56(49) |
| | | | One Side | KI 50G11 | 62(53) | 63(54) | 63(55) |
| | | | | KI 75G11 | - | 63(54) | 63(55) |
| | | | | KI 90G11 | - | - | 63(55) |
| | | | Both Sides | KI 50G11 | 66(57) | 66(57) | 66(58) |
| | | | | KI 75G11 | - | 66(57) | 66(58) |
| KI 90G11 | - | - | | 66(58) | | | |
| STP.2B | 2x12.5 mm PERMAROCK | 2x13 mm SHEETROCK ONE | Nil | | 54(45) | 55(46) | 55(47) |
| | | | One Side | KI 50G11 | 61(51) | 62(52) | 62(53) |
| | | | | KI 75G11 | - | 62(52) | 62(53) |
| | | | | KI 90G11 | - | - | 62(53) |
| | | | Both Sides | KI 50G11 | 65(55) | 65(55) | 65(56) |
| | | | | KI 75G11 | - | 65(55) | 65(56) |
| KI 90G11 | - | - | | 65(56) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS NON-LOAD BEARING WALLS

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | | |
|-------------------------|--------------|--------|---------|---------|---------|
| | STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s | NA |
| | 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| | 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

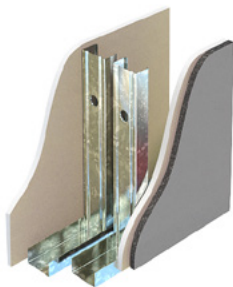
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

PERMAROCK® – TWIN STUD

STP60.1

FIRE RESISTANCE LEVEL
 NLB **-/60/60***
 LB **30/30/30**
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | | | | |
|----------|--|--|---|------------|------------|--------|--------|
| | | | 186.5, 199 | 210.5, 223 | 242.5, 255 | | |
| | | | STUD SIZE mm | | | | |
| | | | 64 | 76 | 92 | | |
| | | | INSULATION* | | | | |
| | | | R _w (R _w +C _{tr}) | | | | |
| STP60.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | One Side | KI 50G11 | 60(50) | 60(51) | 60(52) |
| | | | | KI 75G11 | - | 61(51) | 61(52) |
| | | | | KI 90G11 | - | - | 61(52) |
| | | | Both Sides | KI 50G11 | 63(54) | 63(54) | 63(55) |
| | | | | KI 75G11 | - | 64(54) | 64(55) |
| | | | | KI 90G11 | - | - | 64(55) |
| STP60.1B | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | 1x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | One Side | KI 50G11 | 60(53) | 61(54) | 62(55) |
| | | | | KI 75G11 | - | 62(54) | 63(55) |
| | | | | KI 90G11 | - | - | 63(55) |
| | | | Both Sides | KI 50G11 | 65(57) | 65(57) | 65(58) |
| | | | | KI 75G11 | - | 66(57) | 66(58) |
| | | | | KI 90G11 | - | - | 66(58) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density
 + Must include specified minimum KI 50G11 in cavity to achieve FRL
 In wet areas use MULTISTOP ONE or MULTISTOP ONE HI in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | |
|-------------------------|--------------|--------|---------|---------|
| | 64 | 76 | 92 | 150 |
| STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2720 d | NA | NA |
| | 0.55 | NA | 3240 2d | 3610 2s |
| | 0.75 | 3250 d | 3820 2d | 4180 2d |
| | 1.15 | 3580 d | 4050 2d | 4690 2d |

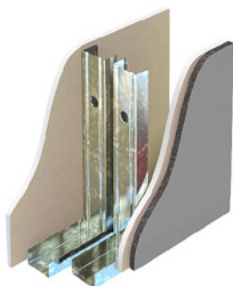
Height Limiting Factor: d – deflection, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

STP90.1

FIRE RESISTANCE LEVEL
 NLB **-/90/90***
 LB **60/60/60** ACR 20%
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | | | | |
|----------|--|--|---|------------|------------|--------|--------|
| | | | 192.5, 205 | 216.5, 229 | 248.5, 261 | | |
| | | | STUD SIZE mm | | | | |
| | | | 64 | 76 | 92 | | |
| | | | INSULATION* | | | | |
| | | | R _w (R _w +C _{tr}) | | | | |
| STP90.1A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | One Side | KI 50G11 | 62(52) | 62(53) | 62(54) |
| | | | | KI 75G11 | - | 63(53) | 63(54) |
| | | | | KI 90G11 | - | - | 63(54) |
| | | | Both Sides | KI 50G11 | 65(56) | 65(56) | 65(57) |
| | | | | KI 75G11 | - | 66(56) | 66(57) |
| | | | | KI 90G11 | - | - | 66(57) |
| STP90.1B | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | 1x16 mm FIRESTOP + 1x12.5 mm PERMAROCK | One Side | KI 50G11 | 61(54) | 62(55) | 63(56) |
| | | | | KI 75G11 | - | 63(55) | 64(56) |
| | | | | KI 90G11 | - | - | 64(56) |
| | | | Both Sides | KI 50G11 | 66(58) | 66(58) | 66(59) |
| | | | | KI 75G11 | - | 67(58) | 67(59) |
| | | | | KI 90G11 | - | - | 67(59) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density
 + Must include specified minimum KI 50G11 in cavity to achieve FRL
 In wet areas use MULTISTOP ONE in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| STUD SPACING mm | 600 (NOGGED) | | | |
|-------------------------|--------------|--------|---------|---------|
| | 64 | 76 | 92 | 150 |
| STUD SIZE mm | 64 | 76 | 92 | 150 |
| BASE METAL THICKNESS mm | 0.50 | 2750 s | NA | NA |
| | 0.55 | NA | 3250 2d | 3610 2s |
| | 0.75 | 3280 d | 3870 2d | 4200 2d |
| | 1.15 | 3590 d | 4050 2d | 4690 2d |

Height Limiting Factor: d – deflection, s – permissible strength, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

*Refer Rondo for maximum heights for load bearing walls with ACR 20%

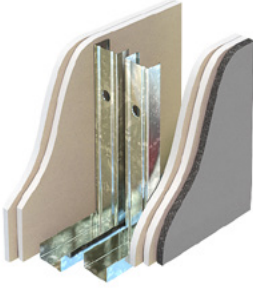
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

PERMAROCK® – TWIN STUD

STP120.1

FIRE RESISTANCE LEVEL
 NLB -/120/120
 LB 90/90/90
 FROM BOTH SIDES

FRL Basis: FC16109



SYSTEM DESCRIPTION

Side 1: Refer to table
Framing: Twin steel studs
Gap: 20 mm
Insulation: Refer to table
Side 2: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TK778-16F02

Based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 212.5, 225 | 236.5, 249 | 268.5, 281 | | |
|-----------|--|--|-------------------|---|------------|------------|--------|--------|
| | | | STUD SIZE mm | 64 | 76 | 92 | | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | | | |
| STP120.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | Nil | 53(45) | 53(46) | 53(47) | | |
| | | | KI 50G11 | One Side | 63(53) | 63(54) | 63(55) | |
| | | | | | KI 75G11 | - | 64(54) | 64(55) |
| | | | | | KI 90G11 | - | - | 64(55) |
| | | | KI 50G11 | Both Sides | 66(57) | 66(57) | 66(58) | |
| | | | | | KI 75G11 | - | 67(57) | 67(58) |
| KI 90G11 | - | - | | | 67(58) | | | |
| STP120.1B | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | 2x13 mm FIRESTOP + 1x12.5 mm PERMAROCK | Nil | 57(51) | 58(52) | 59(53) | | |
| | | | KI 50G11 | One Side | 64(57) | 65(58) | 66(59) | |
| | | | | | KI 75G11 | - | 66(58) | 67(59) |
| | | | | | KI 90G11 | - | - | 67(59) |
| | | | KI 50G11 | Both Sides | 69(61) | 69(61) | 69(62) | |
| | | | | | KI 75G11 | - | 70(61) | 70(62) |
| KI 90G11 | - | - | | | 70(62) | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density

In wet areas use MULTISTOP ONE or MULTISTOP ONE HI in place of FIRESTOP

MAX WALL HEIGHTS NON-LOAD BEARING WALLS*

SERVICEABILITY PRESSURE: 0.25 kPa

| BASE METAL THICKNESS mm | 600 (NOGGED) | | | |
|-------------------------|-----------------|---------|---------|---------|
| | STUD SPACING mm | 64 | 76 | 92 |
| 0.50 | 2720 d | NA | NA | NA |
| 0.55 | NA | 3240 2d | 3610 2s | NA |
| 0.75 | 3250 d | 3820 2d | 4180 2d | 5370 2s |
| 1.15 | 3580 d | 4050 2d | 4690 2d | 6810 3s |

Height Limiting Factor: d – deflection, s – permissible strength, 2d – deflection (2 rows of noggings), 2s – strength (2 rows of noggings), 3s – strength (3 rows of noggings)

Section D

Timber Stud Walls

10/2025

TIMBER STUD WALLS

Click on the links below to navigate to page

- D 2 Introduction
- D 4 Charfactor Design Tables
- D 8 Lined One Side
- D 14 Lined Both Sides
- D 25 Furred Stud
- D 37 Staggered Stud
- D 50 Twin Stud



INTRODUCTION

Description

Knauf Timber Stud Wall Systems consist of single or multiple layers of plasterboard, fixed to one or both sides of timber stud framing.

Design Options

Timber stud wall systems outlined in this manual provide Designers and Builders with a wide range of options to suit project specific requirements in regard to fire rating, acoustic insulation, water resistance and impact resistance. A large number of hybrid systems have been included, providing cost effective solutions where impact and/or water resistance requirements differ on each side of the wall.

Timber Stud Wall Systems are available in non-fire rated configurations with acoustic ratings up to R_w 67, $R_w + C_{tr}$ 59 and in fire rated configurations with Fire Resistance Levels up to 120/120/120 and acoustic ratings up to R_w 73, $R_w + C_{tr}$ 64.

The following types of Timber Stud Wall Systems are outlined in this manual:

- Lined One Side
- Lined Both Sides
- Furred Stud
- Staggered Stud
- Twin Stud.

Materials

Plasterboard Linings

- 10 mm / 13 mm SHEETROCK ONE
- 10 mm SHEETROCK PLUS
- 13 mm WetStop
- 13 mm / 16 mm FireStop
- 13 mm ImpactStop
- 13 mm / 16 mm MultiStop ONE
- 13 mm MultiStop ONE HI
- 13 mm / 16 mm FIBEROCK Aqua-Tough

Other Lining

- 6 mm VILLABOARD

Timber Sections

- 70 mm studs
- 90 mm studs
- 120 mm plates (staggered stud walls)
- 140 mm plates (staggered stud walls).

Deflection Head Track

Rondo Deflection Head Track is used where allowance needs to be made for deflection of the floor/roof structure above a fire rated timber stud wall system (refer to Knauf online CAD Finder for details)

Furring Channels and Fixing Clips

Rondo 129 Furring Channel and 237 Fixing Clip are used in Furred Systems:

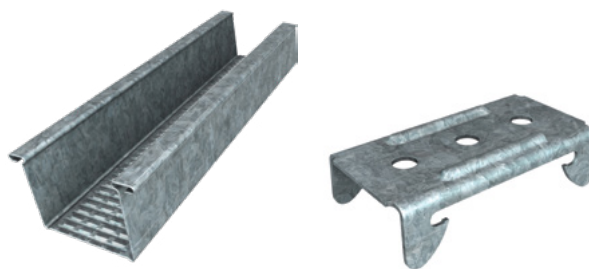


Figure D1: Rondo 129 Furring Channel and 237 Fixing Clip

Insulation

Glasswool

- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
- KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density
- KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density

Screws

Refer General Information – Materials for plasterboard screws suitable for timber framed systems.

Sealants

H.B. Fuller Firesound™ sealant is recommended for use in Knauf fire rated and acoustic systems.

TIMBER FRAMED WALLS

Design Considerations

Maximum Heights And Loads

Timber framed walls must be designed in accordance with AS 1684 Residential timber-framed construction or AS 1720.1 Timber structures; Part 1: Design Methods.

In addition to design loads under normal service conditions, fire rated timber framed walls must be checked for maximum loads under the design fire exposure.

Maximum design loads for fire rated timber framed walls depends on the extent of timber charring in a fire situation, stress grade and size of timber framing.

Where relevant maximum loads for Knauf timber framed walls systems are provided in the Charfactor Design Tables in this section. Contact Knauf where stud heights are not covered in design tables. Refer to project Structural Engineer for timber stud design and details.

Multi-Residential Buildings

Separating walls in multi-residential buildings must satisfy NCC fire rating and acoustic requirements (refer to the Multi-Residential section).

Class 1 Buildings

Knauf Partiwall® is a family of NCC compliant separating wall systems for attached dwellings in Class 1 buildings.

For more information on Partiwall separating walls refer to the Multi-Residential section and to knauf.com/en-AU/knauf-gypsum/products-systems/systems/partiwall.

CHARFACTOR DESIGN TABLES – CF 11

Load Bearing Timber Stud Walls – Axial Load Capacity in kN/Stud

| TIMBER STRESS GRADE F5 | | | | | | | | |
|------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 28.5 | 20.0 | 22.2 | 15.6 | 12.9 | 9.0 | 7.2 | 5.0 |
| 2.1 | 28.1 | 19.7 | 21.8 | 15.2 | 12.5 | 8.7 | 6.9 | 4.8 |
| 2.2 | 27.6 | 19.4 | 21.3 | 14.9 | 12.1 | 8.4 | 6.5 | 4.5 |
| 2.3 | 27.2 | 19.0 | 20.8 | 14.6 | 11.6 | 8.1 | 6.2 | 4.3 |
| 2.4 | 26.7 | 18.7 | 20.4 | 14.2 | 11.2 | 7.8 | 5.8 | 4.0 |
| 2.5 | 26.2 | 18.4 | 19.9 | 13.9 | 10.7 | 7.5 | 5.5 | 3.8 |
| 2.6 | 25.8 | 18.0 | 19.4 | 13.5 | 10.3 | 7.2 | 5.2 | 3.6 |
| 2.7 | 25.3 | 17.7 | 18.9 | 13.2 | 9.9 | 6.9 | 5.0 | 3.4 |
| 2.8 | 24.8 | 17.3 | 18.4 | 12.8 | 9.5 | 6.6 | 4.7 | 3.2 |
| 2.9 | 24.3 | 17.0 | 17.9 | 12.5 | 9.1 | 6.3 | 4.4 | 3.0 |
| 3.0 | 23.7 | 16.6 | 17.4 | 12.1 | 8.7 | 6.1 | 4.2 | 2.9 |
| 3.1 | 23.2 | 16.2 | 16.9 | 11.8 | 8.4 | 5.8 | 4.0 | 2.7 |
| 3.2 | 22.7 | 15.8 | 16.4 | 11.4 | 8.0 | 5.5 | 3.7 | 2.6 |
| 3.3 | 22.2 | 15.5 | 16.0 | 11.1 | 7.7 | 5.3 | 3.5 | 2.4 |
| 3.4 | 21.7 | 15.1 | 15.5 | 10.8 | 7.3 | 5.1 | 3.3 | 2.3 |
| 3.5 | 21.2 | 14.7 | 15.0 | 10.4 | 7.0 | 4.8 | 3.1 | 2.1 |
| 3.6 | 20.6 | 14.4 | 14.5 | 10.1 | 6.7 | 4.6 | 3.0 | 2.0 |
| 3.7 | 20.1 | 14.0 | 14.1 | 9.8 | 6.4 | 4.4 | 2.8 | |
| 3.8 | 19.6 | 13.6 | 13.6 | 9.5 | 6.1 | 4.2 | 2.6 | |
| 3.9 | 19.1 | 13.3 | 13.2 | 9.1 | 5.9 | 4.0 | 2.5 | |
| 4.0 | 18.6 | 12.9 | 12.8 | 8.8 | 5.6 | 3.8 | 2.3 | |

| TIMBER STRESS GRADE F8 | | | | | | | | |
|------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 48.8 | 35.2 | 38.2 | 27.5 | 22.4 | 16.1 | 12.6 | 9.0 |
| 2.1 | 48.0 | 34.6 | 37.4 | 26.9 | 21.6 | 15.5 | 12.0 | 8.5 |
| 2.2 | 47.2 | 34.0 | 36.5 | 26.3 | 20.7 | 14.9 | 11.3 | 8.1 |
| 2.3 | 46.4 | 33.4 | 35.6 | 25.6 | 19.9 | 14.3 | 10.7 | 7.6 |
| 2.4 | 45.5 | 32.8 | 34.7 | 25.0 | 19.1 | 13.7 | 10.1 | 7.2 |
| 2.5 | 44.6 | 32.1 | 33.8 | 24.3 | 18.3 | 13.1 | 9.6 | 6.8 |
| 2.6 | 43.7 | 31.5 | 32.9 | 23.6 | 17.6 | 12.6 | 9.0 | 6.4 |
| 2.7 | 42.8 | 30.8 | 32.0 | 23.0 | 16.8 | 12.0 | 8.5 | 6.1 |
| 2.8 | 41.9 | 30.1 | 31.1 | 22.3 | 16.1 | 11.5 | 8.1 | 5.7 |
| 2.9 | 40.9 | 29.4 | 30.2 | 21.7 | 15.4 | 11.0 | 7.6 | 5.4 |
| 3.0 | 40.0 | 28.7 | 29.3 | 21.0 | 14.7 | 10.5 | 7.2 | 5.1 |
| 3.1 | 39.0 | 28.1 | 28.4 | 20.4 | 14.1 | 10.1 | 6.8 | 4.9 |
| 3.2 | 38.1 | 27.4 | 27.5 | 19.7 | 13.5 | 9.6 | 6.5 | 4.6 |
| 3.3 | 37.2 | 26.7 | 26.7 | 19.1 | 12.9 | 9.2 | 6.1 | 4.3 |
| 3.4 | 36.2 | 26.0 | 25.8 | 18.5 | 12.3 | 8.8 | 5.8 | 4.1 |
| 3.5 | 35.3 | 25.3 | 25.0 | 17.9 | 11.8 | 8.4 | 5.5 | 3.9 |
| 3.6 | 34.4 | 24.6 | 24.2 | 17.3 | 11.3 | 8.0 | 5.2 | 3.7 |
| 3.7 | 33.4 | 24.0 | 23.4 | 16.7 | 10.8 | 7.7 | 4.9 | 3.5 |
| 3.8 | 32.5 | 23.3 | 22.6 | 16.2 | 10.3 | 7.4 | 4.7 | 3.3 |
| 3.9 | 31.6 | 22.7 | 21.9 | 15.6 | 9.9 | 7.0 | 4.4 | 3.1 |
| 4.0 | 30.8 | 22.0 | 21.1 | 15.1 | 9.4 | 6.7 | 4.2 | 3.0 |

| TIMBER STRESS GRADE F14 | | | | | | | | |
|-------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 84.4 | 62.0 | 65.5 | 48.0 | 37.5 | 27.4 | 20.7 | 15.0 |
| 2.1 | 82.7 | 60.7 | 63.6 | 46.6 | 35.8 | 26.1 | 19.4 | 14.1 |
| 2.2 | 80.8 | 59.3 | 61.7 | 45.3 | 34.1 | 24.9 | 18.2 | 13.2 |
| 2.3 | 79.0 | 58.0 | 59.9 | 43.9 | 32.5 | 23.7 | 17.1 | 12.4 |
| 2.4 | 77.1 | 56.6 | 58.0 | 42.5 | 30.9 | 22.6 | 16.1 | 11.7 |
| 2.5 | 75.2 | 55.1 | 56.1 | 41.1 | 29.4 | 21.5 | 15.1 | 11.0 |
| 2.6 | 73.2 | 53.7 | 54.2 | 39.7 | 28.0 | 20.4 | 14.2 | 10.3 |
| 2.7 | 71.3 | 52.3 | 52.4 | 38.3 | 26.7 | 19.4 | 13.3 | 9.7 |
| 2.8 | 69.4 | 50.8 | 50.6 | 37.0 | 25.4 | 18.5 | 12.6 | 9.1 |
| 2.9 | 67.4 | 49.4 | 48.8 | 35.7 | 24.1 | 17.6 | 11.8 | 8.6 |
| 3.0 | 65.5 | 48.0 | 47.0 | 34.4 | 23.0 | 16.7 | 11.1 | 8.1 |
| 3.1 | 63.6 | 46.6 | 45.3 | 33.1 | 21.8 | 15.9 | 10.5 | 7.6 |
| 3.2 | 61.7 | 45.2 | 43.7 | 31.9 | 20.8 | 15.2 | 9.9 | 7.2 |
| 3.3 | 59.8 | 43.8 | 42.1 | 30.7 | 19.8 | 14.4 | 9.4 | 6.8 |
| 3.4 | 58.0 | 42.5 | 40.5 | 29.6 | 18.9 | 13.8 | 8.9 | 6.4 |
| 3.5 | 56.2 | 41.1 | 39.0 | 28.5 | 18.0 | 13.1 | 8.4 | 6.1 |
| 3.6 | 54.4 | 39.8 | 37.5 | 27.4 | 17.2 | 12.5 | 7.9 | 5.8 |
| 3.7 | 52.7 | 38.6 | 36.1 | 26.4 | 16.4 | 11.9 | 7.5 | 5.5 |
| 3.8 | 51.0 | 37.3 | 34.8 | 25.4 | 15.6 | 11.4 | 7.1 | 5.2 |
| 3.9 | 49.4 | 36.1 | 33.5 | 24.5 | 14.9 | 10.9 | 6.8 | 4.9 |
| 4.0 | 47.8 | 35.0 | 32.3 | 23.6 | 14.2 | 10.4 | 6.4 | 4.7 |

| TIMBER STRESS GRADE F22 | | | | | | | | |
|-------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 134.0 | 99.4 | 102.2 | 75.7 | 56.3 | 41.5 | 30.1 | 22.1 |
| 2.1 | 130.4 | 96.7 | 98.5 | 73.0 | 53.2 | 39.2 | 28.0 | 20.6 |
| 2.2 | 126.6 | 93.9 | 94.9 | 70.2 | 50.3 | 37.1 | 26.1 | 19.2 |
| 2.3 | 122.9 | 91.1 | 91.2 | 67.5 | 47.5 | 35.0 | 24.4 | 17.9 |
| 2.4 | 119.1 | 88.3 | 87.6 | 64.9 | 44.9 | 33.1 | 22.7 | 16.7 |
| 2.5 | 115.4 | 85.5 | 84.1 | 62.2 | 42.4 | 31.3 | 21.2 | 15.6 |
| 2.6 | 111.6 | 82.7 | 80.7 | 59.7 | 40.1 | 29.5 | 19.9 | 14.6 |
| 2.7 | 107.9 | 79.9 | 77.4 | 57.2 | 37.9 | 27.9 | 18.6 | 13.7 |
| 2.8 | 104.2 | 77.2 | 74.2 | 54.8 | 35.8 | 26.4 | 17.5 | 12.8 |
| 2.9 | 100.6 | 74.5 | 71.0 | 52.5 | 33.9 | 25.0 | 16.4 | 12.1 |
| 3.0 | 97.1 | 71.9 | 68.1 | 50.3 | 32.1 | 23.7 | 15.4 | 11.3 |
| 3.1 | 93.7 | 69.3 | 65.2 | 48.2 | 30.4 | 22.4 | 14.5 | 10.7 |
| 3.2 | 90.3 | 66.8 | 62.4 | 46.1 | 28.8 | 21.3 | 13.7 | 10.0 |
| 3.3 | 87.0 | 64.4 | 59.8 | 44.2 | 27.4 | 20.2 | 12.9 | 9.5 |
| 3.4 | 83.9 | 62.1 | 57.3 | 42.3 | 26.0 | 19.2 | 12.2 | 8.9 |
| 3.5 | 80.8 | 59.8 | 54.9 | 40.6 | 24.7 | 18.2 | 11.5 | 8.5 |
| 3.6 | 77.9 | 57.6 | 52.6 | 38.9 | 23.5 | 17.3 | 10.9 | 8.0 |
| 3.7 | 75.0 | 55.5 | 50.4 | 37.3 | 22.3 | 16.5 | 10.3 | 7.6 |
| 3.8 | 72.3 | 53.5 | 48.3 | 35.7 | 21.3 | 15.7 | 9.7 | 7.2 |
| 3.9 | 69.7 | 51.5 | 46.4 | 34.3 | 20.3 | 14.9 | 9.2 | 6.8 |
| 4.0 | 67.1 | 49.7 | 44.5 | 32.9 | 19.3 | 14.3 | 8.8 | 6.5 |

CHARFACTOR DESIGN TABLES – CF 21

Load Bearing Timber Stud Walls – Axial Load Capacity in kN/Stud

| TIMBER STRESS GRADE F5 | | | | | | | | |
|------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 15.3 | 8.7 | 11.3 | 6.4 | 5.7 | 3.2 | 2.7 | |
| 2.1 | 15.0 | 8.6 | 11.0 | 6.3 | 5.5 | 3.1 | 2.5 | |
| 2.2 | 14.7 | 8.4 | 10.8 | 6.1 | 5.3 | 2.9 | 2.4 | |
| 2.3 | 14.5 | 8.2 | 10.5 | 5.9 | 5.1 | 2.8 | 2.2 | |
| 2.4 | 14.2 | 8.1 | 10.2 | 5.8 | 4.8 | 2.7 | 2.1 | |
| 2.5 | 13.9 | 7.9 | 9.9 | 5.6 | 4.6 | 2.6 | | |
| 2.6 | 13.6 | 7.7 | 9.6 | 5.4 | 4.4 | 2.4 | | |
| 2.7 | 13.3 | 7.5 | 9.4 | 5.3 | 4.2 | 2.3 | | |
| 2.8 | 13.0 | 7.3 | 9.1 | 5.1 | 4.0 | 2.2 | | |
| 2.9 | 12.7 | 7.1 | 8.8 | 4.9 | 3.8 | 2.1 | | |
| 3.0 | 12.4 | 6.9 | 8.5 | 4.7 | 3.6 | | | |
| 3.1 | 12.1 | 6.8 | 8.2 | 4.6 | 3.5 | | | |
| 3.2 | 11.7 | 6.6 | 8.0 | 4.4 | 3.3 | | | |
| 3.3 | 11.4 | 6.4 | 7.7 | 4.2 | 3.1 | | | |
| 3.4 | 11.1 | 6.2 | 7.4 | 4.1 | 2.9 | | | |
| 3.5 | 10.8 | 6.0 | 7.2 | 3.9 | 2.8 | | | |
| 3.6 | 10.5 | 5.8 | 6.9 | 3.8 | 2.6 | | | |
| 3.7 | 10.2 | 5.6 | 6.7 | 3.6 | 2.5 | | | |
| 3.8 | 9.9 | 5.5 | 6.4 | 3.5 | 2.4 | | | |
| 3.9 | 9.6 | 5.3 | 6.2 | 3.3 | 2.2 | | | |
| 4.0 | 9.4 | 5.1 | 6.0 | 3.2 | 2.1 | | | |

| TIMBER STRESS GRADE F8 | | | | | | | | |
|------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 30.9 | 19.8 | 23.2 | 14.8 | 12.3 | 7.8 | 6.1 | 3.9 |
| 2.1 | 30.3 | 19.4 | 22.6 | 14.5 | 11.8 | 7.5 | 5.8 | 3.6 |
| 2.2 | 29.7 | 19.0 | 22.0 | 14.1 | 11.3 | 7.2 | 5.5 | 3.4 |
| 2.3 | 29.1 | 18.7 | 21.5 | 13.7 | 10.8 | 6.9 | 5.1 | 3.2 |
| 2.4 | 28.6 | 18.3 | 20.9 | 13.3 | 10.4 | 6.6 | 4.8 | 3.0 |
| 2.5 | 27.9 | 17.9 | 20.3 | 12.9 | 9.9 | 6.3 | 4.6 | 2.9 |
| 2.6 | 27.3 | 17.5 | 19.7 | 12.6 | 9.5 | 6.0 | 4.3 | 2.7 |
| 2.7 | 26.7 | 17.1 | 19.1 | 12.2 | 9.1 | 5.7 | 4.0 | 2.5 |
| 2.8 | 26.1 | 16.6 | 18.6 | 11.8 | 8.7 | 5.5 | 3.8 | 2.4 |
| 2.9 | 25.5 | 16.2 | 18.0 | 11.4 | 8.3 | 5.2 | 3.6 | 2.2 |
| 3.0 | 24.8 | 15.8 | 17.4 | 11.1 | 7.9 | 5.0 | 3.4 | 2.1 |
| 3.1 | 24.2 | 15.4 | 16.9 | 10.7 | 7.5 | 4.7 | 3.2 | |
| 3.2 | 23.6 | 15.0 | 16.3 | 10.3 | 7.2 | 4.5 | 3.0 | |
| 3.3 | 23.0 | 14.6 | 15.8 | 10.0 | 6.9 | 4.3 | 2.8 | |
| 3.4 | 22.4 | 14.2 | 15.3 | 9.6 | 6.5 | 4.1 | 2.6 | |
| 3.5 | 21.8 | 13.8 | 14.7 | 9.3 | 6.2 | 3.9 | 2.5 | |
| 3.6 | 21.1 | 13.4 | 14.2 | 9.0 | 5.9 | 3.7 | 2.3 | |
| 3.7 | 20.6 | 13.0 | 13.8 | 8.7 | 5.7 | 3.5 | 2.2 | |
| 3.8 | 20.0 | 12.6 | 13.3 | 8.4 | 5.4 | 3.3 | 2.0 | |
| 3.9 | 19.4 | 12.3 | 12.8 | 8.1 | 5.1 | 3.2 | | |
| 4.0 | 18.8 | 11.9 | 12.4 | 7.8 | 4.9 | 3.0 | | |

| TIMBER STRESS GRADE F14 | | | | | | | | |
|-------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 59.9 | 40.9 | 45.0 | 30.7 | 23.9 | 16.2 | 12.1 | 8.2 |
| 2.1 | 58.6 | 40.0 | 43.7 | 29.8 | 22.8 | 15.5 | 11.4 | 7.7 |
| 2.2 | 57.2 | 39.0 | 42.3 | 28.8 | 21.7 | 14.7 | 10.7 | 7.2 |
| 2.3 | 55.8 | 38.1 | 41.0 | 27.9 | 20.7 | 14.0 | 10.0 | 6.8 |
| 2.4 | 54.4 | 37.1 | 39.7 | 27.0 | 19.7 | 13.3 | 9.4 | 6.3 |
| 2.5 | 53.0 | 36.1 | 38.3 | 26.1 | 18.7 | 12.7 | 8.8 | 5.9 |
| 2.6 | 51.6 | 35.2 | 37.0 | 25.2 | 17.8 | 12.1 | 8.3 | 5.6 |
| 2.7 | 50.2 | 34.2 | 35.7 | 24.3 | 16.9 | 11.5 | 7.8 | 5.2 |
| 2.8 | 48.8 | 33.2 | 34.5 | 23.4 | 16.1 | 10.9 | 7.3 | 4.9 |
| 2.9 | 47.4 | 32.3 | 33.2 | 22.6 | 15.3 | 10.4 | 6.9 | 4.6 |
| 3.0 | 46.0 | 31.3 | 32.0 | 21.7 | 14.6 | 9.8 | 6.5 | 4.4 |
| 3.1 | 44.6 | 30.4 | 30.9 | 20.9 | 13.9 | 9.4 | 6.1 | 4.1 |
| 3.2 | 43.3 | 29.4 | 29.7 | 20.2 | 13.2 | 8.9 | 5.8 | 3.9 |
| 3.3 | 41.9 | 28.5 | 28.6 | 19.4 | 12.6 | 8.5 | 5.4 | 3.6 |
| 3.4 | 40.6 | 27.6 | 27.5 | 18.7 | 12.0 | 8.1 | 5.1 | 3.4 |
| 3.5 | 39.4 | 26.7 | 26.5 | 18.0 | 11.4 | 7.7 | 4.8 | 3.2 |
| 3.6 | 38.1 | 25.9 | 25.5 | 17.3 | 10.8 | 7.3 | 4.6 | 3.0 |
| 3.7 | 36.9 | 25.0 | 24.6 | 16.6 | 10.3 | 6.9 | 4.3 | 2.9 |
| 3.8 | 35.7 | 24.2 | 23.6 | 16.0 | 9.8 | 6.6 | 4.1 | 2.7 |
| 3.9 | 34.6 | 23.4 | 22.7 | 15.4 | 9.4 | 6.3 | 3.8 | 2.5 |
| 4.0 | 33.4 | 22.7 | 21.9 | 14.8 | 9.0 | 6.0 | 3.6 | 2.4 |

| TIMBER STRESS GRADE F22 | | | | | | | | |
|-------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 101.9 | 71.7 | 75.7 | 53.2 | 39.4 | 27.6 | 19.8 | 13.8 |
| 2.1 | 99.0 | 69.7 | 73.0 | 51.3 | 37.3 | 26.1 | 18.5 | 12.9 |
| 2.2 | 96.1 | 67.6 | 70.2 | 49.3 | 35.2 | 24.6 | 17.2 | 12.0 |
| 2.3 | 93.2 | 65.6 | 67.5 | 47.4 | 33.3 | 23.3 | 16.0 | 11.2 |
| 2.4 | 90.3 | 63.5 | 64.8 | 45.5 | 31.4 | 22.0 | 15.0 | 10.4 |
| 2.5 | 87.4 | 61.4 | 62.2 | 43.6 | 29.7 | 20.8 | 14.0 | 9.8 |
| 2.6 | 84.5 | 59.4 | 59.6 | 41.9 | 28.1 | 19.6 | 13.1 | 9.1 |
| 2.7 | 81.6 | 57.4 | 57.2 | 40.1 | 26.6 | 18.6 | 12.3 | 8.5 |
| 2.8 | 78.8 | 55.4 | 54.8 | 38.4 | 25.1 | 17.6 | 11.5 | 8.0 |
| 2.9 | 76.1 | 53.5 | 52.5 | 36.8 | 23.8 | 16.6 | 10.8 | 7.5 |
| 3.0 | 73.4 | 51.6 | 50.3 | 35.3 | 22.5 | 15.7 | 10.1 | 7.1 |
| 3.1 | 70.8 | 49.7 | 48.2 | 33.8 | 21.3 | 14.9 | 9.5 | 6.6 |
| 3.2 | 68.3 | 47.9 | 46.2 | 32.4 | 20.2 | 14.1 | 9.0 | 6.2 |
| 3.3 | 65.8 | 46.2 | 44.2 | 31.0 | 19.2 | 13.4 | 8.5 | 5.9 |
| 3.4 | 63.4 | 44.5 | 42.4 | 29.7 | 18.2 | 12.7 | 8.0 | 5.5 |
| 3.5 | 61.1 | 42.9 | 40.6 | 28.5 | 17.3 | 12.1 | 7.5 | 5.2 |
| 3.6 | 58.9 | 41.3 | 38.9 | 27.3 | 16.5 | 11.5 | 7.1 | 4.9 |
| 3.7 | 56.7 | 39.8 | 37.3 | 26.1 | 15.7 | 10.9 | 6.7 | 4.7 |
| 3.8 | 54.7 | 38.4 | 35.8 | 25.1 | 14.9 | 10.4 | 6.4 | 4.4 |
| 3.9 | 52.7 | 37.0 | 34.3 | 24.0 | 14.2 | 9.9 | 6.0 | 4.2 |
| 4.0 | 50.8 | 35.6 | 32.9 | 23.1 | 13.5 | 9.4 | 5.7 | 3.9 |

CHARFACTOR DESIGN TABLES – CF 23

Load Bearing Timber Stud Walls – Axial Load Capacity in kN/Stud

| TIMBER STRESS GRADE F5 | | | | | | | | |
|------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 12.1 | 6.7 | 8.9 | 4.8 | 4.4 | 2.4 | 2.0 | |
| 2.1 | 11.9 | 6.5 | 8.7 | 4.8 | 4.3 | 2.3 | 1.9 | |
| 2.2 | 11.6 | 6.5 | 8.4 | 4.6 | 4.1 | 2.2 | 1.8 | |
| 2.3 | 11.4 | 6.3 | 8.2 | 4.5 | 3.9 | 2.1 | | |
| 2.4 | 11.2 | 6.1 | 8.0 | 4.3 | 3.7 | 2.0 | | |
| 2.5 | 11.0 | 6.0 | 7.8 | 4.3 | 3.6 | 1.9 | | |
| 2.6 | 10.7 | 5.9 | 7.6 | 4.1 | 3.4 | 1.8 | | |
| 2.7 | 10.5 | 5.7 | 7.3 | 4.0 | 3.2 | | | |
| 2.8 | 10.2 | 5.5 | 7.1 | 3.8 | 3.1 | | | |
| 2.9 | 10.0 | 5.4 | 6.9 | 3.7 | 2.9 | | | |
| 3.0 | 9.8 | 5.3 | 6.6 | 3.6 | 2.8 | | | |
| 3.1 | 9.5 | 5.1 | 6.5 | 3.4 | 2.6 | | | |
| 3.2 | 9.3 | 5.0 | 6.2 | 3.3 | 2.5 | | | |
| 3.3 | 9.0 | 4.8 | 6.0 | 3.1 | 2.4 | | | |
| 3.4 | 8.8 | 4.7 | 5.8 | 3.1 | 2.2 | | | |
| 3.5 | 8.5 | 4.5 | 5.6 | 2.9 | 2.1 | | | |
| 3.6 | 8.2 | 4.4 | 5.4 | 2.8 | 2.0 | | | |
| 3.7 | 8.0 | 4.3 | 5.2 | 2.7 | 1.9 | | | |
| 3.8 | 7.8 | 4.1 | 5.0 | 2.6 | 1.8 | | | |
| 3.9 | 7.6 | 4.0 | 4.8 | 2.5 | | | | |
| 4.0 | 7.3 | 3.8 | 4.7 | 2.4 | | | | |

| TIMBER STRESS GRADE F8 | | | | | | | | |
|------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 25.0 | 15.7 | 18.7 | 11.7 | 9.8 | 6.1 | 4.8 | 3.0 |
| 2.1 | 24.5 | 15.5 | 18.2 | 11.5 | 9.4 | 5.9 | 4.5 | 2.8 |
| 2.2 | 24.1 | 15.1 | 17.8 | 11.1 | 9.0 | 5.6 | 4.3 | 2.6 |
| 2.3 | 23.5 | 14.8 | 17.3 | 10.9 | 8.7 | 5.4 | 4.0 | 2.5 |
| 2.4 | 23.0 | 14.5 | 16.8 | 10.5 | 8.2 | 5.1 | 3.8 | 2.3 |
| 2.5 | 22.6 | 14.2 | 16.3 | 10.2 | 7.9 | 4.9 | 3.6 | 2.2 |
| 2.6 | 22.1 | 13.9 | 15.8 | 9.9 | 7.6 | 4.9 | 3.4 | 2.0 |
| 2.7 | 21.6 | 13.5 | 15.4 | 9.6 | 7.2 | 4.5 | 3.1 | 2.0 |
| 2.8 | 21.1 | 13.2 | 14.9 | 9.4 | 6.9 | 4.3 | 3.0 | 1.8 |
| 2.9 | 20.6 | 12.9 | 14.5 | 9.0 | 6.5 | 4.1 | 2.8 | |
| 3.0 | 20.1 | 12.6 | 14.0 | 8.8 | 6.3 | 3.8 | | |
| 3.1 | 19.6 | 12.2 | 13.5 | 8.4 | 6.0 | 3.7 | | |
| 3.2 | 19.0 | 11.9 | 13.1 | 8.2 | 5.7 | 3.5 | | |
| 3.3 | 18.5 | 11.6 | 12.7 | 7.9 | 5.4 | 3.3 | | |
| 3.4 | 18.0 | 11.2 | 12.2 | 7.6 | 5.2 | 3.1 | | |
| 3.5 | 17.5 | 11.0 | 11.8 | 7.3 | 4.9 | 3.0 | | |
| 3.6 | 17.1 | 10.6 | 11.4 | 7.1 | 4.7 | 2.9 | | |
| 3.7 | 16.6 | 10.3 | 11.1 | 6.8 | 4.5 | 2.7 | | |
| 3.8 | 16.1 | 10.0 | 10.6 | 6.5 | 4.3 | 2.6 | | |
| 3.9 | 15.6 | 9.7 | 10.3 | 6.3 | 4.1 | 2.5 | | |
| 4.0 | 15.1 | 9.4 | 9.9 | 6.1 | 3.8 | 2.3 | | |

| TIMBER STRESS GRADE F14 | | | | | | | | |
|-------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 49.1 | 33.2 | 36.8 | 24.8 | 19.4 | 13.0 | 9.8 | 6.5 |
| 2.1 | 48.0 | 32.5 | 35.7 | 24.1 | 18.5 | 12.4 | 9.2 | 6.1 |
| 2.2 | 46.9 | 31.7 | 34.6 | 23.4 | 17.6 | 11.8 | 8.6 | 5.7 |
| 2.3 | 45.7 | 30.9 | 33.5 | 22.6 | 16.7 | 11.2 | 8.1 | 5.4 |
| 2.4 | 44.6 | 30.1 | 32.4 | 21.8 | 16.0 | 10.7 | 7.6 | 5.0 |
| 2.5 | 43.4 | 29.3 | 31.3 | 21.1 | 15.2 | 10.2 | 7.1 | 4.8 |
| 2.6 | 42.2 | 28.6 | 30.3 | 20.4 | 14.5 | 9.7 | 6.6 | 4.4 |
| 2.7 | 41.1 | 27.7 | 29.2 | 19.6 | 13.7 | 9.2 | 6.3 | 4.2 |
| 2.8 | 40.0 | 26.9 | 28.1 | 19.0 | 13.1 | 8.8 | 5.9 | 3.9 |
| 2.9 | 38.8 | 26.2 | 27.1 | 18.3 | 12.4 | 8.3 | 5.5 | 3.7 |
| 3.0 | 37.7 | 25.4 | 26.2 | 17.6 | 11.8 | 7.9 | 5.2 | 3.5 |
| 3.1 | 36.6 | 24.7 | 25.2 | 16.9 | 11.2 | 7.5 | 4.9 | 3.2 |
| 3.2 | 35.4 | 23.9 | 24.2 | 16.3 | 10.7 | 7.1 | 4.6 | 3.1 |
| 3.3 | 34.3 | 23.1 | 23.4 | 15.6 | 10.2 | 6.8 | 4.3 | 2.9 |
| 3.4 | 33.2 | 22.4 | 22.4 | 15.1 | 9.7 | 6.5 | 4.1 | 2.7 |
| 3.5 | 32.2 | 21.7 | 21.7 | 14.5 | 9.2 | 6.1 | 3.8 | 2.6 |
| 3.6 | 31.2 | 21.0 | 20.8 | 13.9 | 8.8 | 5.9 | 3.7 | 2.4 |
| 3.7 | 31.0 | 20.3 | 20.1 | 13.4 | 8.3 | 5.5 | 3.4 | 2.3 |
| 3.8 | 29.2 | 19.6 | 19.3 | 12.9 | 8.0 | 5.3 | 3.2 | 2.1 |
| 3.9 | 28.3 | 19.0 | 18.5 | 12.4 | 7.6 | 5.0 | 3.1 | 2.0 |
| 4.0 | 27.4 | 18.4 | 17.9 | 12.0 | 7.2 | 4.8 | 2.9 | 1.9 |

| TIMBER STRESS GRADE F22 | | | | | | | | |
|-------------------------|--------|--------|--------|--------|-------|-------|-------|-------|
| STUD SIZE (mm x mm) | | | | | | | | |
| WALL HEIGHT m | 140x45 | 140x35 | 120x45 | 120x35 | 90x45 | 90x35 | 70x45 | 70x35 |
| 2.0 | 84.2 | 58.9 | 62.4 | 43.6 | 32.3 | 22.4 | 16.2 | 11.1 |
| 2.1 | 81.8 | 57.2 | 60.1 | 42.0 | 30.5 | 21.3 | 15.0 | 10.4 |
| 2.2 | 79.4 | 55.5 | 57.8 | 40.4 | 28.8 | 20.1 | 14.0 | 9.7 |
| 2.3 | 76.9 | 53.8 | 55.6 | 38.8 | 27.3 | 19.0 | 13.1 | 9.0 |
| 2.4 | 74.5 | 52.1 | 53.4 | 37.2 | 25.8 | 17.9 | 12.2 | 8.4 |
| 2.5 | 72.2 | 50.4 | 51.3 | 35.7 | 24.3 | 16.9 | 11.4 | 7.9 |
| 2.6 | 69.8 | 48.7 | 49.1 | 34.3 | 23.0 | 16.0 | 10.6 | 7.4 |
| 2.7 | 67.4 | 47.1 | 47.1 | 32.8 | 21.8 | 15.1 | 9.9 | 6.9 |
| 2.8 | 65.1 | 45.5 | 45.1 | 31.5 | 20.6 | 14.3 | 9.4 | 6.5 |
| 2.9 | 62.8 | 43.9 | 43.3 | 30.2 | 19.5 | 13.5 | 8.8 | 6.0 |
| 3.0 | 60.6 | 42.3 | 41.4 | 28.9 | 18.4 | 12.8 | 8.2 | 5.7 |
| 3.1 | 58.5 | 40.8 | 39.7 | 27.6 | 17.5 | 12.2 | 7.7 | 5.4 |
| 3.2 | 56.4 | 39.4 | 38.0 | 26.5 | 16.6 | 11.5 | 7.3 | 5.0 |
| 3.3 | 54.3 | 37.9 | 36.4 | 25.3 | 15.7 | 10.9 | 6.9 | 4.8 |
| 3.4 | 52.4 | 36.6 | 34.9 | 24.3 | 15.0 | 10.4 | 6.5 | 4.5 |
| 3.5 | 50.5 | 35.2 | 33.4 | 23.3 | 14.2 | 9.9 | 6.1 | 4.3 |
| 3.6 | 48.6 | 33.9 | 32.0 | 22.3 | 13.5 | 9.4 | 5.8 | 4.0 |
| 3.7 | 46.8 | 32.6 | 30.7 | 21.4 | 12.8 | 8.9 | 5.4 | 3.7 |
| 3.8 | 45.1 | 31.5 | 29.5 | 20.5 | 12.2 | 8.5 | 5.2 | 3.6 |
| 3.9 | 43.5 | 30.3 | 28.3 | 19.6 | 11.6 | 8.1 | 4.8 | 3.4 |
| 4.0 | 41.9 | 29.2 | 27.1 | 18.9 | 11.1 | 7.7 | 4.6 | 3.1 |

TIMBER FRAME CONSTRUCTION

Class 2 and 3 Buildings

The NCC allows the use of timber framed construction in low rise multi-residential Class 2 or 3 buildings of Type C Construction, and for Type A and B Construction provided that appropriate concessions are met (Refer to the NCC for height limitations, sprinkler and additional requirements of such buildings).

Various structural elements in Class 2 and 3 buildings must satisfy NCC fire rating and acoustic requirements as summarised in the Multi-Residential section.

Knauf Multiframe™ system is a compilation of timber framed wall and floor/ceiling and roof/ceiling solutions satisfying NCC requirements for Class 2 and 3 buildings. For more information refer to the Multi-Residential section and to knauf.com/en-AU/knauf-gypsum/products-systems/systems/multiframe

Penetrations

Penetrations in a fire rated system must be treated strictly in accordance with relevant test reports and approved installation details in order to maintain the system's Fire Resistance Level.

Where components by others are specified in Knauf fire rated penetration details (ie dampers, GPOs, fire collars, etc), such components must be installed in accordance with the manufacturer's specifications. It is the responsibility of the component manufacturer to ensure that the fire rating performance of the system is not affected.

Installation

Fire rated and acoustic systems must be assembled strictly in accordance with specifications outlined in this manual and in the relevant Knauf publications in order to achieve stated Fire Resistance Levels and acoustic ratings.

Framing

- Accurately mark wall layouts. Always check individual measurements against overall site dimensions.
- Cut timber studs to length allowing for deflection of floor/roof structure above.
- Use suitable fasteners and clips for anchoring top and bottom plates. Locate fasteners 50 mm from each end and spaced at maximum 600 mm centres along the wall plate.
- Noggings are required as headers above doorways, for reinforcement behind fixture attachments, and where special circumstances require additional stiffening of the frame.

Plasterboard application

- Plasterboard linings can be installed vertically or horizontally. Refer Knauf online CAD Finder for optional plasterboard configurations in fire rated timber stud walls.
- Cut plasterboard sheets to provide 10 mm maximum gap at floor and ceiling (refer to Knauf online CAD Finder for typical head and base details).
- Vertical sheet ends and edges in fire rated systems are to fall on studs.
- Fasten plasterboard sheets to timber framing with appropriate screws as outlined in General Information section. Place screws 10 mm–16 mm from sheet ends and edges UNO.
- Offset plasterboard joints on opposite sides and in adjacent layers in fire rated systems refer to Knauf online CAD Finder for details.
- For maximum screw spacings in fire rated wall systems refer to Knauf online CAD Finder for details.
- Refer to Knauf Installation Manual for plasterboard fixing specification for non-fire rated timber stud wall systems.

Jointing and Finishing

- Finish all joints and internal and external corners in face layers with the appropriate Knauf jointing system (refer to Knauf Installation Manual). Joints and junctions in inner layers of multiple layer systems are not required to be stopped.
- Paper tape must be used in fire rated and wet area systems
- Stop exposed fasteners on face layers.

Caulking

Perimeter gaps and penetrations in fire rated and acoustic systems must be caulked with an appropriate sealant.

Decoration

Apply paint or other decorative finishes as required. Refer to General Information – Appearance for recommendations on decorating of plasterboard.

To view the full range of system CAD details, scan QR code below.



LINED ONE SIDE

TO.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: NA.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R5)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 10 + STUD |
|--------|------------------------|---------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TO.1A | 1x10 mm SHEETROCK ONE | NA | Nil | 26(23) |
| TO.1E | 1x10 mm SHEETROCK PLUS | NA | Nil | 28(25) |

TO.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: NA.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R5)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 20 + STUD |
|--------|------------------------|---------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TO.2A | 2x10 mm SHEETROCK ONE | NA | Nil | 32(27) |
| TO.2D | 2x10 mm SHEETROCK PLUS | NA | Nil | 34(31) |

LINED ONE SIDE

TO.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: NA.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 13 + STUD |
|--------|-----------------------|---------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TO.3A | 1x13 mm SHEETROCK ONE | na | Nil | 27(25) |
| TO.3D | 1x13 mm WETSTOP | na | Nil | 28(26) |

LINED ONE SIDE

TO30.2

FIRE RESISTANCE LEVEL
NLB -/30/30
LB 30/30/30
 FROM LINED SIDE ONLY

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd
Framing: Timber studs
Insulation: Refer to table
Side 2: NA.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 26 + STUD |
|---------|--------------------------|---------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TO30.2A | 2x13 mm FIRESTOP | NA | Nil | 35(32) |
| TO30.2B | 2x13 mm MULTISTOP ONE | NA | Nil | 35(33) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

TO60.1

FIRE RESISTANCE LEVEL
NBL -/60/60
LB 60/60/60
 FROM LINED SIDE ONLY

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x16 mm fire resistant pbd
Framing: Timber studs
Insulation: Refer to table
Side 2: NA.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 32 + STUD |
|---------|--------------------------|---------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TO60.1A | 2x16 mm FIRESTOP | NA | Nil | 36(33) |
| TO60.1B | 2x16 mm MULTISTOP ONE | NA | Nil | 36(34) |

LINED ONE SIDE

TO90.1

FIRE RESISTANCE LEVEL
NLB -/90/90
LB 90/90/90
 FROM LINED SIDE ONLY

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 3x13 mm fire resistant pbd
Framing: Timber studs
Insulation: Refer to table
Side 2: NA.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 39 + STUD |
|---------|--------------------------|---------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TO90.1A | 3x13 mm FIRESTOP | NA | Nil | 38(36) |
| TO90.1B | 3x13 mm MULTISTOP ONE | NA | Nil | 39(36) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

TO120.1

FIRE RESISTANCE LEVEL
NLB -/120/120
LB 120/120/120
 FROM LINED SIDE ONLY

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd
Framing: Timber studs
Insulation: Refer to table
Side 2: NA.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 48 + STUD |
|----------|--------------------------|---------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TO120.1A | 3x16 mm FIRESTOP | NA | Nil | 39(37) |
| TO120.1B | 3x16 mm MULTISTOP ONE | NA | Nil | 40(38) |

FIBEROCK® AQUA-TOUGH™ – LINED ONE SIDE

TOF.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Timber studs
Insulation: Refer to table
Side 2: NA.

ACOUSTIC RATINGS BASIS: SLR-FB-T-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 13 + STUD |
|--------|-----------------------------------|------------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TOF.3A | 1x13 mm FIBEROCK AQUA-TOUGH | NA | Nil | 30(27) |

TOF30.1

FIRE RESISTANCE LEVEL

NLB -/30/30

FROM LINED SIDE ONLY

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK
AQUA-TOUGH
Framing: Timber studs
Insulation: Refer to table
Side 2: NA.

ACOUSTIC RATINGS BASIS: SLR-FB-T-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 16 + STUD |
|----------|-----------------------------------|------------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TOF30.1A | 1x16 mm FIBEROCK AQUA-TOUGH | NA | Nil | 30(28) |

FIBEROCK® AQUA-TOUGH™ – LINED ONE SIDE

TOF60.1

FIRE RESISTANCE LEVEL
NLB –/60/60
 FROM LINED SIDE ONLY

FRL Basis: Contact Knauf

**SYSTEM DESCRIPTION**

Side 1: 2x16 mm FIBEROCK
AQUA-TOUGH

Framing: Timber studs

Insulation: Refer to table

Side 2: NA.

ACOUSTIC RATINGS BASIS: SLR-FB-T-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 32 + STUD |
|----------|-----------------------------------|------------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TOF60.1A | 2x16 mm FIBEROCK AQUA-TOUGH | NA | Nil | 36(33) |

TOF90.1

FIRE RESISTANCE LEVEL
NLB –/90/90
 FROM LINED SIDE ONLY

FRL Basis: Contact Knauf

**SYSTEM DESCRIPTION**

Side 1: 3x16 mm FIBEROCK
AQUA-TOUGH

Framing: Timber studs

Insulation: Refer to table

Side 2: NA.

ACOUSTIC RATINGS BASIS: SLR-FB-T-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 48 + STUD |
|----------|-----------------------------------|------------------|-------------------|----------------------|
| | | | STUD SIZE mm | ANY STUD |
| | | | INSULATION | $R_w (R_w + C_{tr})$ |
| TOF90.1A | 3x16 mm FIBEROCK AQUA-TOUGH | NA | Nil | 40(38) |

LINED BOTH SIDES

TB.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd
Framing: Timber studs
Insulation: Refer to table
Side 2: 1x10 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4), SLR-SR-T-S-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 90 | 110 |
|--------|------------------------|------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB.1A | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Nil | 27(19) | 28(20) |
| | | | KI 50G11 | 34(25) | 35(26) |
| | | | KI 75G11 | 35(26) | 36(27) |
| | | | KI 90G11 | - | 36(27) |
| TB.1H | 1x10 mm SHEETROCK PLUS | 1x10 mm SHEETROCK PLUS | Nil | 31(26) | 32(26) |
| | | | KI 50G11 | 38(31) | 39(32) |
| | | | KI 75G11 | 39(32) | 40(33) |
| | | | KI 90G11 | - | 40(33) |
| TB.1I | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK PLUS | Nil | 30(22) | 31(23) |
| | | | KI 50G11 | 37(28) | 38(29) |
| | | | KI 75G11 | 38(29) | 38(30) |
| | | | KI 90G11 | - | 39(30) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

LINED BOTH SIDES

TB.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: 2x10 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4), SLR-SR-T-S-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 110 | 130 |
|--------|------------------------|------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB.2A | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK ONE | Nil | 33(25) | 34(26) |
| | | | KI 50G11 | 41(32) | 42(33) |
| | | | KI 75G11 | 41(32) | 42(33) |
| | | | KI 90G11 | - | 42(33) |
| TB.2H | 2x10 mm SHEETROCK PLUS | 2x10 mm SHEETROCK PLUS | Nil | 37(30) | 38(31) |
| | | | KI 50G11 | 46(39) | 46(40) |
| | | | KI 75G11 | 46(39) | 46(40) |
| | | | KI 90G11 | - | 46(40) |
| TB.2I | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK PLUS | Nil | 36(29) | 37(29) |
| | | | KI 50G11 | 44(35) | 45(36) |
| | | | KI 75G11 | 44(35) | 45(36) |
| | | | KI 90G11 | - | 45(36) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

LINED BOTH SIDES

TB.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Timber studs
Insulation: Refer to table
Side 2: 1x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 96 | 116 |
|--------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Nil | 32(26) | 33(26) |
| | | | KI 50G11 | 39(29) | 40(32) |
| | | | KI 75G11 | 40(30) | 41(33) |
| | | | KI 90G11 | - | 41(33) |
| TB.3B | 1x13 mm WETSTOP | 1x13 mm WETSTOP | Nil | 33(27) | 34(28) |
| | | | KI 50G11 | 40(31) | 41(32) |
| | | | KI 75G11 | 41(32) | 42(33) |
| | | | KI 90G11 | - | 42(33) |
| TB.3E | 1x13 mm SHEETROCK ONE | 1x13 mm WETSTOP | Nil | 33(27) | 34(28) |
| | | | KI 50G11 | 40(31) | 41(33) |
| | | | KI 75G11 | 41(32) | 42(34) |
| | | | KI 90G11 | - | 42(34) |
| TB.3K | 1x13 mm SHEETROCK ONE | 1x13 mm IMPACTSTOP | Nil | 34(28) | 35(29) |
| | | | KI 50G11 | 41(32) | 41(33) |
| | | | KI 75G11 | 42(33) | 42(34) |
| | | | KI 90G11 | - | 42(34) |
| TB.3L | 1x13 mm WETSTOP | 1x13 mm IMPACTSTOP | Nil | 33(28) | 34(29) |
| | | | KI 50G11 | 41(34) | 41(34) |
| | | | KI 75G11 | 42(35) | 42(35) |
| | | | KI 90G11 | - | 42(35) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

LINED BOTH SIDES

TB.4

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Timber studs
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 109 | 129 |
|--------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB.4A | 1x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 36(29) | 37(30) |
| | | | KI 50G11 | 42(34) | 43(34) |
| | | | KI 75G11 | 42(34) | 43(34) |
| | | | KI 90G11 | - | 44(35) |
| TB.4B | 1x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 38(31) | 39(33) |
| | | | KI 50G11 | 43(34) | 44(36) |
| | | | KI 75G11 | 43(34) | 44(36) |
| | | | KI 90G11 | - | 45(37) |
| TB.4E | 1x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 37(30) | 38(32) |
| | | | KI 50G11 | 43(34) | 44(35) |
| | | | KI 75G11 | 43(34) | 44(35) |
| | | | KI 90G11 | - | 45(37) |
| TB.4K | 1x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 39(34) | 40(34) |
| | | | KI 50G11 | 44(37) | 45(38) |
| | | | KI 75G11 | 44(37) | 45(38) |
| | | | KI 90G11 | - | 46(40) |
| TB.4L | 1x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 39(33) | 39(33) |
| | | | KI 50G11 | 44(36) | 44(36) |
| | | | KI 75G11 | 44(36) | 44(36) |
| | | | KI 90G11 | - | 45(37) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

LINED BOTH SIDES

TB.5

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x13 mm non-fire resistant pbd
Framing: Timber studs
Insulation: Refer to table
Side 2: 2x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 122 | 142 |
|--------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB.5A | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 40(34) | 41(35) |
| | | | KI 50G11 | 46(39) | 47(40) |
| | | | KI 75G11 | 46(39) | 47(40) |
| | | | KI 90G11 | - | 47(40) |
| TB.5B | 2x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 41(35) | 42(36) |
| | | | KI 50G11 | 47(40) | 47(41) |
| | | | KI 75G11 | 47(40) | 47(41) |
| | | | KI 90G11 | - | 47(41) |
| TB.5E | 2x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 41(35) | 42(36) |
| | | | KI 50G11 | 47(40) | 47(40) |
| | | | KI 75G11 | 47(40) | 47(40) |
| | | | KI 90G11 | - | 47(40) |
| TB.5K | 2x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 43(37) | 43(38) |
| | | | KI 50G11 | 48(41) | 48(42) |
| | | | KI 75G11 | 48(41) | 48(42) |
| | | | KI 90G11 | - | 48(42) |
| TB.5L | 2x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 42(37) | 43(37) |
| | | | KI 50G11 | 47(41) | 47(41) |
| | | | KI 75G11 | 47(41) | 47(41) |
| | | | KI 90G11 | - | 47(41) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

LINED BOTH SIDES

TB30.1

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: 1x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 96 | 116 |
|---------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB30.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 32(26) | 33(28) |
| | | | KI 50G11 | 40(32) | 40(33) |
| | | | KI 75G11 | 41(33) | 41(34) |
| | | | KI 90G11 | - | 41(34) |
| TB30.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | Nil | 34(29) | 35(30) |
| | | | KI 50G11 | 41(33) | 41(35) |
| | | | KI 75G11 | 42(34) | 42(36) |
| | | | KI 90G11 | - | 43(36) |
| TB30.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | Nil | 33(27) | 34(29) |
| | | | KI 50G11 | 40(33) | 40(33) |
| | | | KI 75G11 | 41(34) | 41(34) |
| | | | KI 90G11 | - | 41(34) |
| TB30.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | Nil | 34(29) | 35(30) |
| | | | KI 50G11 | 41(33) | 41(35) |
| | | | KI 75G11 | 42(34) | 42(36) |
| | | | KI 90G11 | - | 43(36) |
| TB30.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | 33(27) | 34(29) |
| | | | KI 50G11 | 40(33) | 40(33) |
| | | | KI 75G11 | 41(34) | 41(34) |
| | | | KI 90G11 | - | 41(34) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TB30.2

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 109 | 129 |
|---------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB30.2A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 39(32) | 39(32) |
| | | | KI 50G11 | 44(35) | 44(37) |
| | | | KI 75G11 | 44(35) | 44(37) |
| | | | KI 90G11 | - | 45(38) |
| TB30.2B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 39(34) | 40(34) |
| | | | KI 50G11 | 44(37) | 45(38) |
| | | | KI 75G11 | 44(37) | 45(38) |
| | | | KI 90G11 | - | 46(40) |
| TB30.2C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 39(33) | 40(33) |
| | | | KI 50G11 | 44(36) | 44(37) |
| | | | KI 75G11 | 44(36) | 44(37) |
| | | | KI 90G11 | - | 45(38) |
| TB60.2D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 39(34) | 40(34) |
| | | | KI 50G11 | 44(37) | 45(38) |
| | | | KI 75G11 | 44(37) | 45(38) |
| | | | KI 90G11 | - | 46(40) |
| TB60.2E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 39(33) | 40(33) |
| | | | KI 50G11 | 44(36) | 44(37) |
| | | | KI 75G11 | 44(36) | 44(37) |
| | | | KI 90G11 | - | 45(38) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

LINED BOTH SIDES

TB60.3

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: 1x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 102 | 122 |
|---------|--------------------------|--------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB60.3A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 34(28) | 34(29) |
| | | | KI 50G11 | 41(35) | 41(36) |
| | | | KI 75G11 | 42(36) | 42(37) |
| | | | KI 90G11 | - | 42(38) |
| TB60.3B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | Nil | 34(29) | 35(30) |
| | | | KI 50G11 | 41(36) | 41(37) |
| | | | KI 75G11 | 42(37) | 42(38) |
| | | | KI 90G11 | - | 42(38) |
| TB60.3C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | Nil | 34(28) | 35(30) |
| | | | KI 50G11 | 41(36) | 41(37) |
| | | | KI 75G11 | 42(37) | 42(38) |
| | | | KI 90G11 | - | 42(38) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TB90.1

FIRE RESISTANCE LEVEL

NLB -/90/90

LB 90/90/90

CF 11[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 122 | 142 |
|---------|--------------------------|--------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB90.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 39(33) | 40(34) |
| | | | KI 50G11 | 48(44) | 48(44) |
| | | | KI 75G11 | 48(44) | 48(44) |
| | | | KI 90G11 | - | 48(44) |
| TB90.1B | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 43(37) | 43(38) |
| | | | KI 50G11 | 48(41) | 48(42) |
| | | | KI 75G11 | 48(41) | 48(42) |
| | | | KI 90G11 | - | 48(42) |
| TB90.1C | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 40(34) | 40(35) |
| | | | KI 50G11 | 48(44) | 48(45) |
| | | | KI 75G11 | 48(44) | 48(45) |
| | | | KI 90G11 | - | 48(45) |
| TB90.1D | 2x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 43(37) | 43(38) |
| | | | KI 50G11 | 48(41) | 48(42) |
| | | | KI 75G11 | 48(41) | 48(42) |
| | | | KI 90G11 | - | 48(42) |
| TB90.1E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 40(34) | 40(35) |
| | | | KI 50G11 | 48(44) | 48(45) |
| | | | KI 75G11 | 48(44) | 48(45) |
| | | | KI 90G11 | - | 48(45) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

LINED BOTH SIDES

TB120.1

FIRE RESISTANCE LEVEL

NLB ~~/120/120~~

LB 120/120/120

CF 21[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x16 mm fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: 2x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 134 | 154 |
|----------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB120.1A | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | 41(35) | 41(36) |
| | | | KI 50G11 | 48(45) | 48(45) |
| | | | KI 75G11 | 48(45) | 48(45) |
| | | | KI 90G11 | - | 48(45) |
| TB120.1B | 2x16 mm MULTISTOP ONE | 2x16 mm MULTISTOP ONE | Nil | 41(36) | 41(37) |
| | | | KI 50G11 | 48(45) | 48(45) |
| | | | KI 75G11 | 48(45) | 48(45) |
| | | | KI 90G11 | - | 48(45) |
| TB120.1C | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | Nil | 41(36) | 41(36) |
| | | | KI 50G11 | 48(45) | 48(45) |
| | | | KI 75G11 | 48(45) | 48(45) |
| | | | KI 90G11 | - | 48(45) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls.

TB120.3

FIRE RESISTANCE LEVEL

NLB ~~/120/120~~

LB 120/120/120

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd

Framing: Timber studs

Insulation: Refer to table

Side 2: 3x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TK778-15F01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 134 | 154 |
|----------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TB120.3A | 3x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | 46(38) | 46(39) |
| | | | KI 50G11 | 52(46) | 52(47) |
| | | | KI 75G11 | 52(46) | 52(47) |
| | | | KI 90G11 | - | 52(47) |
| TB120.3B | 3x16 mm MULTISTOP ONE | 3x16 mm MULTISTOP ONE | Nil | 46(39) | 46(40) |
| | | | KI 50G11 | 52(47) | 52(48) |
| | | | KI 75G11 | 52(47) | 52(48) |
| | | | KI 90G11 | - | 52(48) |
| TB120.3C | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | Nil | 46(38) | 46(39) |
| | | | KI 50G11 | 52(46) | 52(47) |
| | | | KI 75G11 | 52(46) | 52(47) |
| | | | KI 90G11 | - | 52(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ - LINED BOTH SIDES

TBF30.1

FIRE RESISTANCE LEVEL
 NLB -/30/30
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Timber studs
Insulation: Refer to table
Side 2: 1x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-S-02

Acoustic ratings are based on
studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 96 | 116 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TBF30.1A | 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 37(33) | 37(33) |
| | | | KI 50G11 | 41(36) | 41(36) |
| | | | KI 75G11 | 41(36) | 41(36) |
| | | | KI 90G11 | - | 41(36) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TBF30.2

FIRE RESISTANCE LEVEL
 NLB -/30/30
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Timber studs
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-S-02

Acoustic ratings are based on
studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 109 | 129 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TBF30.2A | 1x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 39(34) | 39(34) |
| | | | KI 50G11 | 43(39) | 43(39) |
| | | | KI 75G11 | 43(39) | 43(39) |
| | | | KI 90G11 | - | 43(39) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ – LINED BOTH SIDES

TBF60.1

FIRE RESISTANCE LEVEL

NLB –/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK
AQUA-TOUGH

Framing: Timber studs

Insulation: Refer to table

Side 2: 1x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-S-02

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 102 | 122 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TBF60.1A | 1x16 mm FIBEROCK AQUA-TOUGH | 1x16 mm FIBEROCK AQUA-TOUGH | Nil | 37(33) | 37(33) |
| | | | KI 50G11 | 40(36) | 40(36) |
| | | | KI 75G11 | 40(36) | 40(36) |
| | | | KI 90G11 | - | 40(36) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

FIBEROCK® AQUA-TOUGH™ – LINED BOTH SIDES

TBF90.1

FIRE RESISTANCE LEVEL
NLB **-/90/90**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK
AQUA-TOUGH
Framing: Timber studs
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-S-02

Acoustic ratings are based on
studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 122 | 142 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TBF90.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 40(35) | 41(35) |
| | | | KI 50G11 | 44(39) | 44(40) |
| | | | KI 75G11 | 44(39) | 44(40) |
| | | | KI 90G11 | - | 44(40) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TBF120.1

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x16 mm FIBEROCK
AQUA-TOUGH
Framing: Timber studs
Insulation: Refer to table
Side 2: 2x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-S-02

Acoustic ratings are based on
studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 134 | 154 |
|-----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TBF120.1A | 2x16 mm FIBEROCK AQUA-TOUGH | 2x16 mm FIBEROCK AQUA-TOUGH | Nil | 41(33) | 41(35) |
| | | | KI 50G11 | 45(39) | 45(39) |
| | | | KI 75G11 | 45(39) | 45(39) |
| | | | KI 90G11 | - | 45(39) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FURRED STUD

TF.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd
Framing: Timber studs
Furring: Rondo 129 furring channel
Insulation: Refer to table
Side 2: 1x10 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4), SLR-SR-T-SF-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 120 | 140 |
|--------|------------------------|------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF.1A | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Nil | 30(24) | 31(25) |
| | | | KI 50G11 | 37(29) | 38(30) |
| | | | KI 75G11 | 38(30) | 39(31) |
| | | | KI 90G11 | 38(30) | 39(31) |
| TF.1H | 1x10 mm SHEETROCK PLUS | 1x10 mm SHEETROCK PLUS | Nil | 37(30) | 38(31) |
| | | | KI 50G11 | 45(35) | 46(37) |
| | | | KI 75G11 | 45(35) | 46(37) |
| | | | KI 90G11 | 45(35) | 46(37) |
| TF.1I | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK PLUS | Nil | 33(27) | 34(28) |
| | | | KI 50G11 | 40(32) | 41(33) |
| | | | KI 75G11 | 41(33) | 42(34) |
| | | | KI 90G11 | 41(33) | 42(34) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FURRED STUD

TF.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd
Framing: Timber studs
Furring: Rondo 129 furring channel
Insulation: Refer to table
Side 2: 2x10 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4), SLR-SR-T-SF-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 140 | 160 |
|--------|------------------------|------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF.2A | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK ONE | Nil | 36(27) | 37(28) |
| | | | KI 50G11 | 44(34) | 45(35) |
| | | | KI 75G11 | 44(34) | 46(36) |
| | | | KI 90G11 | 45(35) | 46(36) |
| TF.2H | 2x10 mm SHEETROCK PLUS | 2x10 mm SHEETROCK PLUS | Nil | 46(38) | 47(39) |
| | | | KI 50G11 | 54(46) | 55(48) |
| | | | KI 75G11 | 55(47) | 55(48) |
| | | | KI 90G11 | 55(47) | 55(48) |
| TF.2I | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK PLUS | Nil | 39(30) | 40(31) |
| | | | KI 50G11 | 47(38) | 48(38) |
| | | | KI 75G11 | 47(38) | 49(39) |
| | | | KI 90G11 | 48(38) | 49(39) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FURRED STUD

TF.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 1x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 126 | 146 |
|--------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Nil | 37(31) | 38(32) |
| | | | KI 50G11 | 44(35) | 46(37) |
| | | | KI 75G11 | 44(35) | 46(38) |
| | | | KI 90G11 | 45(36) | 46(38) |
| TF.3B | 1x13 mm WETSTOP | 1x13 mm WETSTOP | Nil | 38(32) | 39(32) |
| | | | KI 50G11 | 46(37) | 47(39) |
| | | | KI 75G11 | 46(37) | 47(39) |
| | | | KI 90G11 | 46(37) | 47(39) |
| TF.3E | 1x13 mm SHEETROCK ONE | 1x13 mm WETSTOP | Nil | 38(32) | 39(32) |
| | | | KI 50G11 | 45(36) | 46(38) |
| | | | KI 75G11 | 45(36) | 47(38) |
| | | | KI 90G11 | 45(36) | 47(38) |
| TF.3K | 1x13 mm SHEETROCK ONE | 1x13 mm IMPACTSTOP | Nil | 39(33) | 40(33) |
| | | | KI 50G11 | 47(39) | 48(41) |
| | | | KI 75G11 | 47(39) | 48(41) |
| | | | KI 90G11 | 47(39) | 48(41) |
| TF.3L | 1x13 mm WETSTOP | 1x13 mm IMPACTSTOP | Nil | 39(33) | 40(33) |
| | | | KI 50G11 | 48(40) | 48(41) |
| | | | KI 75G11 | 48(40) | 49(41) |
| | | | KI 90G11 | 48(40) | 49(41) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FURRED STUD

TF.4

NON-FIRE RATED



SYSTEM DESCRIPTION

- Side 1:** 2x13 mm non-fire resistant pbd
- Framing:** Timber studs
- Furring:** Rondo 129 furring channel
- Insulation:** Refer to table
- Side 2:** 2x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 152 | 172 |
|--------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF.4A | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 46(38) | 47(39) |
| | | | KI 50G11 | 55(45) | 55(47) |
| | | | KI 75G11 | 55(46) | 56(47) |
| | | | KI 90G11 | 55(46) | 56(47) |
| TF.4B | 2x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 47(39) | 48(40) |
| | | | KI 50G11 | 56(47) | 56(48) |
| | | | KI 75G11 | 56(47) | 57(48) |
| | | | KI 90G11 | 56(47) | 57(48) |
| TF.4E | 2x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 46(39) | 47(39) |
| | | | KI 50G11 | 55(46) | 56(47) |
| | | | KI 75G11 | 55(46) | 56(48) |
| | | | KI 90G11 | 55(46) | 56(48) |
| TF.4K | 2x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 48(40) | 49(41) |
| | | | KI 50G11 | 56(48) | 57(49) |
| | | | KI 75G11 | 57(48) | 57(49) |
| | | | KI 90G11 | 57(48) | 57(50) |
| TF.4L | 2x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 49(41) | 50(41) |
| | | | KI 50G11 | 57(49) | 57(50) |
| | | | KI 75G11 | 57(49) | 58(50) |
| | | | KI 90G11 | 57(49) | 58(50) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TF30.1

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm fire resistant pbd
- Framing:** Timber studs
- Furring:** Rondo 129 furring channel
- Insulation:** Refer to table
- Side 2:** 1x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 126 | 146 |
|---------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF30.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 39(33) | 40(33) |
| | | | KI 50G11 | 47(39) | 48(40) |
| | | | KI 75G11 | 47(39) | 48(40) |
| | | | KI 90G11 | 47(39) | 48(40) |
| TF30.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | Nil | 40(34) | 41(34) |
| | | | KI 50G11 | 48(41) | 49(42) |
| | | | KI 75G11 | 49(41) | 50(42) |
| | | | KI 90G11 | 49(41) | 50(42) |
| TF30.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | Nil | 40(33) | 41(34) |
| | | | KI 50G11 | 48(41) | 49(41) |
| | | | KI 75G11 | 48(41) | 49(41) |
| | | | KI 90G11 | 48(41) | 49(41) |
| TF30.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | Nil | 40(34) | 41(34) |
| | | | KI 50G11 | 48(41) | 49(42) |
| | | | KI 75G11 | 49(41) | 50(42) |
| | | | KI 90G11 | 49(41) | 50(42) |
| TF30.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | 40(33) | 41(34) |
| | | | KI 50G11 | 48(41) | 49(41) |
| | | | KI 75G11 | 48(41) | 49(41) |
| | | | KI 90G11 | 48(41) | 49(41) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

FURRED STUD

TF30.2

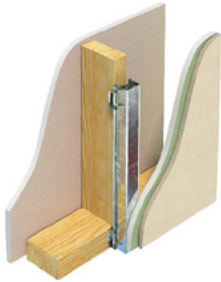
FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIRESTOP
Framing: Timber stud
Furring: Rondo 129 furring channel
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE
 + 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 134 | 154 |
|---------|------------------|--|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF30.2B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE +1x6 mm VILLABOARD | KI 50G11 | 52(43) | 53(44) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

FURRED STUD

TF30.3

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Side 1: 1x13 mm MULTISTOP ONE
+ 1x13 mm FIBEROCK
AQUA-TOUGH

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 1x13 mm MULTISTOP ONE
+ 13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 152 | 172 |
|---------|---|---|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF30.3A | 1x13 mm MULTISTOP ONE + 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm MULTISTOP ONE + 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 49(41) | 50(42) |
| | | | KI 50G11 | 55(49) | 55(50) |
| | | | KI 75G11 | 55(49) | 55(50) |
| | | | KI 90G11 | 55(49) | 55(50) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TF30.4

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 139 | 159 |
|---------|--------------------------|--------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF30.4A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 44(37) | 45(37) |
| | | | KI 50G11 | 52(43) | 52(44) |
| | | | KI 75G11 | 52(43) | 53(44) |
| | | | KI 90G11 | 52(43) | 53(44) |
| TF30.4B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 45(38) | 46(39) |
| | | | KI 50G11 | 53(45) | 54(46) |
| | | | KI 75G11 | 53(45) | 54(46) |
| | | | KI 90G11 | 53(45) | 54(46) |
| TF30.4C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 45(38) | 46(38) |
| | | | KI 50G11 | 52(44) | 53(45) |
| | | | KI 75G11 | 53(44) | 53(45) |
| | | | KI 90G11 | 53(44) | 54(45) |
| TF30.4D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 45(38) | 46(39) |
| | | | KI 50G11 | 53(45) | 54(46) |
| | | | KI 75G11 | 53(45) | 54(46) |
| | | | KI 90G11 | 53(45) | 54(46) |
| TF30.4E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 45(38) | 46(38) |
| | | | KI 50G11 | 52(44) | 53(45) |
| | | | KI 75G11 | 53(44) | 53(45) |
| | | | KI 90G11 | 53(44) | 54(45) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FURRED STUD

TF60.5

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
Framing: Timber studs
Furring: Rondo 129 furring channel
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 132 | 152 |
|---------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF60.5A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 42(35) | 42(36) |
| | | | KI 50G11 | 49(41) | 50(42) |
| | | | KI 75G11 | 50(41) | 51(43) |
| | | | KI 90G11 | 50(41) | 51(43) |
| TF60.5B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | Nil | 42(36) | 43(36) |
| | | | KI 50G11 | 50(42) | 51(43) |
| | | | KI 75G11 | 51(42) | 51(43) |
| | | | KI 90G11 | 51(43) | 52(44) |
| TF60.5C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | Nil | 42(36) | 43(36) |
| | | | KI 50G11 | 50(41) | 51(43) |
| | | | KI 75G11 | 50(42) | 51(43) |
| | | | KI 90G11 | 50(42) | 51(43) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TF60.6

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIRESTOP
Framing: Timber studs
Furring: Rondo 129 furring channel
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE
 + 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 138 | 158 |
|---------|------------------|---|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF60.6B | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE +1x6 mm VILLABOARD | KI 50G11 | 53(45) | 54(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

FURRED STUD

TF60.7

FIRE RESISTANCE LEVEL

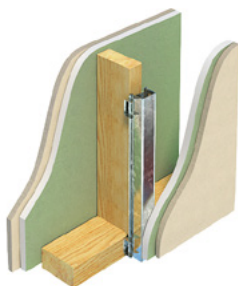
NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Side 1: 1x16 mm MULTISTOP ONE
+ 1x13 mm FIBEROCK
AQUA-TOUGH

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 1x16 mm MULTISTOP ONE
+ 1x13 mm FIBEROCK
AQUA-TOUGH

TF90.1

FIRE RESISTANCE LEVEL

NLB -/90/90

LB 90/90/90

CF 11[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 150 | 170 |
|---------|---|---|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF60.7A | 1x16 mm MULTISTOP ONE + 1x13 mm FIBEROCK AQUA-TOUGH | 1x16 mm MULTISTOP ONE + 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 50(43) | 51(43) |
| | | | KI 50G11 | 58(51) | 58(52) |
| | | | KI 75G11 | 58(51) | 58(52) |
| | | | KI 90G11 | 58(51) | 58(52) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 152 | 172 |
|----------|--------------------------|--------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF90.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 49(41) | 49(41) |
| | | | KI 50G11 | 57(49) | 57(50) |
| | | | KI 75G11 | 57(49) | 57(50) |
| | | | KI 90G11 | 57(49) | 58(50) |
| TF90.1B | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 50(42) | 51(43) |
| | | | KI 50G11 | 58(51) | 58(52) |
| | | | KI 75G11 | 58(51) | 58(52) |
| | | | KI 90G11 | 58(51) | 59(52) |
| TF90.1C | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 49(41) | 50(42) |
| | | | KI 50G11 | 57(50) | 58(51) |
| | | | KI 75G11 | 57(50) | 58(51) |
| | | | KI 90G11 | 57(50) | 58(51) |
| TF120.1D | 2x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 50(42) | 51(43) |
| | | | KI 50G11 | 58(51) | 58(52) |
| | | | KI 75G11 | 58(51) | 58(52) |
| | | | KI 90G11 | 58(51) | 59(52) |
| TF120.1E | 2x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 49(41) | 50(42) |
| | | | KI 50G11 | 57(50) | 58(51) |
| | | | KI 75G11 | 57(50) | 58(51) |
| | | | KI 90G11 | 57(50) | 58(51) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

FURRED STUD

TF120.1

FIRE RESISTANCE LEVEL

NLB -/120/120

LB 120/120/120

CF 21[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x16 mm fire resistant pbd

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 2x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 164 | 184 |
|----------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF120.1A | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | 51(43) | 52(44) |
| | | | KI 50G11 | 58(50) | 59(51) |
| | | | KI 75G11 | 59(50) | 59(51) |
| | | | KI 90G11 | 59(50) | 59(51) |
| TF120.1B | 2x16 mm MULTISTOP ONE | 2x16 mm MULTISTOP ONE | Nil | 52(44) | 53(45) |
| | | | KI 50G11 | 59(51) | 60(53) |
| | | | KI 75G11 | 59(52) | 60(53) |
| | | | KI 90G11 | 59(52) | 60(53) |
| TF120.1C | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | Nil | 52(44) | 53(45) |
| | | | KI 50G11 | 59(51) | 59(52) |
| | | | KI 75G11 | 59(51) | 59(52) |
| | | | KI 90G11 | 59(51) | 59(52) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TF120.3

FIRE RESISTANCE LEVEL

NLB -/120/120

LB 120/120/120

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 3x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TK778-15F01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 196 | 216 |
|----------|-----------------------|-----------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TF120.3A | 3x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | 54(47) | 55(48) |
| | | | KI 50G11 | 61(55) | 62(56) |
| | | | KI 75G11 | 61(55) | 62(56) |
| | | | KI 90G11 | - | 62(56) |
| TF120.3B | 3x16 mm MULTISTOP ONE | 3x16 mm MULTISTOP ONE | Nil | 55(48) | 56(49) |
| | | | KI 50G11 | 62(56) | 63(57) |
| | | | KI 75G11 | 62(56) | 63(57) |
| | | | KI 90G11 | - | 63(57) |
| TF120.3C | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | Nil | 54(47) | 55(48) |
| | | | KI 50G11 | 61(55) | 62(56) |
| | | | KI 75G11 | 61(55) | 62(56) |
| | | | KI 90G11 | - | 62(56) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ – FURRED STUD

TFF30.1

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 1x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-FS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 126 | 146 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TFF30.1A | 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 41(33) | 42(34) |
| | | | KI 50G11 | 50(41) | 50(41) |
| | | | KI 75G11 | 51(43) | 52(43) |
| | | | KI 90G11 | 52(44) | 52(44) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TFF30.2

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH

Framing: Timber studs

Furring: Rondo 129 furring channel

Insulation: Refer to table

Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-FS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 139 | 159 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TFF30.2A | 1x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 46(38) | 47(38) |
| | | | KI 50G11 | 54(46) | 54(46) |
| | | | KI 75G11 | 55(47) | 55(47) |
| | | | KI 90G11 | 56(47) | 56(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ – FURRED STUD

TFF60.1

FIRE RESISTANCE LEVEL
 NLB –/60/60
 LB 60/60/60
 CF 23[†]
 FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK
AQUA-TOUGH
Framing: Timber studs
Furring: Rondo 129 furring channel
Insulation: Refer to table
Side 2: 1x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-FS-01

Acoustic ratings are based on
studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 132 | 152 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TFF60.1A | 1x16 mm FIBEROCK AQUA-TOUGH | 1x16 mm FIBEROCK AQUA-TOUGH | Nil | 45(37) | 46(37) |
| | | | KI 50G11 | 53(45) | 53(45) |
| | | | KI 75G11 | 54(47) | 54(47) |
| | | | KI 90G11 | 55(47) | 55(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TFF90.1

FIRE RESISTANCE LEVEL
 NLB –/90/90
 FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK
AQUA-TOUGH
Framing: Timber studs
Furring: Rondo 129 furring channel
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-FS-01

Acoustic ratings are based on
studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 152 | 172 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TFF90.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 52(42) | 53(44) |
| | | | KI 50G11 | 58(47) | 59(49) |
| | | | KI 75G11 | 60(49) | 60(50) |
| | | | KI 90G11 | 61(50) | 61(51) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ – FURRED STUD

TFF120.1

FIRE RESISTANCE LEVEL
 NLB **-/120/120**
 FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x16 mm FIBEROCK
 AQUA-TOUGH
Framing: Timber studs
Furring: Rondo 129 furring channel
Insulation: Refer to table
Side 2: 2x16 mm FIBEROCK
 AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-FS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 164 | 184 |
|-----------|-----------------------------------|-----------------------------------|-------------------|---|--------|
| | | | STUD SIZE mm | 70 | 90 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | |
| TFF120.1A | 2x16 mm FIBEROCK AQUA-TOUGH | 2x16 mm FIBEROCK AQUA-TOUGH | Nil | 53(44) | 56(46) |
| | | | KI 50G11 | 60(53) | 60(54) |
| | | | KI 75G11 | 61(56) | 61(56) |
| | | | KI 90G11 | 62(56) | 62(56) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

STAGGERED STUD

TS.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 1x10 mm non-fire resistant pbd.

ACOUSTIC RATINGS

BASIS: RT&A TE405-20S04(R4), TK778-12S01 & SLR-SR-T-SS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 110 | 140 | 160 |
|--------|------------------------|------------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS.1A | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Nil | 28(19) | 30(21) | 31(22) |
| | | | KI 50G11 | 34(26) | 36(28) | 37(29) |
| | | | KI 75G11 | 35(26) | 37(28) | 38(29) |
| | | | KI 90G11 | 36(28) | 38(30) | 39(31) |
| TS.1H | 1x10 mm SHEETROCK PLUS | 1x10 mm SHEETROCK PLUS | Nil | 36(27) | 37(28) | 37(28) |
| | | | KI 50G11 | 44(33) | 45(36) | 45(37) |
| | | | KI 75G11 | 45(34) | 46(37) | 46(38) |
| | | | KI 90G11 | 45(34) | 46(37) | 47(39) |
| TS.1I | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK PLUS | Nil | 33(24) | 35(26) | 36(26) |
| | | | KI 50G11 | 39(31) | 41(33) | 42(33) |
| | | | KI 75G11 | 40(31) | 42(33) | 43(33) |
| | | | KI 90G11 | 41(33) | 43(35) | 44(35) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TS.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 2x10 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4), SLR-SR-T-SS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 130 | 160 | 180 |
|--------|------------------------|------------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS.2A | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK ONE | Nil | 34(23) | 36(25) | 37(26) |
| | | | KI 50G11 | 43(33) | 45(35) | 46(36) |
| | | | KI 75G11 | 44(33) | 46(35) | 47(36) |
| | | | KI 90G11 | 45(35) | 47(37) | 48(38) |
| TS.2H | 2x10 mm SHEETROCK PLUS | 2x10 mm SHEETROCK PLUS | Nil | 42(34) | 44(35) | 44(36) |
| | | | KI 50G11 | 52(45) | 53(46) | 53(47) |
| | | | KI 75G11 | 53(46) | 54(47) | 54(48) |
| | | | KI 90G11 | 54(47) | 55(48) | 55(49) |
| TS.2I | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK PLUS | Nil | 39(28) | 41(30) | 42(30) |
| | | | KI 50G11 | 48(38) | 50(40) | 51(40) |
| | | | KI 75G11 | 49(38) | 51(40) | 52(40) |
| | | | KI 90G11 | 50(40) | 52(42) | 53(42) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

STAGGERED STUD

TS.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd

Framing: Staggered timber studs

Insulation: Refer to table

Side 2: 1x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 116 | 146 | 166 |
|--------|-----------------------|-----------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Nil | 35(28) | 36(29) | 37(29) |
| | | | KI 50G11 | 44(34) | 44(34) | 45(35) |
| | | | KI 75G11 | 45(35) | 45(35) | 46(37) |
| | | | KI 90G11 | 45(36) | 45(36) | 46(38) |
| TS.3B | 1x13 mm WETSTOP | 1x13 mm WETSTOP | Nil | 36(29) | 37(30) | 38(30) |
| | | | KI 50G11 | 44(33) | 45(36) | 45(36) |
| | | | KI 75G11 | 45(34) | 46(37) | 47(37) |
| | | | KI 90G11 | 45(34) | 46(37) | 47(37) |
| TS.3E | 1x13 mm SHEETROCK ONE | 1x13 mm WETSTOP | Nil | 35(28) | 36(29) | 37(29) |
| | | | KI 50G11 | 44(34) | 45(35) | 45(36) |
| | | | KI 75G11 | 45(35) | 46(36) | 46(37) |
| | | | KI 90G11 | 45(35) | 46(36) | 46(37) |
| TS.3K | 1x13 mm SHEETROCK ONE | 1x13 mm IMPACTSTOP | Nil | 37(30) | 38(30) | 38(31) |
| | | | KI 50G11 | 44(34) | 45(37) | 46(37) |
| | | | KI 75G11 | 45(35) | 47(38) | 47(38) |
| | | | KI 90G11 | 45(35) | 47(38) | 47(38) |
| TS.3L | 1x13 mm WETSTOP | 1x13 mm IMPACTSTOP | Nil | 37(31) | 38(31) | 39(31) |
| | | | KI 50G11 | 45(35) | 46(37) | 46(38) |
| | | | KI 75G11 | 46(36) | 47(38) | 47(39) |
| | | | KI 90G11 | 46(36) | 47(39) | 47(39) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TS.4

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd

Framing: Staggered timber studs

Insulation: Refer to table

Side 2: 2x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 129 | 159 | 179 |
|--------|-----------------------|-----------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS.4A | 1x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 40(34) | 41(34) | 41(34) |
| | | | KI 50G11 | 48(39) | 49(41) | 49(42) |
| | | | KI 75G11 | 49(41) | 50(43) | 50(43) |
| | | | KI 90G11 | 50(42) | 51(44) | 51(45) |
| TS.4B | 1x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 41(35) | 42(35) | 42(35) |
| | | | KI 50G11 | 49(41) | 50(43) | 50(44) |
| | | | KI 75G11 | 50(42) | 51(44) | 51(45) |
| | | | KI 90G11 | 51(43) | 52(45) | 52(46) |
| TS.4E | 1x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 40(35) | 41(34) | 42(35) |
| | | | KI 50G11 | 48(40) | 49(42) | 50(43) |
| | | | KI 75G11 | 50(41) | 50(43) | 51(44) |
| | | | KI 90G11 | 52(46) | 52(47) | 53(48) |
| TS.4K | 1x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 42(36) | 43(36) | 43(36) |
| | | | KI 50G11 | 49(42) | 50(44) | 50(45) |
| | | | KI 75G11 | 51(43) | 51(45) | 52(46) |
| | | | KI 90G11 | 52(44) | 52(46) | 53(47) |
| TS.4L | 1x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 42(36) | 43(36) | 44(37) |
| | | | KI 50G11 | 50(43) | 50(44) | 51(45) |
| | | | KI 75G11 | 51(44) | 51(45) | 52(46) |
| | | | KI 90G11 | 52(45) | 52(46) | 53(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

STAGGERED STUD

TS.5

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x13 mm non-fire resistant pbd

Framing: Staggered timber studs

Insulation: Refer to table

Side 2: 2x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 142 | 172 | 192 |
|--------|-----------------------|-----------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS.5A | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | 44(37) | 45(37) | 45(38) |
| | | | KI 50G11 | 53(46) | 53(47) | 54(48) |
| | | | KI 75G11 | 54(47) | 54(48) | 55(49) |
| | | | KI 90G11 | 55(48) | 56(50) | 56(50) |
| TS.5B | 2x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | 45(38) | 46(38) | 47(39) |
| | | | KI 50G11 | 53(47) | 54(48) | 54(49) |
| | | | KI 75G11 | 54(48) | 55(49) | 55(50) |
| | | | KI 90G11 | 55(49) | 56(51) | 56(51) |
| TS.5E | 2x13 mm SHEETROCK ONE | 2x13 mm WETSTOP | Nil | 44(37) | 45(38) | 46(38) |
| | | | KI 50G11 | 53(46) | 54(48) | 54(49) |
| | | | KI 75G11 | 54(47) | 55(49) | 55(50) |
| | | | KI 90G11 | 55(48) | 56(50) | 56(51) |
| TS.5K | 2x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | 45(39) | 47(39) | 47(40) |
| | | | KI 50G11 | 54(48) | 54(49) | 54(50) |
| | | | KI 75G11 | 55(49) | 55(50) | 55(51) |
| | | | KI 90G11 | 56(50) | 56(51) | 56(52) |
| TS.5L | 2x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | 46(39) | 47(40) | 48(40) |
| | | | KI 50G11 | 54(48) | 54(50) | 54(50) |
| | | | KI 75G11 | 55(49) | 55(51) | 55(51) |
| | | | KI 90G11 | 56(50) | 56(52) | 56(52) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

STAGGERED STUD

TS30.1

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd**Framing:** Staggered timber studs**Insulation:** Refer to table**Side 2:** 1x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 116 | 146 | 166 |
|---------|-----------------------|-----------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS30.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 38(31) | 38(31) | 39(31) |
| | | | KI 50G11 | 45(34) | 46(37) | 46(38) |
| | | | KI 75G11 | 46(35) | 47(38) | 47(39) |
| | | | KI 90G11 | 46(35) | 47(38) | 47(39) |
| TS30.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | Nil | 38(32) | 39(32) | 40(32) |
| | | | KI 50G11 | 46(37) | 46(38) | 46(39) |
| | | | KI 75G11 | 47(38) | 47(39) | 48(40) |
| | | | KI 90G11 | 47(38) | 47(39) | 48(40) |
| TS30.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | Nil | 38(31) | 39(31) | 40(32) |
| | | | KI 50G11 | 45(35) | 46(37) | 46(38) |
| | | | KI 75G11 | 46(37) | 47(39) | 47(39) |
| | | | KI 90G11 | 46(37) | 47(39) | 47(39) |
| TS30.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | Nil | 38(32) | 39(32) | 40(32) |
| | | | KI 50G11 | 46(37) | 46(38) | 46(39) |
| | | | KI 75G11 | 47(38) | 47(39) | 48(40) |
| | | | KI 90G11 | 47(38) | 47(39) | 48(40) |
| TS30.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | 38(31) | 39(31) | 40(32) |
| | | | KI 50G11 | 45(35) | 46(37) | 46(38) |
| | | | KI 75G11 | 46(37) | 47(39) | 47(39) |
| | | | KI 90G11 | 46(37) | 47(39) | 47(39) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TS30.2

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd +
1x13 mm non-fire resistant pbd**Framing:** Staggered timber studs**Insulation:** Refer to table**Side 2:** 1x13 mm fire resistant pbd +
1x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 142 | 172 | 192 |
|---------|--|--|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS30.2A | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | KI 90G11 | 53(47) | 54(48) | 54(49) |
| TS30.2B | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | KI 90G11 | 54(48) | 54(49) | 54(50) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

STAGGERED STUD

TS30.3

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIRESTOP
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE +
 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 122 | 152 | 172 |
|---------|------------------|---|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS30.3B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 49(42) | 49(43) | 49(44) |
| | | | KI 90G11 | 50(44) | 51(45) | 51(45) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TS30.4

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm MULTISTOP ONE +
 1x6 mm VILLABOARD
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE +
 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 128 | 158 | 178 |
|---------|---|---|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS30.4B | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | 46(38) | 47(39) | 48(40) |
| | | | KI 50G11 | 54(46) | 55(48) | 55(49) |
| | | | KI 75G11 | 55(47) | 56(49) | 56(50) |
| | | | KI 90G11 | 56(48) | 57(50) | 57(51) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

STAGGERED STUD

TS30.5

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd**Framing:** Staggered timber studs**Insulation:** Refer to table**Side 2:** 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 129 | 159 | 179 |
|---------|-----------------------|-----------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS30.5A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 42(35) | 43(36) | 44(36) |
| | | | KI 50G11 | 49(43) | 50(44) | 50(45) |
| | | | KI 75G11 | 50(44) | 51(45) | 51(46) |
| | | | KI 90G11 | 51(45) | 52(46) | 52(47) |
| TS30.5B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 43(36) | 44(37) | 44(38) |
| | | | KI 50G11 | 50(44) | 50(45) | 51(46) |
| | | | KI 75G11 | 51(45) | 51(46) | 52(47) |
| | | | KI 90G11 | 52(46) | 52(47) | 53(48) |
| TS30.5C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 42(36) | 44(37) | 44(37) |
| | | | KI 50G11 | 50(43) | 50(45) | 51(45) |
| | | | KI 75G11 | 51(44) | 51(46) | 52(46) |
| | | | KI 90G11 | 52(45) | 52(47) | 53(48) |
| TS30.5D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 43(36) | 44(37) | 44(38) |
| | | | KI 50G11 | 50(44) | 50(45) | 51(46) |
| | | | KI 75G11 | 51(45) | 51(46) | 52(47) |
| | | | KI 90G11 | 52(46) | 52(47) | 53(48) |
| TS30.5E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 42(36) | 44(37) | 44(37) |
| | | | KI 50G11 | 50(43) | 50(45) | 51(45) |
| | | | KI 75G11 | 51(44) | 51(46) | 52(46) |
| | | | KI 90G11 | 52(45) | 52(47) | 53(48) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TS30.6

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd + 1x13 mm non-fire resistant pbd**Framing:** Staggered timber studs**Insulation:** Refer to table**Side 2:** 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 142 | 172 | 192 |
|---------|--|------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS30.6A | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | 2x13 mm FIRESTOP | KI 90G11 | 53(48) | 54(49) | 54(49) |
| TS30.6B | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | 2x13 mm FIRESTOP | KI 90G11 | 54(48) | 54(49) | 54(50) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

STAGGERED STUD

TS60.7

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd

Framing: Staggered timber studs

Insulation: Refer to table

Side 2: 1x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 122 | 152 | 172 |
|---------|--------------------------|--------------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS60.7A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 39(32) | 40(33) | 41(33) |
| | | | KI 50G11 | 46(38) | 47(39) | 47(40) |
| | | | KI 75G11 | 47(39) | 48(40) | 48(41) |
| | | | KI 90G11 | 47(39) | 48(40) | 48(41) |
| TS60.7B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | Nil | 39(33) | 41(34) | 41(34) |
| | | | KI 50G11 | 46(39) | 47(40) | 47(41) |
| | | | KI 75G11 | 48(40) | 48(41) | 48(42) |
| | | | KI 90G11 | 48(40) | 48(41) | 48(42) |
| TS60.7C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | Nil | 39(33) | 41(34) | 41(34) |
| | | | KI 50G11 | 46(39) | 47(40) | 47(40) |
| | | | KI 75G11 | 47(40) | 48(41) | 48(41) |
| | | | KI 90G11 | 47(40) | 48(41) | 48(41) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TS60.8

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd +
1x13 mm non-fire rated pbd

Framing: Staggered timber studs

Insulation: Refer to table

Side 2: 1x16 mm fire resistant pbd +
1x13 mm non-fire rated pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 148 | 178 | 198 |
|---------|---|---|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS60.8A | 1x16 mm FIRESTOP + 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP + 1x13 mm SHEETROCK ONE | KI 90G11 | 53(48) | 53(49) | 53(50) |
| TS60.8B | 1x16 mm MULTISTOP ONE + 1x13 mm WETSTOP | 1x16 mm MULTISTOP ONE + 1x13 mm WETSTOP | KI 90G11 | 54(49) | 54(50) | 54(50) |

* KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

STAGGERED STUD

TS60.9

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Side 1:** 1x16 mm FIRESTOP
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE +
 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-05F09

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 128 | 158 | 178 |
|---------|------------------|---|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS60.9B | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | 50(44) | 50(45) | 50(46) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TS60.10

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Side 1:** 1x16 mm MULTISTOP ONE +
 1x6 mm VILLABOARD
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE +
 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 134 | 1764 | 184 |
|----------|---|---|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS60.10B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | 47(40) | 48(41) | 49(41) |
| | | | KI 50G11 | 54(48) | 55(49) | 55(50) |
| | | | KI 75G11 | 55(49) | 56(50) | 56(51) |
| | | | KI 90G11 | 56(50) | 57(51) | 57(51) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

STAGGERED STUD

TS90.1

FIRE RESISTANCE LEVEL
 NLB -/90/90
 LB 90/90/90
 CF 11[†]
 FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 142 | 172 | 192 |
|---------|-----------------------|-----------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS90.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 46(39) | 48(41) | 49(42) |
| | | | KI 50G11 | 54(48) | 54(49) | 54(50) |
| | | | KI 75G11 | 55(49) | 55(50) | 55(51) |
| | | | KI 90G11 | 56(50) | 56(51) | 56(52) |
| TS90.1B | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 47(40) | 48(41) | 49(42) |
| | | | KI 50G11 | 54(49) | 54(50) | 54(51) |
| | | | KI 75G11 | 55(50) | 55(51) | 55(52) |
| | | | KI 90G11 | 56(51) | 56(52) | 56(53) |
| TS90.1C | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 47(39) | 48(40) | 48(41) |
| | | | KI 50G11 | 54(49) | 54(50) | 54(50) |
| | | | KI 75G11 | 55(50) | 55(51) | 55(51) |
| | | | KI 90G11 | 56(51) | 56(52) | 56(52) |
| TS90.1D | 2x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | 47(40) | 48(41) | 49(42) |
| | | | KI 50G11 | 54(49) | 54(50) | 54(51) |
| | | | KI 75G11 | 55(50) | 55(51) | 55(52) |
| | | | KI 90G11 | 56(51) | 56(52) | 56(53) |
| TS90.1E | 2x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 47(39) | 48(40) | 48(41) |
| | | | KI 50G11 | 54(49) | 54(50) | 54(50) |
| | | | KI 75G11 | 55(50) | 55(51) | 55(51) |
| | | | KI 90G11 | 56(51) | 56(52) | 56(52) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

STAGGERED STUD

TS120.1

FIRE RESISTANCE LEVEL

NLB -/120/120

LB 120/120/120

CF 21[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x16 mm fire resistant pbd**Framing:** Staggered timber studs**Insulation:** Refer to table**Side 2:** 2x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 154 | 184 | 204 |
|----------|-----------------------|-----------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS120.1A | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | 48(41) | 49(42) | 50(43) |
| | | | KI 50G11 | 54(50) | 54(51) | 54(51) |
| | | | KI 75G11 | 55(51) | 55(52) | 55(52) |
| | | | KI 90G11 | 56(52) | 56(53) | 56(53) |
| TS120.1B | 2x16 mm MULTISTOP ONE | 2x16 mm MULTISTOP ONE | Nil | 48(42) | 49(43) | 50(44) |
| | | | KI 50G11 | 54(51) | 54(51) | 54(52) |
| | | | KI 75G11 | 55(52) | 55(52) | 55(53) |
| | | | KI 90G11 | 56(53) | 56(53) | 56(54) |
| TS120.1C | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | Nil | 48(42) | 49(43) | 50(43) |
| | | | KI 50G11 | 54(50) | 54(51) | 54(51) |
| | | | KI 75G11 | 55(51) | 55(52) | 55(52) |
| | | | KI 90G11 | 56(52) | 56(53) | 56(53) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TS120.3

FIRE RESISTANCE LEVEL

NLB -/120/120

LB 120/120/120

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd**Framing:** Staggered timber studs**Insulation:** Refer to table**Side 2:** 3x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TK778-15F01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 186 | 216 | 236 |
|----------|-----------------------|-----------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TS120.3A | 3x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | 50(45) | 51(47) | 51(48) |
| | | | KI 50G11 | 59(55) | 60(56) | 60(57) |
| | | | KI 75G11 | 59(55) | 60(56) | 60(57) |
| | | | KI 90G11 | 59(55) | 60(56) | 60(57) |
| TS120.3B | 3x16 mm MULTISTOP ONE | 3x16 mm MULTISTOP ONE | Nil | 50(46) | 51(48) | 51(49) |
| | | | KI 50G11 | 59(56) | 60(57) | 60(58) |
| | | | KI 75G11 | 59(56) | 60(57) | 60(58) |
| | | | KI 90G11 | 59(56) | 60(57) | 60(58) |
| TS120.3C | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | Nil | 50(45) | 51(47) | 51(48) |
| | | | KI 50G11 | 59(55) | 60(56) | 60(57) |
| | | | KI 75G11 | 59(55) | 60(56) | 60(57) |
| | | | KI 90G11 | 59(55) | 60(56) | 60(57) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ – STAGGERED STUD

TSF30.1

FIRE RESISTANCE LEVEL
NLB **-/30/30**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 1x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-SS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 116 | 146 | 166 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TSF30.1A | 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm FIBEROCK AQUA-TOUGH | Nil | 41(33) | 42(34) | 43(35) |
| | | | KI 50G11 | 46(39) | 47(41) | 48(43) |
| | | | KI 75G11 | 48(41) | 49(43) | 50(44) |
| | | | KI 90G11 | 49(42) | 50(43) | 51(44) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TSF30.2

FIRE RESISTANCE LEVEL
NLB **-/30/30**
LB **30/30/30**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-SS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 129 | 159 | 179 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TSF30.2A | 1x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 46(37) | 46(38) | 47(40) |
| | | | KI 50G11 | 50(43) | 50(44) | 51(45) |
| | | | KI 75G11 | 51(44) | 51(45) | 52(46) |
| | | | KI 90G11 | 52(45) | 52(46) | 54(47) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ – STAGGERED STUD

TSF60.1

FIRE RESISTANCE LEVEL

NLB -/60/60

LB 60/60/60

CF 23[†]

FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK
AQUA-TOUGH

Framing: Staggered timber studs

Insulation: Refer to table

Side 2: 1x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-SS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 122 | 152 | 172 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TSF60.1A | 1x16 mm FIBEROCK AQUA-TOUGH | 1x16 mm FIBEROCK AQUA-TOUGH | Nil | 44(36) | 45(37) | 46(38) |
| | | | KI 50G11 | 48(42) | 49(43) | 50(44) |
| | | | KI 75G11 | 49(44) | 51(44) | 51(45) |
| | | | KI 90G11 | 50(44) | 51(45) | 52(46) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

FIBEROCK® AQUA-TOUGH™ – STAGGERED STUD

TSF90.1

FIRE RESISTANCE LEVEL
NLB **-/90/90**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK
AQUA-TOUGH
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-SS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 142 | 172 | 192 |
|----------|-----------------------------------|-----------------------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TSF90.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | 48(42) | 48(43) | 49(43) |
| | | | KI 50G11 | 52(44) | 53(46) | 55(48) |
| | | | KI 75G11 | 54(46) | 55(48) | 56(49) |
| | | | KI 90G11 | 55(47) | 56(48) | 56(50) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TSF120.1

FIRE RESISTANCE LEVEL
NLB **-/120/120**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x16 mm FIBEROCK
AQUA-TOUGH
Framing: Staggered timber studs
Insulation: Refer to table
Side 2: 2x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-SS-01

Acoustic ratings are based on studs @ 600 mm ctrs

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 154 | 184 | 204 |
|-----------|-----------------------------------|-----------------------------------|-------------------|---|--------|--------|
| | | | PLATE SIZE mm | 90 | 120 | 140 |
| | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| TSF120.1A | 2x16 mm FIBEROCK AQUA-TOUGH | 2x16 mm FIBEROCK AQUA-TOUGH | Nil | 49(43) | 49(43) | 50(43) |
| | | | KI 50G11 | 53(48) | 53(49) | 55(50) |
| | | | KI 75G11 | 55(50) | 55(51) | 56(52) |
| | | | KI 90G11 | 55(51) | 56(52) | 56(53) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x10 mm non-fire resistant pbd
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x10 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4), TK778-12S01 & SLR-SR-T-DS-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 180 | 220 |
|----------|------------------------|------------------------|-------------------|----------|---|--------|
| | | | STUD SIZE mm | | 70 | 90 |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | |
| TT.1A | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Nil | | 31(23) | 32(24) |
| | | | One Side | KI 50G11 | 40(33) | 41(34) |
| | | | | KI 75G11 | 41(33) | 42(34) |
| | | | | KI 90G11 | - | 43(36) |
| | | | Both Sides | KI 50G11 | 42(35) | 43(36) |
| | | | | KI 75G11 | 43(35) | 44(36) |
| KI 90G11 | - | 45(38) | | | | |
| TT.1H | 1x10 mm SHEETROCK PLUS | 1x10 mm SHEETROCK PLUS | Nil | | 39(32) | 40(32) |
| | | | One Side | KI 50G11 | 50(40) | 51(42) |
| | | | | KI 75G11 | 50(40) | 51(42) |
| | | | | KI 90G11 | - | 51(42) |
| | | | Both Sides | KI 50G11 | 53(43) | 54(45) |
| | | | | KI 75G11 | 53(43) | 54(45) |
| KI 90G11 | - | 54(45) | | | | |
| TT.1I | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK PLUS | Nil | | 36(28) | 37(29) |
| | | | One Side | KI 50G11 | 45(38) | 46(39) |
| | | | | KI 75G11 | 46(38) | 47(39) |
| | | | | KI 90G11 | - | 48(41) |
| | | | Both Sides | KI 50G11 | 46(40) | 48(41) |
| | | | | KI 75G11 | 48(40) | 49(41) |
| KI 90G11 | - | 50(43) | | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x10 mm non-fire resistant pbd
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x10 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4), TK778-12S01 & SLR-SR-T-DS-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 200 | 240 | | |
|--------|------------------------|------------------------|-------------------|----------|---|------------|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | | |
| TT.2A | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK ONE | Nil | | 40(32) | 43(34) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 48(39) | 49(42) |
| | | | | | | | 49(39) | 50(42) |
| | | | | | | | - | 51(44) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 49(40) | 51(44) |
| | | | | | | | 51(41) | 52(44) |
| - | 53(46) | | | | | | | |
| TT.2H | 2x10 mm SHEETROCK PLUS | 2x10 mm SHEETROCK PLUS | Nil | | 48(39) | 49(39) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 58(48) | 59(50) |
| | | | | | | | 58(48) | 59(50) |
| | | | | | | | - | 59(50) |
| | | | 50G11 | 75G11 | 90G11 | Both Sides | 61(51) | 62(53) |
| | | | | | | | 61(51) | 62(53) |
| - | 62(53) | | | | | | | |
| TT.2I | 2x10 mm SHEETROCK ONE | 2x10 mm SHEETROCK PLUS | Nil | | 44(34) | 45(37) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 53(44) | 54(47) |
| | | | | | | | 54(44) | 55(47) |
| | | | | | | | - | 56(49) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 54(46) | 56(49) |
| | | | | | | | 56(46) | 57(49) |
| - | 58(51) | | | | | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 1x13 mm non-fire resistant pbd
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 186 | 226 | |
|----------|-----------------------|-----------------------|-------------------|------------|---|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | |
| TT.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Nil | | 39(32) | 39(32) | |
| | | | KI 50G11 | One Side | 51(40) | 52(42) | |
| | | | | | KI 75G11 | 51(40) | 52(42) |
| | | | | | KI 90G11 | - | 52(42) |
| | | | KI 50G11 | Both Sides | 54(43) | 55(45) | |
| | | | | | KI 75G11 | 54(43) | 55(45) |
| KI 90G11 | - | 55(45) | | | | | |
| TT.3B | 1x13 mm WETSTOP | 1x13 mm WETSTOP | Nil | | 40(33) | 41(33) | |
| | | | KI 50G11 | One Side | 52(42) | 53(43) | |
| | | | | | KI 75G11 | 52(42) | 53(43) |
| | | | | | KI 90G11 | - | 53(44) |
| | | | KI 50G11 | Both Sides | 55(45) | 56(46) | |
| | | | | | KI 75G11 | 55(45) | 56(46) |
| KI 90G11 | - | 56(47) | | | | | |
| TT.3K | 1x13 mm SHEETROCK ONE | 1x13 mm IMPACTSTOP | Nil | | 41(34) | 42(34) | |
| | | | KI 50G11 | One Side | 53(43) | 54(44) | |
| | | | | | KI 75G11 | 54(43) | 54(45) |
| | | | | | KI 90G11 | - | 55(45) |
| | | | KI 50G11 | Both Sides | 56(46) | 57(47) | |
| | | | | | KI 75G11 | 57(46) | 57(48) |
| KI 90G11 | - | 58(48) | | | | | |
| TT.3L | 1x13 mm WETSTOP | 1x13 mm IMPACTSTOP | Nil | | 41(34) | 42(35) | |
| | | | KI 50G11 | One Side | 54(43) | 55(45) | |
| | | | | | KI 75G11 | 54(44) | 55(45) |
| | | | | | KI 90G11 | - | 55(45) |
| | | | KI 50G11 | Both Sides | 57(46) | 58(48) | |
| | | | | | KI 75G11 | 57(47) | 58(48) |
| KI 90G11 | - | 58(48) | | | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT.4

NON-FIRE RATED



SYSTEM DESCRIPTION

Side 1: 2x13 mm non-fire resistant pbd

Framing: Twin timber studs

Gap: 20 mm

Insulation: Refer to table

Side 2: 2x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 212 | 252 | |
|----------|-----------------------|-----------------------|-------------------|------------|---|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | |
| TT.4A | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | Nil | | 48(40) | 49(41) | |
| | | | KI 50G11 | One Side | 57(47) | 58(49) | |
| | | | | | KI 75G11 | 58(48) | 59(50) |
| | | | | | KI 90G11 | - | 60(51) |
| | | | KI 50G11 | Both Sides | 60(50) | 61(52) | |
| | | | | | KI 75G11 | 61(51) | 62(53) |
| KI 90G11 | - | 63(54) | | | | | |
| TT.4B | 2x13 mm WETSTOP | 2x13 mm WETSTOP | Nil | | 49(41) | 51(42) | |
| | | | KI 50G11 | One Side | 58(49) | 59(51) | |
| | | | | | KI 75G11 | 59(50) | 60(52) |
| | | | | | KI 90G11 | - | 61(53) |
| | | | KI 50G11 | Both Sides | 61(52) | 62(54) | |
| | | | | | KI 75G11 | 62(53) | 63(55) |
| KI 90G11 | - | 64(56) | | | | | |
| TT.4K | 2x13 mm SHEETROCK ONE | 2x13 mm IMPACTSTOP | Nil | | 50(42) | 52(43) | |
| | | | KI 50G11 | One Side | 60(50) | 60(52) | |
| | | | | | KI 75G11 | 61(51) | 61(53) |
| | | | | | KI 90G11 | - | 62(54) |
| | | | KI 50G11 | Both Sides | 63(53) | 63(55) | |
| | | | | | KI 75G11 | 64(54) | 64(56) |
| KI 90G11 | - | 65(57) | | | | | |
| TT.4L | 2x13 mm WETSTOP | 2x13 mm IMPACTSTOP | Nil | | 51(42) | 52(43) | |
| | | | KI 50G11 | One Side | 60(51) | 61(52) | |
| | | | | | KI 75G11 | 61(52) | 62(53) |
| | | | | | KI 90G11 | - | 63(54) |
| | | | KI 50G11 | Both Sides | 63(54) | 64(55) | |
| | | | | | KI 75G11 | 64(55) | 65(56) |
| KI 90G11 | - | 66(57) | | | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT30.1

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd

Framing: Twin timber studs

Gap: 20 mm

Insulation: Refer to table

Side 2: 1x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 186 | 226 | | |
|---------|-----------------------|-----------------------|-------------------|----------|---|------------|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | | |
| TT30.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | | 41(34) | 42(35) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 54(43) | 54(45) |
| | | | | | | | 54(43) | 54(45) |
| | | | | | | | - | 55(45) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 57(46) | 57(48) |
| | | | | | | | 57(46) | 57(48) |
| - | 58(48) | | | | | | | |
| TT30.1B | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | Nil | | 42(35) | 43(36) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 55(45) | 56(47) |
| | | | | | | | 55(45) | 56(47) |
| | | | | | | | - | 56(47) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 58(48) | 59(50) |
| | | | | | | | 58(48) | 59(50) |
| - | 59(50) | | | | | | | |
| TT30.1C | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | Nil | | 42(35) | 43(35) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 55(44) | 55(46) |
| | | | | | | | 55(44) | 56(46) |
| | | | | | | | - | 56(46) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 58(47) | 58(49) |
| | | | | | | | 58(47) | 59(49) |
| - | 59(49) | | | | | | | |
| TT30.1D | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | Nil | | 42(35) | 43(36) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 55(45) | 56(47) |
| | | | | | | | 55(45) | 56(47) |
| | | | | | | | - | 56(47) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 58(48) | 59(50) |
| | | | | | | | 58(48) | 59(50) |
| - | 59(50) | | | | | | | |
| TT30.1E | 1x13 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | | 42(35) | 43(35) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 55(44) | 55(46) |
| | | | | | | | 55(44) | 56(46) |
| | | | | | | | - | 56(46) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 58(47) | 58(49) |
| | | | | | | | 58(47) | 59(49) |
| - | 59(49) | | | | | | | |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT30.2

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIRESTOP
Framing: Twin timber stud
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x13 mm fire resistant +
 1x13 mm non-fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&ATE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | R _w (R _w +C _{tr}) | |
|-------------|------------------|--|-------------------|------------|---|--------|
| | | | 199 | 239 | | |
| | | | STUD SIZE mm | | 70 | 90 |
| INSULATION* | | | | | | |
| TT30.2A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP + 1x13 mm SHEETROCK ONE | KI 50G11 | Both Sides | 59(50) | 60(51) |
| | | | KI 75G11 | | 60(51) | 61(52) |
| TT30.2B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE + 1x13 mm WETSTOP | KI 50G11 | Both Sides | 59(50) | 60(52) |
| | | | KI 75G11 | | 61(51) | 61(53) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

- * KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TT30.3

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Side 1:** 1x13 mm FIRESTOP
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | R _w (R _w +C _{tr}) | |
|-------------|------------------|---|-------------------|------------|---|--------|
| | | | 192 | 232 | | |
| | | | STUD SIZE mm | | 70 | 90 |
| INSULATION* | | | | | | |
| TT30.3B | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | KI 50G11 | Both Sides | 60(50) | 60(52) |
| | | | KI 75G11 | | 61(51) | 62(53) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

- * KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT30.4

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Side 1: 1x13 mm MULTISTOP ONE +
1x6 mm VILLABOARD

Framing: Twin timber studs

Gap: 20 mm

Insulation: Refer to table

Side 2: 1x13 mm MULTISTOP ONE
+ 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | |
|-------------|--|--|---|----------|-----------------|
| | | | 198 | 238 | |
| | | | STUD SIZE mm | | |
| | | | 70 | 90 | |
| INSULATION* | | | R _w (R _w +C _{tr}) | | |
| TT30.4B | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x13 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | | 50(41) 51(42) |
| | | | One Side | KI 50G11 | 58(48) 59(50) |
| | | | | KI 75G11 | 60(49) 60(51) |
| | | | | KI 90G11 | - 61(52) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT30.5

FIRE RESISTANCE LEVEL

NLB -/30/30

LB 30/30/30

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x13 mm fire resistant pbd

Framing: Twin timber studs

Gap: 20 mm

Insulation: Refer to table

Side 2: 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 199 | 239 | |
|----------|--------------------------|--------------------------|-------------------|------------|---|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | |
| TT30.5A | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | | 46(38) | 47(39) | |
| | | | KI 50G11 | One Side | 56(45) | 56(47) | |
| | | | | | KI 75G11 | 57(46) | 57(48) |
| | | | | | KI 90G11 | - | 59(49) |
| | | | KI 50G11 | Both Sides | 59(48) | 59(50) | |
| | | | | | KI 75G11 | 60(49) | 60(51) |
| KI 90G11 | - | 62(52) | | | | | |
| TT30.5B | 1x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | | 47(40) | 48(40) | |
| | | | KI 50G11 | One Side | 57(47) | 58(49) | |
| | | | | | KI 75G11 | 58(48) | 59(50) |
| | | | | | KI 90G11 | - | 60(51) |
| | | | KI 50G11 | Both Sides | 60(50) | 61(52) | |
| | | | | | KI 75G11 | 61(51) | 62(53) |
| KI 90G11 | - | 63(54) | | | | | |
| TT30.5C | 1x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | | 47(39) | 48(40) | |
| | | | KI 50G11 | One Side | 57(46) | 57(48) | |
| | | | | | KI 75G11 | 58(47) | 59(49) |
| | | | | | KI 90G11 | - | 60(50) |
| | | | KI 50G11 | Both Sides | 60(49) | 60(51) | |
| | | | | | KI 75G11 | 61(50) | 62(52) |
| KI 90G11 | - | 63(53) | | | | | |
| TT30.5D | 1x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | | 47(40) | 48(40) | |
| | | | KI 50G11 | One Side | 57(47) | 58(49) | |
| | | | | | KI 75G11 | 58(48) | 59(50) |
| | | | | | KI 90G11 | - | 60(51) |
| | | | KI 50G11 | Both Sides | 60(50) | 61(52) | |
| | | | | | KI 75G11 | 61(51) | 62(53) |
| KI 90G11 | - | 63(54) | | | | | |
| TT30.5E | 1x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | | 47(39) | 48(40) | |
| | | | KI 50G11 | One Side | 57(46) | 57(48) | |
| | | | | | KI 75G11 | 58(47) | 59(49) |
| | | | | | KI 90G11 | - | 60(50) |
| | | | KI 50G11 | Both Sides | 60(49) | 60(51) | |
| | | | | | KI 75G11 | 61(50) | 62(52) |
| KI 90G11 | - | 63(53) | | | | | |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TWIN STUD

TT60.6

FIRE RESISTANCE LEVEL
 NLB -/60/60
 LB 60/60/60
 CF 23[†]
 FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 1x16 mm fire resistant pbd
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

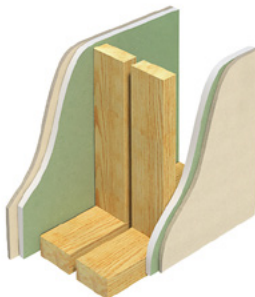
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 192 | 232 | |
|----------|-----------------------|-----------------------|-------------------|------------|---|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | |
| TT60.6A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | | 44(36) | 45(37) | |
| | | | KI 50G11 | One Side | 55(46) | 56(47) | |
| | | | | | KI 75G11 | 57(47) | 57(49) |
| | | | | | KI 90G11 | - | 59(50) |
| | | | KI 50G11 | Both Sides | 58(49) | 59(50) | |
| | | | | | KI 75G11 | 60(50) | 60(52) |
| KI 90G11 | - | 62(53) | | | | | |
| TT60.6B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | Nil | | 44(37) | 45(38) | |
| | | | KI 50G11 | One Side | 57(48) | 57(49) | |
| | | | | | KI 75G11 | 58(49) | 59(50) |
| | | | | | KI 90G11 | - | 60(52) |
| | | | KI 50G11 | Both Sides | 60(51) | 60(52) | |
| | | | | | KI 75G11 | 61(52) | 62(53) |
| KI 90G11 | - | 63(55) | | | | | |
| TT60.6C | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | Nil | | 44(37) | 45(38) | |
| | | | KI 50G11 | One Side | 56(47) | 57(48) | |
| | | | | | KI 75G11 | 57(48) | 58(50) |
| | | | | | KI 90G11 | - | 59(51) |
| | | | KI 50G11 | Both Sides | 59(50) | 60(51) | |
| | | | | | KI 75G11 | 60(51) | 61(53) |
| KI 90G11 | - | 62(54) | | | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.
 † Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TT60.7

FIRE RESISTANCE LEVEL
 NLB -/60/60
 LB 60/60/60
 CF 23[†]
 FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Side 1: 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 204 | 244 | |
|---------|---|---|-------------------|----------|----------------|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | R _w | | |
| TT60.7B | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | 1x16 mm MULTISTOP ONE + 1x6 mm VILLABOARD | Nil | | 52(43) | 53(44) | |
| | | | KI 50G11 | One Side | 60(50) | 61(52) | |
| | | | | | KI 75G11 | 62(51) | 62(53) |
| | | | | | KI 90G11 | - | 64(54) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.
 † Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TWIN STUD

TT90.1

FIRE RESISTANCE LEVEL
 NLB -/90/90
 LB 90/90/90
 CF 11'
 FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x13 mm fire resistant pbd
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x13 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 212 | 252 | | |
|---------|--------------------------|--------------------------|-------------------|----------|---|------------|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | | |
| TT90.1A | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | | 51(42) | 52(43) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 60(51) | 60(51) |
| | | | | | | | 61(52) | 61(52) |
| | | | | | | | - | 62(53) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 63(54) | 63(54) |
| | | | | | | | 64(55) | 64(55) |
| - | 65(56) | | | | | | | |
| TT90.1B | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | | 52(44) | 53(45) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 61(53) | 62(54) |
| | | | | | | | 62(54) | 63(55) |
| | | | | | | | - | 64(56) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 64(56) | 65(57) |
| | | | | | | | 65(57) | 66(58) |
| - | 67(59) | | | | | | | |
| TT90.1C | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | | 52(43) | 53(44) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 61(52) | 61(53) |
| | | | | | | | 62(53) | 62(54) |
| | | | | | | | - | 63(55) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 64(55) | 64(56) |
| | | | | | | | 65(56) | 65(57) |
| - | 66(58) | | | | | | | |
| TT90.1D | 2x13 mm IMPACTSTOP | 2x13 mm IMPACTSTOP | Nil | | 52(44) | 53(45) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 61(53) | 62(54) |
| | | | | | | | 62(54) | 63(55) |
| | | | | | | | - | 64(56) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 64(56) | 65(57) |
| | | | | | | | 65(57) | 66(58) |
| - | 67(59) | | | | | | | |
| TT90.1E | 2x13 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | | 52(43) | 53(44) | | |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | One Side | 61(52) | 61(53) |
| | | | | | | | 62(53) | 62(54) |
| | | | | | | | - | 63(55) |
| | | | KI 50G11 | KI 75G11 | KI 90G11 | Both Sides | 64(55) | 64(56) |
| | | | | | | | 65(56) | 65(57) |
| - | 66(58) | | | | | | | |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TWIN STUD

TT120.1

FIRE RESISTANCE LEVEL

NLB -/120/120

LB 120/120/120

CF 21[†]

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 2x16 mm fire resistant pbd
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S04(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 224 | 264 |
|----------|-----------------------|-----------------------|-------------------|----------|---|--------|
| | | | STUD SIZE mm | | 70 | 90 |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | |
| TT120.1A | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | | 50(42) | 51(43) |
| | | | One Side | KI 50G11 | 61(51) | 61(53) |
| | | | | KI 75G11 | 62(52) | 62(54) |
| | | | | KI 90G11 | - | 63(55) |
| | | | Both Sides | KI 50G11 | 64(54) | 64(56) |
| | | | | KI 75G11 | 65(55) | 65(57) |
| KI 90G11 | - | 66(58) | | | | |
| TT120.1B | 2x16 mm MULTISTOP ONE | 2x16 mm MULTISTOP ONE | Nil | | 51(43) | 52(45) |
| | | | One Side | KI 50G11 | 62(53) | 62(55) |
| | | | | KI 75G11 | 63(54) | 63(56) |
| | | | | KI 90G11 | - | 64(57) |
| | | | Both Sides | KI 50G11 | 65(56) | 65(58) |
| | | | | KI 75G11 | 66(57) | 66(59) |
| KI 90G11 | - | 67(60) | | | | |
| TT120.1C | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | Nil | | 51(43) | 52(44) |
| | | | One Side | KI 50G11 | 61(52) | 62(54) |
| | | | | KI 75G11 | 62(53) | 63(55) |
| | | | | KI 90G11 | - | 64(56) |
| | | | Both Sides | KI 50G11 | 64(55) | 65(57) |
| | | | | KI 75G11 | 65(56) | 66(58) |
| KI 90G11 | - | 67(59) | | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TT120.3

FIRE RESISTANCE LEVEL

NLB -/120/120

LB 120/120/120

FROM BOTH SIDES

FRL Basis: FC16195, FC15834



SYSTEM DESCRIPTION

Side 1: 3x16 mm fire resistant pbd
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 3x16 mm fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TK778-15F01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 256 | 296 |
|----------|-----------------------|-----------------------|-------------------|----------|---|--------|
| | | | STUD SIZE mm | | 70 | 90 |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | |
| TT120.1A | 3x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | | 54(48) | 55(49) |
| | | | One Side | KI 50G11 | 63(56) | 64(57) |
| | | | | KI 75G11 | 63(56) | 64(57) |
| | | | | KI 90G11 | 63(56) | 64(57) |
| | | | Both Sides | KI 50G11 | 66(59) | 67(60) |
| | | | | KI 75G11 | 66(59) | 67(60) |
| KI 90G11 | - | 67(60) | | | | |
| TT120.1B | 3x16 mm MULTISTOP ONE | 3x16 mm MULTISTOP ONE | Nil | | 55(49) | 56(50) |
| | | | One Side | KI 50G11 | 64(57) | 65(58) |
| | | | | KI 75G11 | 64(57) | 65(58) |
| | | | | KI 90G11 | 64(57) | 65(58) |
| | | | Both Sides | KI 50G11 | 67(60) | 68(61) |
| | | | | KI 75G11 | 67(60) | 68(61) |
| KI 90G11 | - | 68(61) | | | | |
| TT120.1C | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | Nil | | 54(48) | 55(49) |
| | | | One Side | KI 50G11 | 63(56) | 64(57) |
| | | | | KI 75G11 | 63(56) | 64(57) |
| | | | | KI 90G11 | 63(56) | 64(57) |
| | | | Both Sides | KI 50G11 | 66(59) | 67(60) |
| | | | | KI 75G11 | 66(59) | 67(60) |
| KI 90G11 | - | 67(60) | | | | |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

FIBEROCK® AQUA-TOUGH™ – TWIN STUD

TTF30.1

FIRE RESISTANCE LEVEL
NLB **-/30/30**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 1x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-DS-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 186 | 226 | |
|----------|-----------------------------------|-----------------------------------|-------------------|------------|----------------------|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | $R_w (R_w + C_{tr})$ | | |
| TTF30.1A | 1x13 mm FIBEROCK AQUA-TOUGH | 1x13 mm FIBEROCK AQUA-TOUGH | Nil | | 45(38) | 46(40) | |
| | | | KI 50G11 | One Side | 53(43) | 55(45) | |
| | | | | | KI 75G11 | 54(44) | 56(46) |
| | | | | | KI 90G11 | - | 56(46) |
| | | | KI 50G11 | Both Sides | 55(45) | 57(47) | |
| | | | | | KI 75G11 | 56(46) | 58(48) |
| | | | | | KI 90G11 | - | 59(50) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

TTF30.2

FIRE RESISTANCE LEVEL
NLB **-/30/30**
FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x13 mm FIBEROCK
AQUA-TOUGH
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-DS-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 199 | 239 | |
|----------|-----------------------------------|-----------------------------------|-------------------|------------|----------------------|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | $R_w (R_w + C_{tr})$ | | |
| TTF30.2A | 1x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | | 49(41) | 51(43) | |
| | | | KI 50G11 | One Side | 58(48) | 60(51) | |
| | | | | | KI 75G11 | 59(49) | 61(52) |
| | | | | | KI 90G11 | - | 61(52) |
| | | | KI 50G11 | Both Sides | 60(50) | 62(52) | |
| | | | | | KI 75G11 | 61(51) | 63(53) |
| | | | | | KI 90G11 | - | 64(54) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ – TWIN STUD

TTF60.1

FIRE RESISTANCE LEVEL

NLB **-/60/60**

LB **60/60/60**

CF **23'**

FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 1x16 mm FIBEROCK
AQUA-TOUGH

Framing: Twin timber studs

Gap: 20 mm

Insulation: Refer to table

Side 2: 1x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-DS-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 192 | 232 | |
|----------|-----------------------------------|-----------------------------------|-------------------|------------|---|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | |
| TTF60.1A | 1x16 mm FIBEROCK AQUA-TOUGH | 1x16 mm FIBEROCK AQUA-TOUGH | Nil | | 48(40) | 49(42) | |
| | | | KI 50G11 | One Side | 57(47) | 59(50) | |
| | | | | | KI 75G11 | 58(48) | 60(51) |
| | | | | | KI 90G11 | - | 60(51) |
| | | | KI 50G11 | Both Sides | 59(49) | 61(51) | |
| | | | | | KI 75G11 | 60(50) | 62(52) |
| | | | | | KI 90G11 | - | 63(53) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire-rated walls

TTF90.1

FIRE RESISTANCE LEVEL

NLB **-/90/90**

FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x13 mm FIBEROCK
AQUA-TOUGH

Framing: Twin timber studs

Gap: 20 mm

Insulation: Refer to table

Side 2: 2x13 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-DS-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | | 212 | 252 | |
|----------|-----------------------------------|-----------------------------------|-------------------|------------|---|--------|--------|
| | | | STUD SIZE mm | | 70 | 90 | |
| | | | INSULATION* | | R _w (R _w +C _{tr}) | | |
| TTF90.1A | 2x13 mm FIBEROCK AQUA-TOUGH | 2x13 mm FIBEROCK AQUA-TOUGH | Nil | | 56(47) | 57(51) | |
| | | | KI 50G11 | One Side | 65(54) | 67(58) | |
| | | | | | KI 75G11 | 66(55) | 68(59) |
| | | | | | KI 90G11 | - | 68(59) |
| | | | KI 50G11 | Both Sides | 67(56) | 69(60) | |
| | | | | | KI 75G11 | 68(57) | 70(61) |
| | | | | | KI 90G11 | - | 71(62) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.

KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.

KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

FIBEROCK® AQUA-TOUGH™ – TWIN STUD

TTF120.1

FIRE RESISTANCE LEVEL
NLB –/120/120
 FROM BOTH SIDES

FRL Basis: Contact Knauf



SYSTEM DESCRIPTION

Side 1: 2x16 mm FIBEROCK
AQUA-TOUGH
Framing: Twin timber studs
Gap: 20 mm
Insulation: Refer to table
Side 2: 2x16 mm FIBEROCK
AQUA-TOUGH

ACOUSTIC RATINGS BASIS: SLR-FB-T-DS-01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MIN WALL WIDTH mm | 224 | 264 | |
|-------------|-----------------------------------|-----------------------------------|---|----------|--------|--------|
| | | | STUD SIZE mm | 70 | 90 | |
| INSULATION* | | | R _w (R _w +C _{tr}) | | | |
| TTF120.1A | 2x16 mm FIBEROCK AQUA-TOUGH | 2x16 mm FIBEROCK AQUA-TOUGH | Nil | 58(49) | 60(53) | |
| | | | One Side | KI 50G11 | 67(56) | 69(60) |
| | | | | KI 75G11 | 68(57) | 70(61) |
| | | | | KI 90G11 | - | 70(61) |
| | | | Both Sides | KI 50G11 | 69(58) | 71(62) |
| | | | | KI 75G11 | 70(59) | 72(63) |
| | | | | KI 90G11 | - | 73(64) |

* KI 50G11 – 50 mm glasswool insulation 11 kg/m³ density.
 KI 75G11 – 75 mm glasswool insulation 11 kg/m³ density.
 KI 90G11 – 90 mm glasswool insulation 11 kg/m³ density.

Section E

External Walls

10/2025

EXTERNAL WALLS

Click on the links below to navigate to page

- E 2 Introduction
- E 7 OutRwall® Residential
- E 11 OutRwall® Commercial
- E 19 Brick Veneer Walls
- E 20 Fireclad®



INTRODUCTION

The following Knauf external wall systems are outlined in this section.

- OutRwall® Residential
- OutRwall® Commercial
- Brick Veneer Walls
- Fireclad®

OUTRWALL® RESIDENTIAL

Description

Knauf OutRwall Residential exterior wall systems are fire, acoustic and thermal rated boundary wall systems specifically for Class 1 and 10a buildings. Designed for domestic houses, townhouses, terraces and detached buildings, OutRwall Residential systems are used when external walls of buildings are within close proximity to the allotment boundary or another building on the same allotment. Knauf OutRwall Residential systems can be used for both timber and steel framing.

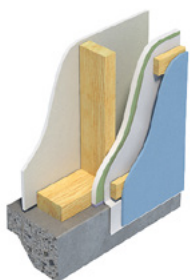


Figure E1: Example of Knauf Timber OutRwall Residential

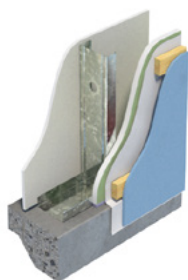


Figure E2: Example of Knauf Steel OutRwall Residential

Design Options

Fire Resistance Level (FRL)

Knauf OutRwall Residential systems can achieve FRL up to FRL 60/60/60 from the outside.

Acoustic Performance

Knauf OutRwall Residential systems can achieve acoustic ratings up to R_w 48.

Thermal Performance

The system values $R_{t(SUM)}$ and $R_{t(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging.

The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{t(SUM)}$, $R_{t(WIN)}$. Thermal bridging may significantly reduce the Total R-Value, particularly for Steel OutRwall Systems. In such cases, addressing the shortfall in Total R Value may require employing, a larger cavity, denser insulation, a thermal break or a combination of these measures.

Refer to an ESD consultant to determine Total R-Value or $R_{t(SUM)}$, $R_{t(WIN)}$, tailored to your project's framing design and cladding system.

Materials

Plasterboard Linings

- 10 mm / 13 mm SHEETROCK ONE
- 10 mm SHEETROCK PLUS
- 13 mm WetStop
- 13 mm / 16 mm MultiStop ONE

External Cladding

Any type of non-combustible lightweight cladding (unless noted otherwise).

- Fibre cement cladding
- Weatherboard
- Steel or aluminium cladding

Pliable Building Membrane

Building membrane to NCC requirements.

Insulation

- KI 50G14 insulation (R1.3)
- KI 90G24 insulation (R2.5)
- KI 90G32 insulation (R2.7)

Screws

Refer to General Information – Materials section for plasterboard screw types.

Caulking

H.B. Fuller Firesound™ sealant.

INTRODUCTION

Design Consideration

- Refer to NCC Fire Resistance requirements for external walls.
- Refer to Timber Stud Walls section for load bearing capacities of fire rated timber framed walls.
- Refer to Rondo or structural engineer for load bearing capacities of fire rated steel framed walls.
- Beware of flanking sound effects on acoustic performance (refer to General Information – Design).
- Water resistant linings must be used in wet areas.
- Water and fire-resistant plasterboard must be used on the outer side of framing where required.
- Plasterboard linings on the outer side of framing must be protected by an approved building membrane.
- Refer to General Information – Design for notes on Condensation and Ventilation.
- Refer to NCC, ABCB Housing Provision and ESD consultant for thermal requirements.
- External cladding must be installed on battens or top hats.

Installation

General

- Fire rated and acoustic systems must be installed strictly in accordance with Knauf specifications in order to achieve stated FRL and acoustic ratings.
- Refer to Systems+ and online CAD Finder for detailed system specifications.
- Timber or steel framing shall be installed in accordance with Structural Engineer's design and manufacturer's specification to relevant Australian Standards.

Jointing and Finishing

- Stop and finish face layers of internal linings with the appropriate Knauf jointing system (refer to Knauf Plasterboard Installation Manual). Joints and junctions in inner layers of multiple layer systems are not required to be stopped.
- Paper tape must be used in fire rated and wet area systems.
- Taping and setting is not required for external MultiStop ONE linings as plasterboard is covered with an external cladding system.

To view the full range of installation details, scan QR code below.



OUTRWALL® COMMERCIAL

Description

Knauf OutRwall Commercial exterior wall system is a fire, acoustic and thermal rated boundary wall systems specifically for Class 2-9 buildings. When combined with various non-combustible cladding systems, OutRwall Commercial systems are used when external walls of buildings such as commercial, industrial, institutional, low, medium and high-rise residential constructions. Knauf OutRwall Commercial systems can be used for both timber and steel framing.



Figure E3: Example of Knauf Timber OutRwall Commercial System

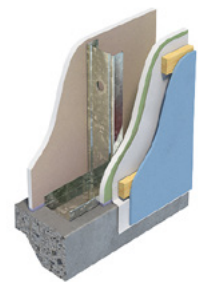


Figure E4: Example of Knauf Steel OutRwall Commercial System

Design Options

Fire Resistance Level (FRL)

Knauf OutRwall Commercial systems can achieve FRL up to FRL 120/120/120 from both directions.

Acoustic Performance

Knauf OutRwall Commercial have can achieve acoustic ratings up to R_w 57.

Thermal Performance

The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging.

The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Thermal bridging may significantly reduce the Total R-Value, particularly for Steel OutRwall Systems. In such cases, addressing the shortfall in Total R Value may require employing, a larger cavity, denser insulation, a thermal break or a combination of these measures.

Refer to an ESD consultant to determine Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$, tailored to your project's framing design and cladding system.

INTRODUCTION

Materials

Plasterboard Linings

- 10 mm SHEETROCK ONE
- 10 mm SHEETROCK PLUS
- 13 mm / 16 mm FireStop
- 13 mm / 16 mm MultiStop ONE

External Cladding

Any type of non-combustible lightweight cladding (unless noted otherwise).

Pliable Building Membrane

Building membrane to NCC requirements.

Insulation

- KI 50G14 insulation (R1.3)
- KI 90G24 insulation (R2.5)
- KI 90G32 insulation (R2.7)

Screws

Refer to General Information – Materials section for plasterboard screw types.

Caulking

H.B. Fuller Firesound™ sealant.

Design Consideration

- Refer to Multi-Residential section for thermal resistance requirements for external walls in 2 and 3 buildings.
- Refer to NCC and ESD consultant for thermal requirements.
- For other notes, refer to OutRwall Residential section.

Installation

General

- Fire rated and acoustic systems must be installed strictly in accordance with Knauf specifications in order to achieve stated FRL and acoustic ratings.
- Refer to Systems+ and online CAD Finder for detailed system specifications.
- Timber or steel framing shall be installed in accordance with Structural Engineer's design and manufacturer's specification to relevant Australian Standards.

Jointing and Finishing

- Stop and finish face layers of internal linings with the appropriate Knauf jointing system (refer to Knauf Plasterboard Installation Manual). Joints and junctions in inner layers of multiple layer systems are not required to be stopped.
- Paper tape must be used in fire rated and wet area systems.
- Taping and setting is not required for external MultiStop ONE linings as plasterboard is covered with an external cladding system.

To view the full range of installation details, scan QR code below.



INTRODUCTION

BRICK VENEER WALLS

Description

Knauf Brick Veneer wall systems utilise fire rated or non-fire rated brick veneer and Knauf internal linings direct fixed to steel or timber framing.

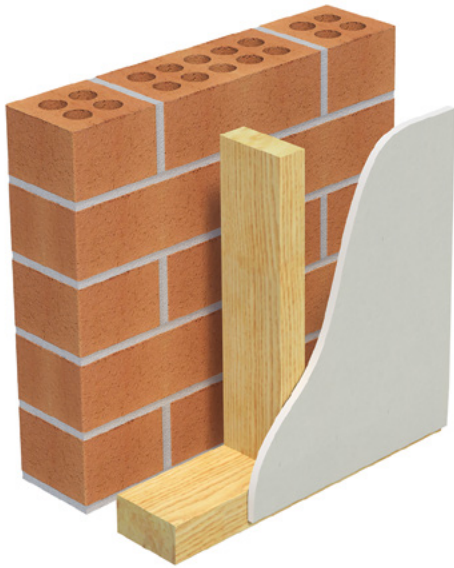


Figure E5: Example of Knauf Brick Veneer Wall System

Design Options

Knauf Brick Veneer wall systems are available in non-fire rated or fire rated configurations up to FRL 120/120/120 from both sides.

Acoustic ratings have been provided for systems with 70 mm and 90 mm studs. All acoustic ratings are based on 110 mm clay brick 170 kg/m² and 50 mm gap between brick veneer and internal framing.

Materials

Design Consideration

- 10 mm SHEETROCK ONE
- 13 mm FireStop
- 16 mm FireStop

Brick Veneer

- Non-fire rated Brick Veneer (min 110 mm clay brick 170 kg/m²)
- FRL 60/60/60 Brick Veneer
- FRL 90/90/90 Brick Veneer
- FRL 120/120/120 Brick Veneer

Insulation

KI 90G24 insulation (R2.5).

Screws

Refer to General Information – Materials section for plasterboard screw types.

Caulking

H.B. Fuller Firesound sealant.

Design Considerations

See OutRwall Residential notes.

Installation

- Brick veneer must be constructed in accordance with NCC and AS 3700 Masonry Structures.
- See OutRwall Residential for other Installation notes.

To view the full range of installation details, scan QR code below.



INTRODUCTION

FIRECLAD®

Description

Knauf Fireclad is a lightweight fire rated external wall system for portal framed industrial buildings that require fire protection from the outside.

Fireclad consists of multiple layers of MultiStop ONE plasterboard attached to steel girts behind external steel cladding.

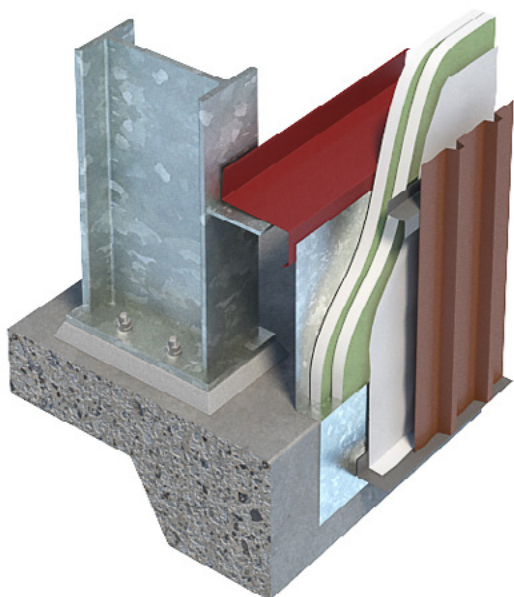


Figure E6: Example of Knauf Fireclad® System

Design Options

Knauf Fireclad systems are available in Fire Resistance Levels up to 120/120/120 from outside only.

Materials

Plasterboard Linings

- 13 mm MultiStop ONE
- 16 mm MultiStop ONE

External Cladding

Approved external steel cladding on girts by others.

Pliable Building Membrane

Building membrane to NCC requirements.

Screws

Refer to General Information – Materials section for plasterboard screw types.

Caulking

H.B. Fuller Firesound™ sealant.

Design Considerations

- Refer to NCC Fire Resistance requirements for external walls.
- The weight of the Fireclad system should be supported by the steel frame or reacted through to the floor slab using girt bridging or sag rods.
- Plasterboard linings must be protected by an approved building membrane and external cladding system (by others).
- Fire rated details are available where the Fireclad system is penetrated by pipes, cables, ducts and windows, for various treatments at gutters and base of walls, and where control joints or transitions to non-fire rated areas are required.

Installation

Refer to Knauf Fireclad brochure and online CAD Finder for installation instructions and details.

To view the full range of installation details, scan QR code below.



OUTRWALL® RESIDENTIAL

OWT.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Internal Lining:

1x10 mm non-fire resistant lining

Framing: Timber Studs

Insulation: Refer to table

External Lining:

Nil

External Cladding:

Lightweight External Cladding on battens over Building membrane to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT 274G

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 80 + CLADDING | | NOM 100 + CLADDING | |
|--------|------------------------|-----------------|---------------|----------------------|--------------------------------|----------------------|--------------------------------|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ |
| OWT.1A | 1x10 mm SHEETROCK ONE | Nil | KI 50G14 | 27(23) | R1.73 / R1.88 | 27(24) | R1.80 / R1.95 |
| | | | KI 90G24 | - | - | 29(25) | R2.80 / R3.01 |
| | | | KI 90G32 | - | - | 30(26) | R3.00 / R3.21 |
| OWT.1C | 1x10 mm SHEETROCK PLUS | Nil | KI 50G14 | 30(25) | R1.73 / R1.88 | 30(26) | R1.80 / R1.95 |
| | | | KI 90G24 | - | - | 32(27) | R2.80 / R3.01 |
| | | | KI 90G32 | - | - | 33(28) | R3.00 / R3.21 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

OWT30.1

FIRE RESISTANCE LEVEL
LB 30/30/30
FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x10 mm non-fire resistant pbd

Framing: Timber Studs

Insulation: Refer to table

External Lining:

1x13 mm MultiStop ONE

External Cladding:

Lightweight External Cladding on battens over Building membrane to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT 274G

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 93 + CLADDING | | NOM 113 + CLADDING | |
|----------|------------------------|-----------------------|---------------|----------------------|--------------------------------|----------------------|--------------------------------|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ |
| OWT30.1A | 1x10 mm SHEETROCK ONE | 1x13 mm MULTISTOP ONE | KI 50G14 | 37(29) | R1.78 / R1.93 | 37(30) | R1.85 / R2.00 |
| | | | KI 90G24 | - | - | 39(31) | R2.85 / R3.06 |
| | | | KI 90G32 | - | - | 39(31) | R3.05 / R3.26 |
| OWT30.1C | 1x10 mm SHEETROCK PLUS | 1x13 mm MULTISTOP ONE | KI 50G14 | 39(30) | R1.78 / R1.93 | 39(31) | R1.85 / R2.00 |
| | | | KI 90G24 | - | - | 41(32) | R2.85 / R3.06 |
| | | | KI 90G32 | - | - | 41(32) | R3.05 / R3.26 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

OUTRWALL® RESIDENTIAL

OWT60.1

FIRE RESISTANCE LEVEL
 LB 60/60/60*
 CF 23†
 FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Internal Lining:** 1x10 mm non-fire resistant lining
- Framing:** Timber Studs
- Insulation:** Refer to table
- External Lining:** 1x16 mm MultiStop ONE
- External Cladding:** Lightweight External Cladding on battens over Building membrane to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
 THERMAL BASIS: JMF REPORT 274G

Based on studs @ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 96 + CLADDING | | NOM 116 + CLADDING | |
|------------|------------------------|---------------------------------------|---------------|---|---|---|---|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | R _{ti} (SUM)/R _{ti} (WIN)** | R _w (R _w +C _{tr}) | R _{ti} (SUM)/R _{ti} (WIN)** |
| OWT60.1A ‡ | 1x10 mm SHEETROCK ONE | 1x16 mm MULTISTOP ONE | KI 75G11 | - | - | 37(30) | R2.35 / R2.58 |
| | | | KI 90G24 | - | - | 39(31) | R2.89 / R3.10 |
| | | | KI 90G32 | - | - | 39(31) | R3.09 / R3.29 |
| OWT60.1G ‡ | 1x10 mm SHEETROCK PLUS | 1x16 mm MULTISTOP ONE | KI 75G11 | - | - | 40(32) | R2.35 / R2.58 |
| | | | KI 90G24 | - | - | 42(33) | R2.89 / R3.10 |
| | | | KI 90G32 | - | - | 42(33) | R3.09 / R3.29 |
| OWT60.1N | 1x10 mm SHEETROCK ONE | 1x16 mm MULTISTOP ONE (+ JH CLADDING) | KI 50G14 | 41(32) | R1.83 / R1.98 | 41(33) | R1.90 / R2.05 |
| | | | KI 90G24 | - | - | 43(34) | R2.90 / R3.11 |
| | | | KI 90G32 | - | - | 43(34) | R3.10 / R3.30 |
| OWT60.1O | 1x10 mm SHEETROCK PLUS | 1x16 mm MULTISTOP ONE (+ JH CLADDING) | KI 50G14 | 44(34) | R1.83 / R1.98 | 44(35) | R1.90 / R2.05 |
| | | | KI 90G24 | - | - | 46(36) | R2.90 / R3.11 |
| | | | KI 90G32 | - | - | 46(36) | R3.10 / R3.30 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values R_{ti}(SUM) and R_{ti}(WIN) provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or R_{ti}(SUM), R_{ti}(WIN). Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

† Must include specified minimum Knauf insulation inside cavity to achieve FRL

‡ Refer to Charfactor design tables for maximum vertical loads on load bearing fire rated walls

‡ 90 mm stud only

OWT60.2

FIRE RESISTANCE LEVEL
 LB 60/60/60*
 CF 23†
 FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Internal Lining:** 1x13 mm non-fire resistant lining
- Framing:** Timber Studs
- Insulation:** Refer to table
- External Lining:** 1x16 mm MultiStop ONE
- External Cladding:** Lightweight External Cladding on battens over Building membrane to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
 THERMAL BASIS: JMF REPORT 274G

Based on studs @ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 99 + CLADDING | | NOM 119 + CLADDING | |
|----------|-----------------------|-----------------------|---------------|---|---|---|---|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | R _{ti} (SUM)/R _{ti} (WIN)** | R _w (R _w +C _{tr}) | R _{ti} (SUM)/R _{ti} (WIN)** |
| OWT60.2A | 1x13 mm SHEETROCK ONE | 1x16 mm MULTISTOP ONE | KI 50G14 | 41(31) | R1.84 / R1.99 | 41(32) | R1.91 / R2.06 |
| | | | KI 90G24 | - | - | 43(33) | R2.91 / R3.12 |
| | | | KI 90G32 | - | - | 43(33) | R3.11 / R3.31 |
| OWT60.2B | 1x13 mm WETSTOP | 1x16 mm MULTISTOP ONE | KI 50G14 | 41(31) | R1.84 / R1.99 | 41(32) | R1.91 / R2.06 |
| | | | KI 90G24 | - | - | 43(33) | R2.91 / R3.12 |
| | | | KI 90G32 | - | - | 43(33) | R3.11 / R3.31 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values R_{ti}(SUM) and R_{ti}(WIN) provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or R_{ti}(SUM), R_{ti}(WIN). Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

† Must include specified minimum KI 50G11 inside cavity to achieve FRL

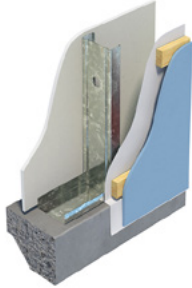
‡ Refer to Charfactor design tables for maximum vertical loads on load bearing fire rated walls

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

OUTRWALL® RESIDENTIAL

OWS.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Internal Lining:

1x10 mm non-fire resistant lining

Framing: Rondo lipped steel studs**Insulation:** Refer to table

External Lining:

Nil

External Cladding:

Lightweight External
Cladding on battens over
Building membrane to
NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT I274H

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 80 + CLADDING | | | NOM 100 + CLADDING | | |
|--------|---------------------------|-----------------|------------------|----------------------------------|----------------------------------|--------------------------------------|----------------------------------|----------------------------------|--------------------------------------|
| | | | | 70 | | | 90 | | |
| | | | STUD SIZE mm | 0.75 BMT $R_w (R_w + C_{tr})$ | 1.15 BMT $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/$ $R_{ti(WIN)}^{**}$ | 0.75 BMT $R_w (R_w + C_{tr})$ | 1.15 BMT $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/$ $R_{ti(WIN)}^{**}$ |
| OWS.1A | 1x10 mm SHEETROCK ONE | Nil | KI 50G14 | 28(24) | 26(23) | R1.73 / R1.88 | 29(25) | 27(24) | R1.80 / R1.95 |
| | | | KI 90G24 | - | - | - | 31(27) | 29(26) | R2.80 / R3.01 |
| | | | KI 90G32 | - | - | - | 32(28) | 30(27) | R3.00 / R3.21 |
| OWS.1C | 1x10 mm SHEETROCK PLUS | Nil | KI 50G14 | 31(26) | 29(25) | R1.73 / R1.88 | 32(27) | 30(26) | R1.80 / R1.95 |
| | | | KI 90G24 | - | - | - | 34(29) | 32(28) | R2.80 / R3.01 |
| | | | KI 90G32 | - | - | - | 35(30) | 33(29) | R3.00 / R3.21 |

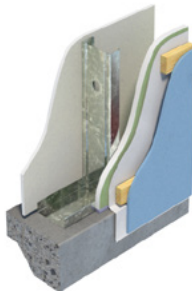
* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

OWS30.1

FIRE RESISTANCE LEVEL
NLB -/30/30
LB 30/30/30
FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x10 mm non-fire resistant lining

Framing: Rondo lipped steel studs**Insulation:** Refer to table

External Lining:

1x13 mm MultiStop ONE

External Cladding:

Lightweight External
Cladding on battens over
Building membrane and thermal
break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT I274H

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 93 + CLADDING | | | NOM 113 + CLADDING | | |
|----------|---------------------------|--------------------------|------------------|----------------------------------|----------------------------------|--------------------------------------|----------------------------------|----------------------------------|--------------------------------------|
| | | | | 70 | | | 90 | | |
| | | | STUD SIZE mm | 0.75 BMT $R_w (R_w + C_{tr})$ | 1.15 BMT $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/$ $R_{ti(WIN)}^{**}$ | 0.75 BMT $R_w (R_w + C_{tr})$ | 1.15 BMT $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/$ $R_{ti(WIN)}^{**}$ |
| OWS30.1A | 1x10 mm SHEETROCK ONE | 1x13 mm MULTISTOP ONE | KI 50G14 | 39(31) | 35(30) | R1.78 / R1.93 | 40(32) | 36(31) | R1.85 / R2.00 |
| | | | KI 90G24 | - | - | - | 42(33) | 38(32) | R2.85 / R3.06 |
| | | | KI 90G32 | - | - | - | 42(33) | 38(32) | R3.05 / R3.26 |
| OWS30.1C | 1x10 mm SHEETROCK PLUS | 1x13 mm MULTISTOP ONE | KI 50G14 | 41(33) | 39(32) | R1.78 / R1.93 | 42(34) | 40(33) | R1.85 / R2.00 |
| | | | KI 90G24 | - | - | - | 44(35) | 42(34) | R2.85 / R3.06 |
| | | | KI 90G32 | - | - | - | 44(35) | 42(34) | R3.05 / R3.26 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

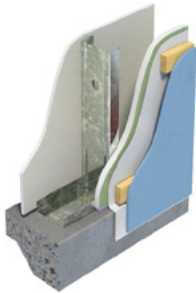
** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

OUTRWALL® RESIDENTIAL

OWS60.1

FIRE RESISTANCE LEVEL
 NLB **-/60/60***
 LB **60/60/60*** ACR 20%
 FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x10 mm non-fire resistant lining

Framing: Rondo lipped steel studs

Insulation: Refer to table

External Lining:

1x16 mm MultiStop ONE

External Cladding:

James Hardie fibre cement cladding (min 10 kg/m²) on 35 mm top hats over Building membrane to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
 THERMAL BASIS: JMF REPORT I274H

Based on studs @ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 96 + CLADDING | | | NOM 116 + CLADDING | | | |
|-------------|---|---|---|---|---|---|---|----------|---------------|---|
| | | | | STUD SIZE mm | 70 | | | 90 | | |
| | | | | | 0.75 BMT | 1.15 BMT | R _{ti} (SUM)/ R _{ti} (WIN)** | 0.75 BMT | 1.15 BMT | R _{ti} (SUM)/ R _{ti} (WIN)** |
| INSULATION* | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | | | | |
| OWS60.1A | 1x10 mm SHEETROCK ONE | 1x16 mm MULTISTOP ONE (+ JH CLADDING) | KI 50G14 | 43(35) | 39(34) | R1.83 / R1.98 | 44(36) | 40(35) | R1.90 / R2.05 | |
| | | | KI 90G24 | - | - | - | 46(37) | 42(36) | R2.90 / R3.11 | |
| | | | KI 90G32 | - | - | - | 47(37) | 43(36) | R3.10 / R3.30 | |
| OWS60.1E | 1x10 mm SHEETROCK PLUS | 1x16 mm MULTISTOP ONE (+ JH CLADDING) | KI 50G14 | 45(37) | 41(36) | R1.83 / R1.98 | 46(38) | 42(37) | R1.90 / R2.05 | |
| | | | KI 90G24 | - | - | - | 48(39) | 44(38) | R2.90 / R3.11 | |
| | | | KI 90G32 | - | - | - | 48(39) | 44(38) | R3.10 / R3.30 | |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

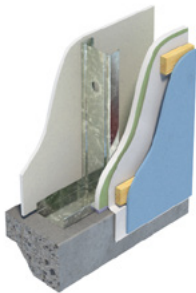
** The system values R_{ti}(SUM) and R_{ti}(WIN) provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or R_{ti}(SUM), R_{ti}(WIN). Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

+ Must include specified minimum KI 50G11 inside cavity to achieve FRL
 † Refer Engineer for maximum heights for load bearing walls with ACR 20%

OWS60.2

FIRE RESISTANCE LEVEL
 NLB **-/60/60***
 LB **60/60/60*** ACR 20%
 FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x13 mm non-fire resistant lining

Framing: Rondo lipped steel studs

Insulation: Refer to table

External Lining:

1x16 mm MultiStop ONE

External Cladding:

Lightweight External Cladding on battens over Building membrane and thermal break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
 THERMAL BASIS: JMF REPORT I274H

Based on studs @ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 99 + CLADDING | | | NOM 119 + CLADDING | | | |
|-------------|---|---|---|---|---|---|---|----------|---------------|---|
| | | | | STUD SIZE mm | 70 | | | 90 | | |
| | | | | | 0.75 BMT | 1.15 BMT | R _{ti} (SUM)/ R _{ti} (WIN)** | 0.75 BMT | 1.15 BMT | R _{ti} (SUM)/ R _{ti} (WIN)** |
| INSULATION* | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | | | | |
| OWS60.2A | 1x13 mm SHEETROCK ONE | 1x16 mm MULTISTOP ONE | KI 50G14 | 42(35) | 38(34) | R1.84 / R1.99 | 43(36) | 39(35) | R1.91 / R2.06 | |
| | | | KI 90G24 | - | - | - | 45(37) | 41(36) | R2.91 / R3.12 | |
| | | | KI 90G32 | - | - | - | 45(37) | 41(36) | R3.11 / R3.31 | |
| OWS60.2B | 1x13 mm WETSTOP | 1x16 mm MULTISTOP ONE | KI 50G14 | 42(35) | 38(34) | R1.84 / R1.99 | 43(36) | 39(35) | R1.91 / R2.06 | |
| | | | KI 90G24 | - | - | - | 45(37) | 41(36) | R2.91 / R3.12 | |
| | | | KI 90G32 | - | - | - | 45(37) | 41(36) | R3.11 / R3.31 | |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values R_{ti}(SUM) and R_{ti}(WIN) provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or R_{ti}(SUM), R_{ti}(WIN). Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

+ Must include specified minimum KI 50G11 inside cavity to achieve FRL
 † Refer Engineer for maximum heights for load bearing walls with ACR 20%

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

OUTRWALL® COMMERCIAL

OWT30.2

FIRE RESISTANCE LEVEL
LB 30/30/30
FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x13 mm fire resistant pbd

Framing: Timber Studs

Insulation: Refer to table

External Lining:

1x13 mm MultiStop ONE

External Cladding:

Lightweight External
Cladding on battens over
Building membrane to
NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT 274G

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 96 + CLADDING | | NOM 116 + CLADDING | |
|----------|---------------------|--------------------------|---------------|----------------------|--------------------------------|----------------------|--------------------------------|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ |
| OWT30.2A | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 50G14 | 40(31) | R1.79 / R1.94 | 40(32) | R1.86 / R2.01 |
| | | | KI 90G24 | - | - | 42(33) | R2.86 / R3.07 |
| | | | KI 90G32 | - | - | 42(33) | R3.06 / R3.27 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

OWT60.3

FIRE RESISTANCE LEVEL
LB 60/60/60
CF 23†
FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x16 mm fire resistant lining

Framing: Timber Studs

Insulation: Refer to table

External Lining:

1x16 mm MultiStop ONE

External Cladding:

Lightweight External
Cladding on battens over
Building membrane to
NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT 274G

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 102 + CLADDING | | NOM 122 + CLADDING | |
|----------|---------------------|--------------------------|---------------|----------------------|--------------------------------|----------------------|--------------------------------|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ |
| OWT60.3A | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 50G14 | 41(33) | R1.86 / R2.01 | 41(34) | R1.93 / R2.08 |
| | | | KI 90G24 | - | - | 43(35) | R2.93 / R3.14 |
| | | | KI 90G32 | - | - | 43(35) | R3.13 / R3.34 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire rated walls

OUTRWALL® COMMERCIAL

OWT90.1

FIRE RESISTANCE LEVEL
LB 90/90/90*
CF 11†
 FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Internal Lining:**
1x10 mm non-fire resistant pbd
- Framing:** Timber Studs
- Insulation:** Refer to table
- External Lining:**
2x13 mm MultiStop ONE
- External Cladding:**
Lightweight External Cladding on battens over Building membrane to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
 THERMAL BASIS: JMF REPORT 274G

Based on studs @ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 106 + CLADDING | | NOM 126 + CLADDING | |
|----------|------------------------|-----------------------|---------------|---|---|---|---|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | R _{ti} (SUM)/R _{ti} (WIN)** | R _w (R _w +C _{tr}) | R _{ti} (SUM)/R _{ti} (WIN)** |
| OWT90.1A | 1x10 mm SHEETROCK ONE | 2x13 mm MULTISTOP ONE | KI 50G14 | 41(33) | R1.89 / R2.02 | 41(34) | R1.96 / R2.09 |
| | | | KI 90G24 | - | - | 43(35) | R2.96 / R3.15 |
| | | | KI 90G32 | - | - | 43(35) | R3.17 / R3.34 |
| OWT90.1C | 1x10 mm SHEETROCK PLUS | 2x13 mm MULTISTOP ONE | KI 50G14 | 43(34) | R1.89 / R2.02 | 43(35) | R1.96 / R2.09 |
| | | | KI 90G24 | - | - | 45(36) | R2.96 / R3.15 |
| | | | KI 90G32 | - | - | 45(36) | R3.17 / R3.34 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density
 ** The system values R_{ti}(SUM) and R_{ti}(WIN) provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or R_t(SUM), R_t(WIN). Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.
 † Must include specified minimum KI 50G11 inside cavity to achieve FRL
 ‡ Refer to Charfactor design tables for maximum vertical loads on load bearing fire rated walls

OWT90.2

FIRE RESISTANCE LEVEL
LB 90/90/90
 FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Internal Lining:**
1x10 mm non-fire resistant lining
- Framing:** Timber Studs
- Insulation:** Refer to table
- External Lining:**
2x16 mm MultiStop ONE
- External Cladding:**
Lightweight External Cladding on battens over Building membrane to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
 THERMAL BASIS: JMF REPORT 274G

Based on studs @ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 112 + CLADDING | | NOM 132 + CLADDING | |
|----------|------------------------|-----------------------|---------------|---|---|---|---|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | R _w (R _w +C _{tr}) | R _{ti} (SUM)/R _{ti} (WIN)** | R _w (R _w +C _{tr}) | R _{ti} (SUM)/R _{ti} (WIN)** |
| OWT90.2A | 1x10 mm SHEETROCK ONE | 2x16 mm MULTISTOP ONE | KI 50G14 | 41(33) | R1.91 / R2.06 | 41(34) | R1.98 / R2.13 |
| | | | KI 90G24 | - | - | 43(35) | R2.98 / R3.19 |
| | | | KI 90G32 | - | - | 43(35) | R3.19 / R3.38 |
| OWT90.2C | 1x10 mm SHEETROCK PLUS | 2x16 mm MULTISTOP ONE | KI 50G14 | 43(33) | R1.91 / R2.06 | 43(34) | R1.98 / R2.13 |
| | | | KI 90G24 | - | - | 45(35) | R2.98 / R3.19 |
| | | | KI 90G32 | - | - | 45(35) | R3.19 / R3.38 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density
 ** The system values R_{ti}(SUM) and R_{ti}(WIN) provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or R_t(SUM), R_t(WIN). Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

OUTRWALL® COMMERCIAL

OWT90.3

FIRE RESISTANCE LEVEL

LB 90/90/90

FROM OUTSIDE

LB 60/60/60

CF 23†

FROM INSIDE

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x16 mm fire resistant pbd

Framing: Timber Studs

Insulation: Refer to table

Internal Lining:

2x16 mm MultiStop ONE

External Cladding:

Lightweight External
Cladding on battens over
Building membrane to
NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT 274G

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 118 + CLADDING | | NOM 138 + CLADDING | |
|----------|---------------------|--------------------------|---------------|----------------------|--------------------------------|----------------------|--------------------------------|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ |
| OWT90.3A | 1x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | KI 50G14 | 44(36) | R1.95 / R2.10 | 44(37) | R2.02 / R2.17 |
| | | | KI 90G24 | - | - | 46(38) | R3.02 / R3.23 |
| | | | KI 90G32 | - | - | 46(38) | R3.22 / R3.42 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire rated walls

OWT90.4

FIRE RESISTANCE LEVEL

LB 90/90/90

CF 11†

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

2x13 mm fire resistant pbd

Framing: Timber Studs

Insulation: Refer to table

External Lining:

2x13 mm MultiStop ONE

External Cladding:

Lightweight External
Cladding on battens over
Building membrane to
NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT 274G

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 122 + CLADDING | | NOM 142 + CLADDING | |
|----------|---------------------|--------------------------|---------------|----------------------|--------------------------------|----------------------|--------------------------------|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ |
| OWT90.4A | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | KI 50G14 | 46(36) | R1.91 / R2.06 | 46(37) | R1.98 / R2.13 |
| | | | KI 90G24 | - | - | 48(38) | R2.98 / R3.19 |
| | | | KI 90G32 | - | - | 48(38) | R3.18 / R3.39 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire rated walls

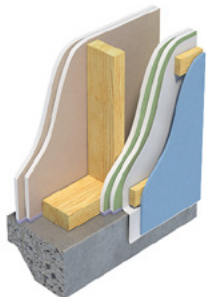
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

OUTRWALL® COMMERCIAL

OWT120.1

FIRE RESISTANCE LEVEL
LB 120/120/120
CF 21[†]
FROM BOTH SIDES

FRL Basis: FC16195



ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT 274G

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 134 + CLADDING | | NOM 154 + CLADDING | |
|-----------|---------------------|--------------------------|---------------|----------------------|--------------------------------|----------------------|--------------------------------|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ |
| OWT120.1A | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | KI 50G14 | 47(38) | R2.03 / R2.18 | 47(39) | R2.10 / R2.25 |
| | | | KI 90G24 | - | - | 49(40) | R3.10 / R3.31 |
| | | | KI 90G32 | - | - | 49(40) | R3.30 / R3.51 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire rated walls

SYSTEM DESCRIPTION

Internal Lining:

2x16 mm fire resistant pbd

Framing: Timber Studs

Insulation: Refer to table

External Lining:

2x16 mm MultiStop ONE

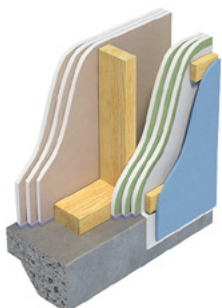
External Cladding:

Lightweight External
Cladding on battens over
Building membrane to
NCC requirements.

OWT120.3

FIRE RESISTANCE LEVEL
LB 120/120/120
FROM BOTH SIDES

FRL Basis: FC16195



ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT 274G

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 166 + CLADDING | | NOM 186 + CLADDING | |
|-----------|---------------------|--------------------------|---------------|----------------------|--------------------------------|----------------------|--------------------------------|
| | | | STUD SIZE mm | 70 | | 90 | |
| | | | INSULATION* | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | $R_w (R_w + C_{tr})$ | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ |
| OWT120.3A | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | KI 50G14 | 50(40) | R2.09 / R2.24 | 50(41) | R2.16 / R2.31 |
| | | | KI 90G24 | - | - | 52(42) | R3.16 / R3.37 |
| | | | KI 90G32 | - | - | 52(42) | R3.36 / R3.57 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

SYSTEM DESCRIPTION

Internal Lining:

3x16 mm fire resistant pbd

Framing: Timber Studs

Insulation: Refer to table

External Lining:

3x16 mm MultiStop ONE

External Cladding:

Lightweight External
Cladding on battens over
Building membrane to
NCC requirements.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

OUTRWALL® COMMERCIAL

OWS60.1

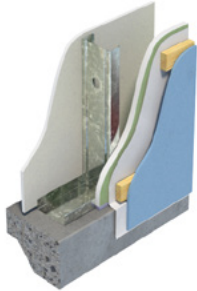
FIRE RESISTANCE LEVEL

NLB -/60/60*

LB 60/60/60* ACR 20%

FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x10 mm non-fire resistant lining

Framing: Rondo lipped steel studs

Insulation: Refer to table

External Lining:

1x16 mm MultiStop ONE

External Cladding:

James Hardie fibre cement cladding (min 10 kg/m²) on 35 mm top hats over Building membrane to NCC requirements.ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT I274HBased on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 102 + CLADDING | | | NOM 118 + CLADDING | | | |
|-------------|---|---|---|---|---|---|---|----------|------------------|---|
| | | | | STUD SIZE mm | 76 | | | 92 | | |
| | | | | | 0.75 BMT | 1.15 BMT | R _{ti} (SUM)/ R _{ti} (WIN)** | 0.75 BMT | 1.15 BMT | R _{ti} (SUM)/ R _{ti} (WIN)** |
| INSULATION* | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | | | | |
| OWS60.1N | 1x10 mm SHEETROCK ONE | 1x16 mm MULTISTOP ONE (+ JH CLADDING) | KI 50G14 | 43(35) | 39(34) | R1.83 / R1.98 | 44(36) | 40(35) | R1.90 / R2.05 | |
| | | | KI 90G24 | - | - | - | 46(37) | 42(36) | R2.90 / R3.11 | |
| | | | KI 90G32 | - | - | - | 47(37) | 43(36) | R3.10 / R3.30 | |
| OWS60.1O | 1x10 mm SHEETROCKPLUS | 1x16 mm MULTISTOP ONE (+ JH CLADDING) | KI 50G14 | 45(37) | 41(36) | R1.83 / R1.98 | 46(38) | 42(37) | R1.90 / R2.05 | |
| | | | KI 90G24 | - | - | - | 48(39) | 44(38) | R2.90 / R3.11 | |
| | | | KI 90G32 | - | - | - | 48(39) | 44(38) | R3.10 / R3.30 | |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density** The system values R_{ti}(SUM) and R_{ti}(WIN) provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or R_{ti}(SUM), R_{ti}(WIN). Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

+ Must include specified minimum KI 50G11 inside cavity to achieve FRL

† Refer Rondo/Engineer for maximum heights for load bearing walls with ACR 20%

OWS60.2

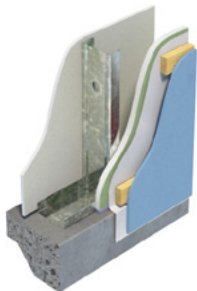
FIRE RESISTANCE LEVEL

NLB -/60/60*

LB 60/60/60* ACR 20%

FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x13 mm non-fire resistant lining

Framing: Rondo lipped steel studs

Insulation: Refer to table

External Lining:

1x16 mm MultiStop ONE

External Cladding:

Lightweight External Cladding on battens over Building membrane and thermal break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT I274HBased on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 105 + CLADDING | | | NOM 121 + CLADDING | | | |
|-------------|---|---|---|---|---|---|---|----------|------------------|---|
| | | | | STUD SIZE mm | 76 | | | 92 | | |
| | | | | | 0.75 BMT | 1.15 BMT | R _{ti} (SUM)/ R _{ti} (WIN)** | 0.75 BMT | 1.15 BMT | R _{ti} (SUM)/ R _{ti} (WIN)** |
| INSULATION* | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | | | | |
| OWS60.2C | 1x13 mm SHEETROCK ONE | 1x16 mm MULTISTOP ONE | KI 50G14 | 42(35) | 38(34) | R1.84 / R1.99 | 43(36) | 39(35) | R1.91 / R2.06 | |
| | | | KI 90G24 | - | - | - | 45(37) | 41(36) | R2.91 / R3.12 | |
| | | | KI 90G32 | - | - | - | 45(37) | 41(36) | R3.11 / R3.31 | |
| OWS60.2D | 1x13 mm WETSTOP | 1x16 mm MULTISTOP ONE | KI 50G14 | 42(35) | 38(34) | R1.84 / R1.99 | 43(36) | 39(35) | R1.91 / R2.06 | |
| | | | KI 90G24 | - | - | - | 45(37) | 41(36) | R2.91 / R3.12 | |
| | | | KI 90G32 | - | - | - | 45(37) | 41(36) | R3.11 / R3.31 | |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density** The system values R_{ti}(SUM) and R_{ti}(WIN) provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or R_{ti}(SUM), R_{ti}(WIN). Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

+ Must include specified minimum KI 50G11 inside cavity to achieve FRL

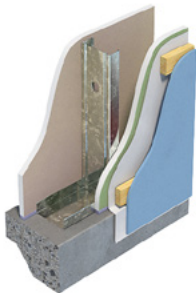
† Refer Rondo/Engineer for maximum heights for load bearing walls with ACR 20%

OUTRWALL® COMMERCIAL

OWS60.3

FIRE RESISTANCE LEVEL
 NLB -/60/60*
 LB 30/30/30
 FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Internal Lining:** 1x13 mm fire rated lining
- Framing:** Rondo lipped steel studs
- Insulation:** Refer to table
- External Lining:** 1x13 mm MultiStop ONE
- External Cladding:** Lightweight External Cladding on battens over Building membrane and thermal break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
 THERMAL BASIS: JMF REPORT I274H

Based on studs @ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 102 + CLADDING | | | NOM 118 + CLADDING | | |
|-------------|----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|--------------------------------|----------|---------------|
| | | | | STUD SIZE mm | 76 | | 92 | | |
| | | | | | 0.75 BMT | 1.15 BMT | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | 0.75 BMT | 1.15 BMT |
| INSULATION* | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | | | |
| OWS60.3A | 1x13 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 50G14 | 43(35) | 39(34) | R1.79 / R1.94 | 44(36) | 40(35) | R1.86 / R2.01 |
| | | | KI 90G24 | - | - | - | 46(37) | 42(36) | R2.86 / R3.07 |
| | | | KI 90G32 | - | - | - | 46(37) | 42(36) | R3.06 / R3.27 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

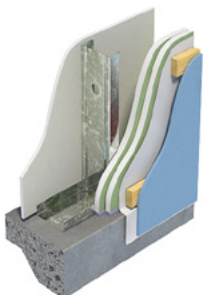
** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

+ Must include specified minimum KI 50G11 inside cavity to achieve FRL

OWS90.1

FIRE RESISTANCE LEVEL
 NLB -/90/90
 LB 90/90/90
 FROM OUTSIDE ONLY

FRL Basis: FC16195



SYSTEM DESCRIPTION

- Internal Lining:** 1x10 mm non-fire resistant lining
- Framing:** Rondo lipped steel studs
- Insulation:** Refer to table
- External Lining:** 2x13 mm MultiStop ONE
- External Cladding:** Lightweight External Cladding on battens over Building membrane and thermal break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
 THERMAL BASIS: JMF REPORT I274H

Based on studs @ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 112 + CLADDING | | | NOM 128 + CLADDING | | |
|-------------|------------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|--------------------------------|----------|---------------|
| | | | | STUD SIZE mm | 76 | | 92 | | |
| | | | | | 0.75 BMT | 1.15 BMT | $R_{ti(SUM)}/R_{ti(WIN)}^{**}$ | 0.75 BMT | 1.15 BMT |
| INSULATION* | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | | | |
| OWS90.1A | 1x10 mm SHEETROCK ONE | 2x13 mm MULTISTOP ONE | KI 50G14 | 43(34) | 39(33) | R1.89 / R2.02 | 44(35) | 40(34) | R1.96 / R2.09 |
| | | | KI 90G24 | - | - | - | 46(36) | 42(35) | R2.96 / R3.15 |
| | | | KI 90G32 | - | - | - | 46(36) | 42(35) | R3.17 / R3.34 |
| OWS90.1C | 1x10 mm SHEETROCK PLUS | 2x13 mm MULTISTOP ONE | KI 50G14 | 45(36) | 41(35) | R1.89 / R2.02 | 46(37) | 42(36) | R1.96 / R2.09 |
| | | | KI 90G24 | - | - | - | 48(38) | 44(37) | R2.96 / R3.15 |
| | | | KI 90G32 | - | - | - | 48(38) | 44(37) | R3.17 / R3.34 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti(SUM)}$ and $R_{ti(WIN)}$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti(SUM)}$, $R_{ti(WIN)}$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

OUTRWALL® COMMERCIAL

OWS90.2

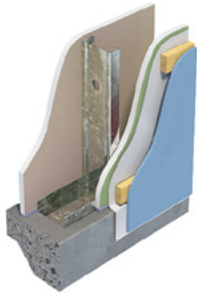
FIRE RESISTANCE LEVEL

NLB -/90/90*

LB 60/60/60 ACR 20%

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

1x16 mm fire rated lining

Framing: Rondo lipped steel studs

Insulation: Refer to table

External Lining:

1x16 mm MultiStop ONE

External Cladding:

Lightweight External Cladding on battens over Building membrane and thermal break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT I274HBased on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 108 + CLADDING | | | NOM 124 + CLADDING | | |
|-------------|----------------------|--------------------------|------------------|----------------------|----------------------|--------------------------------|--------------------|----------|--------------------------------|
| | | | | 76 | | | 92 | | |
| | | | STUD SIZE mm | 0.75 BMT | 1.15 BMT | $R_{ti}(SUM)/R_{ti}(WIN)^{**}$ | 0.75 BMT | 1.15 BMT | $R_{ti}(SUM)/R_{ti}(WIN)^{**}$ |
| INSULATION* | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | | | | |
| OWS90.2A | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 50G14 | 44(36) | 40(35) | R1.86 / R2.01 | 45(37) | 41(36) | R1.93 / R2.08 |
| | | | KI 90G24 | - | - | - | 47(38) | 43(37) | R2.93 / R3.14 |
| | | | KI 90G32 | - | - | - | 47(38) | 43(37) | R3.13 / R3.34 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti}(SUM)$ and $R_{ti}(WIN)$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti}(SUM)$, $R_{ti}(WIN)$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

+ Must include specified minimum KI 50G11 inside cavity to achieve FRL

† Refer Rondo/Engineer for maximum heights for load bearing walls with ACR 20%

OWS120.3

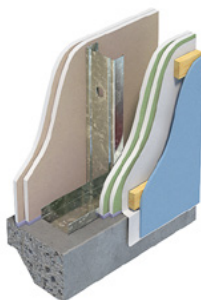
FIRE RESISTANCE LEVEL

NLB -/120/120

LB 90/90/90

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

2x13 mm fire resistant lining

Framing: Rondo lipped steel studs

Insulation: Refer to table

External Lining:

2x13 mm MultiStop ONE

External Cladding:

Lightweight External Cladding on battens over Building membrane and thermal break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01
THERMAL BASIS: JMF REPORT I274HBased on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 128 + CLADDING | | | NOM 144 + CLADDING | | |
|-------------|----------------------|--------------------------|------------------|----------------------|----------------------|--------------------------------|--------------------|----------|--------------------------------|
| | | | | 76 | | | 92 | | |
| | | | STUD SIZE mm | 0.75 BMT | 1.15 BMT | $R_{ti}(SUM)/R_{ti}(WIN)^{**}$ | 0.75 BMT | 1.15 BMT | $R_{ti}(SUM)/R_{ti}(WIN)^{**}$ |
| INSULATION* | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | | $R_w (R_w + C_{tr})$ | $R_w (R_w + C_{tr})$ | | | | |
| OWS120.3A | 2x13 mm FIRESTOP | 2x13 mm MULTISTOP ONE | KI 50G14 | 50(41) | 46(40) | R1.91 / R2.06 | 51(42) | 47(41) | R1.98 / R2.13 |
| | | | KI 90G24 | - | - | - | 53(43) | 49(42) | R2.98 / R3.19 |
| | | | KI 90G32 | - | - | - | 53(43) | 49(42) | R3.18 / R3.39 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti}(SUM)$ and $R_{ti}(WIN)$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti}(SUM)$, $R_{ti}(WIN)$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

OUTRWALL® COMMERCIAL

OWS120.4

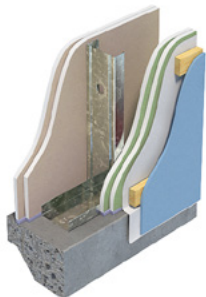
FIRE RESISTANCE LEVEL

NLB -/120/120

LB 120/120/120 ACR 20%

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

2x16 mm fire resistant lining

Framing:

Rondo lipped steel studs

Insulation:

Refer to table

External Lining:

2x16 mm MultiStop ONE

External Cladding:

Lightweight External Cladding on battens over Building membrane and thermal break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01

THERMAL BASIS: JMF REPORT I274H

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 140 + CLADDING | | | NOM 156 + CLADDING | | |
|-------------|---------------------|--------------------------|--------------------|--------------------|-------------------|--------------------------------|--------------------|----------|--------------------------------|
| | | | | 76 | | | 92 | | |
| | | | STUD SIZE mm | 0.75 BMT | 1.15 BMT | $R_{ti}(SUM)/R_{ti}(WIN)^{**}$ | 0.75 BMT | 1.15 BMT | $R_{ti}(SUM)/R_{ti}(WIN)^{**}$ |
| INSULATION* | $R_w(R_w+C_{tr})$ | $R_w(R_w+C_{tr})$ | $R_{ti}(WIN)^{**}$ | $R_w(R_w+C_{tr})$ | $R_w(R_w+C_{tr})$ | $R_{ti}(WIN)^{**}$ | | | |
| OWS120.4A | 2x16 mm FIRESTOP | 2x16 mm MULTISTOP ONE | KI 50G14 | 51(43) | 47(42) | R2.03 / R2.18 | 52(44) | 48(43) | R2.10 / R2.25 |
| | | | KI 90G24 | - | - | - | 54(45) | 50(44) | R3.10 / R3.31 |
| | | | KI 90G32 | - | - | - | 54(45) | 50(44) | R3.30 / R3.51 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density
 Refer Engineer for maximum heights for load bearing walls with ACR 20%

** The system values $R_{ti}(SUM)$ and $R_{ti}(WIN)$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti}(SUM)$, $R_{ti}(WIN)$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

OWS180.3

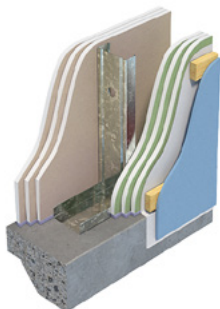
FIRE RESISTANCE LEVEL

NLB -/180/180 †

LB 120/120/120

FROM BOTH SIDES

FRL Basis: FC16195



SYSTEM DESCRIPTION

Internal Lining:

3x16 mm fire resistant lining

Framing:

Rondo lipped steel studs

Insulation:

Refer to table

External Lining:

3x16 mm MultiStop ONE

External Cladding:

Lightweight External Cladding on battens over Building membrane and thermal break to NCC requirements.

ACOUSTIC RATINGS RT&A TK778-14F01

THERMAL BASIS: JMF REPORT I274H

Based on studs
@ 450 mm ctrs

| SYSTEM | INTERNAL LINING | EXTERNAL LINING | WALL WIDTH mm | NOM 172 + CLADDING | | | NOM 188 + CLADDING | | |
|-------------|---------------------|--------------------------|--------------------|--------------------|-------------------|--------------------------------|--------------------|----------|--------------------------------|
| | | | | 76 | | | 92 | | |
| | | | STUD SIZE mm | 0.75 BMT | 1.15 BMT | $R_{ti}(SUM)/R_{ti}(WIN)^{**}$ | 0.75 BMT | 1.15 BMT | $R_{ti}(SUM)/R_{ti}(WIN)^{**}$ |
| INSULATION* | $R_w(R_w+C_{tr})$ | $R_w(R_w+C_{tr})$ | $R_{ti}(WIN)^{**}$ | $R_w(R_w+C_{tr})$ | $R_w(R_w+C_{tr})$ | $R_{ti}(WIN)^{**}$ | | | |
| OWS180.3A | 3x16 mm FIRESTOP | 3x16 mm MULTISTOP ONE | KI 50G14 | 54(45) | 50(44) | R2.10 / R2.25 | 55(46) | 51(45) | R2.17 / R2.32 |
| | | | KI 90G24 | - | - | - | 57(47) | 53(46) | R3.17 / R3.38 |
| | | | KI 90G32 | - | - | - | 57(47) | 53(46) | R3.37 / R3.58 |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
 KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density
 KI 90G32 - 90 mm glasswool insulation 32 kg/m³ density

** The system values $R_{ti}(SUM)$ and $R_{ti}(WIN)$ provided have been calculated based on a thermal path through the wall cavity and does not allow for any thermal bridging. The NCC requires thermal bridging to be accounted for to determine the Total R-Value or $R_{ti}(SUM)$, $R_{ti}(WIN)$. Refer to an ESD consultant to determine Total R-Value, tailored to your project's framing design and cladding system.

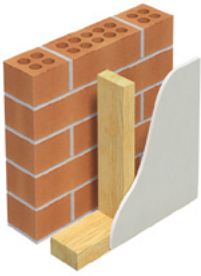
† Refer Rondo and Knauf for maximum wall heights under structural and fire condition

BRICK VENEER WALLS

BVT

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195



SYSTEM DESCRIPTION

Brick Veneer:

110 clay brick, min 170 kg/m²

Framing: Timber

Gap: 50 mm

Insulation: Refer to table

Internal Lining:

Refer to table.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S07, TK778-14S01

| SYSTEM | FIRE RESISTANCE LEVEL | | INTERNAL LINING | WALL WIDTH mm | 230 + LINING | 250 + LINING | TOTAL R-VALUE m ² K/W |
|-----------|-----------------------|----------------------------------|-----------------------|---------------|---|---|----------------------------------|
| | FROM INSIDE | FROM OUTSIDE | | STUD SIZE mm | 70 | 90 | |
| | | | | INSULATION* | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | |
| BVT.1A | --- | BRICK VENEER FRL | 1x10 mm SHEETROCK ONE | KI 90G24 | 59(49) | 59(50) | 3.3 |
| BVT30.1A | LB 30/30/30 | MIN 30/30/30 BRICK VENEER FRL | 1x13 mm FIRESTOP | KI 90G24 | 64(55) | 65(56) | 3.3 |
| BVT60.1A | LB 60/60/60 CF23† | MIN 60/60/60 BRICK VENEER FRL | 1x16 mm FIRESTOP | KI 90G24 | 66(56) | 67(58) | 3.3 |
| BVT90.1A | LB 90/90/90 CF11† | MIN 90/90/90 BRICK VENEER FRL | 2x13 mm FIRESTOP | KI 90G24 | 70(61) | 71(62) | 3.3 |
| BVT120.1A | LB 120/120/120 CF21† | MIN 120/120/120 BRICK VENEER FRL | 2x16 mm FIRESTOP | KI 90G24 | 71(62) | 72(63) | 3.3 |

* KI 90G24 – 90 mm glasswool insulation 24 kg/m³ density

† Refer to Charfactor design tables for maximum vertical loads on load bearing fire rated walls

BVS

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195



SYSTEM DESCRIPTION

Brick Veneer:

110 clay brick, min 170 kg/m²

Framing: Steel stud

Gap: 50 mm

Insulation: Refer to table

Internal Lining:

Refer to table.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S07, TK778-14S01

Based on stud @ 450 mm ctrs

| SYSTEM | FIRE RESISTANCE LEVEL | | INTERNAL LINING | WALL WIDTH mm | 236 + LINING | 252 + LINING | TOTAL R-VALUE m ² K/W |
|-----------|--------------------------------------|----------------------------------|-----------------------|---------------|---|---|----------------------------------|
| | FROM INSIDE | FROM OUTSIDE | | STUD SIZE mm | 76 | 92 | |
| | | | | INSULATION* | R _w (R _w +C _{tr}) | R _w (R _w +C _{tr}) | |
| BVS.1A | --- | BRICK VENEER FRL | 1x10 mm SHEETROCK ONE | KI 90G24 | 59(49) | 59(50) | 3.3 |
| BVS60.1A | NLB -/60/60 LB 30/30/30 | MIN 60/60/60 BRICK VENEER FRL | 1x13 mm FIRESTOP | KI 90G24 | 64(55) | 65(56) | 3.3 |
| BVS90.1A | NLB -/90/90 LB 60/60/60 ACR 20% | MIN 90/90/90 BRICK VENEER FRL | 1x16 mm FIRESTOP | KI 90G24 | 66(56) | 67(58) | 3.3 |
| BVS120.1A | NLB -/120/120 LB 90/90/90 | MIN 90/90/90 BRICK VENEER FRL | 2x13 mm FIRESTOP | KI 90G24 | 70(61) | 71(62) | 3.3 |
| BVS120.2A | NLB -/120/120 LB 120/120/120 ACR 20% | MIN 120/120/120 BRICK VENEER FRL | 2x16 mm FIRESTOP | KI 90G24 | 71(62) | 72(63) | 3.3 |

* KI 90G24 – 90 mm glasswool insulation 24 kg/m³ density

Refer Engineer for maximum heights for load bearing walls with ACR 20%

NOTE:

Refer to Rondo Building Services for steel studs and thicknesses for external wall applications

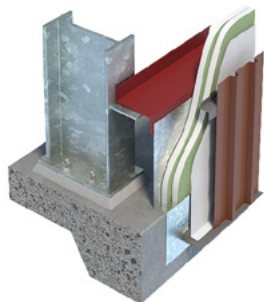
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

FIRECLAD®

FC

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195, FC17308



ACOUSTIC RATINGS BASIS: RT&A TE405-20S07

| SYSTEM | FRL | LINING | NOM WALL WIDTH mm | INSULATION | R _w | R-VALUE m ² K/W |
|----------|----------------------------------|--------------------------|-------------------|------------|----------------|----------------------------|
| FC60.1A | 60/60/60 from outside only | 2x16 mm MULTISTOP ONE | Adds 54 mm | NA | 36 | 0.5 |
| FC90.1A | 90/90/90 from outside only | 3x13 mm MULTISTOP ONE | Adds 61 mm | NA | 38 | 0.5 |
| FC120.1A | 120/120/120 from outside only | 3x16 mm MULTISTOP ONE | Adds 70 mm | NA | 39 | 0.5 |

SYSTEM DESCRIPTION

External Lining:

- Steel cladding on battens
- Building membrane to NCC requirements
- Two or more layers of MULTISTOP ONE fixed to girts.

Section F

Masonry Upgrades

10/2025

MASONRY UPGRADES

Click on the links below to navigate to page

- F 2** **Introduction**
- F 6** **Acoustic Upgrades**
- F 6** Internal Walls
- F 11** Blade Columns
- F 13** Shaft/Stair Walls
- F 15** AAC Panels
- F 17** **Fire Upgrades**



INTRODUCTION

Description

Knauf Masonry Upgrades encompass a range of Acoustic and Fire Upgrades systems with plasterboard linings on one or both sides of masonry walls.

Design Options

Masonry Acoustic Upgrades

Masonry Acoustic Upgrades systems outlined in this manual achieve acoustic ratings up to R_w 79 and $R_w + C_{tr}$ 65.

The following types of Acoustic Upgrades systems have been included:

TABLE F1: TYPES OF ACOUSTIC UPGRADES

| SYSTEM TYPE | WALL TYPE |
|-------------|-----------------------------|
| MWI | Internal masonry walls |
| MWB | Enclosed blade columns |
| MWS | Shaft and stair shaft walls |

Internal Walls

Acoustic ratings have been provided for the following types of internal masonry walls:

- 150 mm Concrete Panel
- 200 mm Concrete Panel
- 140 mm Concrete Block (core filled)
- 190 mm Concrete Block (core filled)
- 190 mm Lightweight Concrete Block (core filled).

Refer to Knauf for acoustic upgrades of other types of masonry walls.

Acoustic Upgrades of internal masonry walls utilise 13 mm non-fire resistant plasterboard fixed to one or both sides of the wall via:

- Direct adhesive fixings
- 28 mm Rondo furring channels
- Free standing 64 mm Rondo studs.

Blade Columns

Acoustic upgrades of enclosed blade columns are provided for 150 mm and 200 mm concrete thicknesses.

Lining configurations are based on various fire rated steel stud wall systems with the following fixing options:

- 28 mm Rondo furring channels on both sides
- 28 mm Rondo furring channel on one side and free standing 64 mm Rondo studs on the other side.

Shaft/Stair Walls

Acoustic upgrades of shaft and stair walls are based on the same masonry and lining types as upgrades of internal walls, with linings fixed only to one side of the wall via 28 mm Rondo furring channels or free standing 64 mm Rondo steel studs.

Autoclaved Aerated Concrete (AAC) Panels

Acoustic ratings have been provided for 75 mm AAC panels.

Masonry Fire Upgrades

Masonry Fire Upgrades systems outlined in this manual provide additional Fire Resistance Levels up to +90/+90/+90 from one side only or +90/+180/+180 from both sides.

Fire Upgrades systems utilise single or multiple layers of fire resistant plasterboard fixed to one or both sides of masonry walls on 28 mm Rondo furring channels.

INTRODUCTION

Materials

Masonry Acoustic Upgrades

Plasterboard Linings

- 13 mm SHEETROCK ONE
- 13 mm ImpactStop
- 13 mm / 16 mm FireStop (blade columns).

Metal components

- Rondo 129 (28 mm) Furring Channel and direct fixing clips or BetaGrip® clips where specified
- Rondo 64 mm C-studs and tracks.

Insulation

- KI 25G24 - 25 mm glasswool insulation 24 kg/m³ density
- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
- KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

Screws

Refer to General Information – Materials for plasterboard screw types suitable for fixing to metal sections.

Masonry Adhesive

Knauf Masonry Adhesive is a plaster-based setting compound that has been specifically designed for direct fixing of plasterboard linings to masonry walls.

Caulking

H.B. Fuller Firesound™ sealant.

Masonry Fire Upgrades

Plasterboard Linings

- 13 mm FireStop
- 16 mm FireStop

Metal components

- Rondo 129 (28 mm) Furring Channel and direct fixing clips.

Screws

Refer to General Information – Materials for plasterboard screw types suitable for fixing to metal sections.

Caulking

H.B. Fuller Firesound™ sealant.

Design Considerations

- Refer to the Multi-Residential section for NCC Acoustic and Fire Resistance requirements for multi-residential buildings.
- Systems with free standing steel studs satisfy NCC requirements for impact sound insulation (discontinuous construction) as well as allow a cavity space for services to run between the masonry wall and plasterboard, as a minimum 20 mm gap is specified between the studs and the substrate.
- Beware of flanking sound effects on acoustic performance (refer to General Information – Design).
- Refer Steel Stud Walls section for maximum heights of 64 mm studs lined one side.
- Refer to masonry manufacturer for Fire Resistance Levels of masonry walls.

INTRODUCTION

Installation

General

- Fire rated and acoustic upgrade systems must be assembled strictly in accordance with the installation details and specifications outlined in this manual to achieve stated Fire Resistance Levels and acoustic ratings.
- Blockwork masonry walls must be constructed in accordance with AS 3700 *Masonry Structures*.
- Concrete walls must be constructed in accordance with AS 3600 *Concrete Structures*.
- Refer to AAC manufacturer's specification for AAC system installation instructions.

Masonry Adhesive Method

NOTE:

Masonry adhesive method must not be used for installation of fire resistant linings in fire upgrade systems.

- It is essential that all new masonry surfaces be allowed to dry to normal levels before installing Knauf plasterboards.
- Masonry walls in wet areas, such as bathrooms and laundries may be lined with SHEETROCK PLUS, WetStop, ImpactStop, MultiStop ONE or FIBEROCK Aqua-Tough as per the wet area installation requirements (refer Knauf Plasterboard Installation Manual). Linings in tiled areas must be mechanically fastened.
- Masonry walls should be checked for flatness and level using a straight edge or string line before determining the fixing method.
- Wall surfaces with high/low spots over 15 mm or out of plumb by more than 15 mm will need to be straightened with a series of levelling pads.
- Masonry adhesive method should not be used for walls over 3m high or where the wall surface requires more than 25 mm of packing to bring it back to a

true line.

- All services should be in place prior to plasterboard installation.
- Masonry walls must be dry and free from dust, oil, flaking paint, efflorescence, release agents, or any other material or treatment that could adversely affect bonding of masonry adhesive.
- Adhesion can also be affected by the porosity and/or previous surface treatment of a wall. Surfaces that are particularly dry or porous may need to be dampened. For best results masonry walls should be coated with a bonding agent before applying masonry adhesive.
- Masonry adhesive daubs should be about 50 mm diameter by 15 mm thickness. Space adhesive daubs at maximum 450 mm centres vertically and horizontally and 50 mm from sheet ends and edges.
- Ribbons or additional daubs of masonry adhesive must be applied at sheet ends and at cornice and skirting lines. Additional daubs of masonry adhesive are also required at external angles and fixtures.

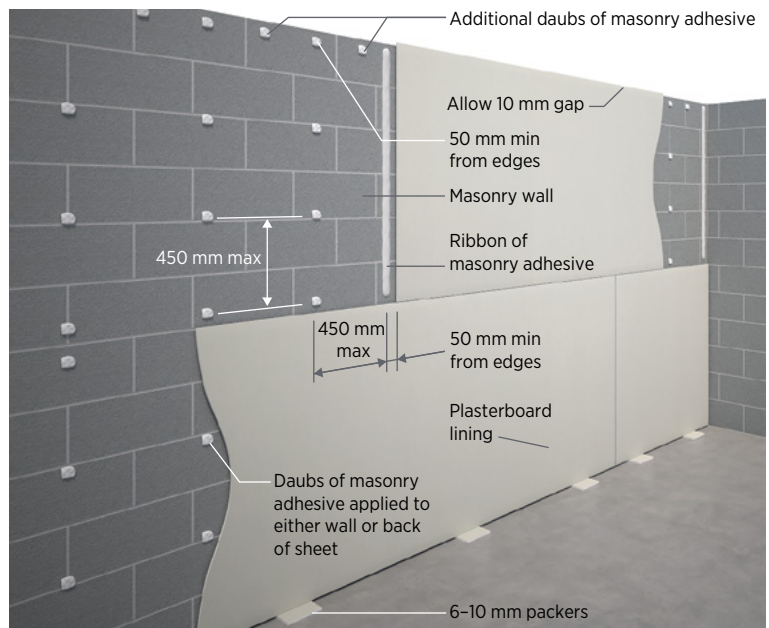


Figure F1: Fixing to a true wall surface

For detailed Masonry Adhesive Method installation instructions refer to Knauf Plasterboard Installation Manual.

INTRODUCTION

Installation Using Furring Channels

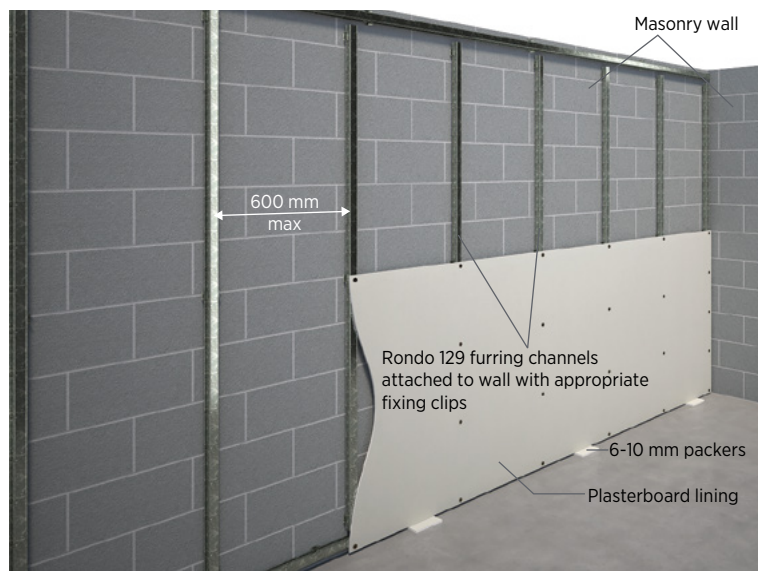


Figure F2: Fixing to furring channels clipped to wall

- Set out fixing clips for vertical channels spaced at maximum 600 mm centres and for top and bottom horizontal channels. Pack clips where required to achieve a true surface.
- Fix clips to masonry with suitable fasteners.
- Fix plasterboard to furring channels using an appropriate method.
- Refer to Knauf online CAD Finder and Plasterboard Installation Manual for installation instructions for fire rated and non-fire rated systems.

NOTES:

- Fire resistant linings in fire upgrade systems must be mechanically fixed. Adhesive fixing is not permitted.
- In fire upgrade systems clips must be fixed to masonry with metal only fasteners. Plastic sleeves are not permitted.

Installation on Steel Studs

Refer to Knauf online CAD Finder and Plasterboard Installation Manual for installation instructions for fire rated and non-fire rated systems respectively.

Jointing and Finishing

- Finish all joints and internal and external corners in face layers with the appropriate Knauf jointing system (refer to Knauf Plasterboard Installation Manual). Joints and junctions in inner layers of multiple layer systems are not required to be stopped.
- Paper tape must be used in fire rated and wet area systems.

Caulking

Perimeter gaps and penetrations in fire rated and acoustic systems must be caulked with an approved sealant (refer Knauf online CAD Finder).

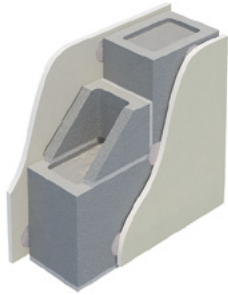
To view the full range of system CAD details, scan QR code below.



ACOUSTIC UPGRADES – INTERNAL WALLS

MWI.1

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

SYSTEM DESCRIPTION

Side 1:

- 1x13 mm non-fire resistant pbd, adhesive fixed

Masonry:

- Refer to table

Side 2:

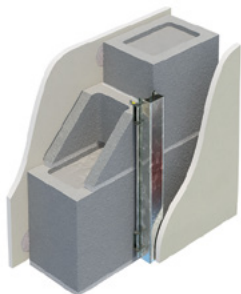
- 1x13 mm non-fire resistant pbd, adhesive fixed.

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION | R _w (R _w +C _{tr}) |
|--------|-----------------------|-----------------------|---|-------------------|-----------|--------|------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWI.1A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 150 mm Concrete Panel (360 kg/m ²) | 180 | NA | NA | Nil | 50(44) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 230 | NA | NA | Nil | 52(45) |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 170 | NA | NA | Nil | 49(44) |
| | | | 190 mm Concrete Block (Core Filled 400 kg/m ²) | 220 | NA | NA | Nil | 51(45) |
| | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 221 | NA | NA | Nil | 50(44) |

[^] Acoustic ratings are based on tests of lightweight concrete blocks by National Masonry

MWI.2

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

SYSTEM DESCRIPTION

Side 1:

- 1x13 mm non-fire resistant pbd, adhesive fixed

Masonry:

- Refer to table

Side 2:

- 1x13 mm non-fire resistant pbd
- 28 mm furring channels @ 600 mm ctrs fixed to masonry wall with direct fix clips, or BETAGRIP® clips for 50 mm furring cavities
- Insulation (refer to table).

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|---|-----------------------|---------------------------|--|---------------------------|---------------------------|--------|---|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWI.2A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 150 mm Concrete Panel (360 kg/m ²) | 208 | NA | 30 | Nil | 54(45) |
| | | | | | | | KI 25G24 (furring cavity) | 58(48) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 258 | NA | 30 | Nil | 57(47) |
| | | | | | | | KI 25G24 (furring cavity) | 61(50) |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 198 | NA | 30 | Nil | 52(44) |
| | | | | | | | KI 25G24 (furring cavity) | 55(47) |
| | | | 190 mm Concrete Block (Core Filled 400 kg/m ²) | 248 | NA | 30 | Nil | 55(46) |
| | | | | | | | KI 25G24 (furring cavity) | 58(49) |
| | | | 268 | 50 | KI 50G11 (furring cavity) | 60(51) | | |
| | | | | | | | Nil | 54(45) |
| QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 248 | NA | 30 | KI 25G24 (furring cavity) | 55(46) | | | |
| | | | | KI 50G11 (furring cavity) | 57(48) | | | |
| 268 | 50 | KI 50G11 (furring cavity) | 57(48) | | | | | |
| | | | | Nil | 54(46) | | | |
| MWI.2I | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 198 | NA | 30 | KI 25G24 (furring cavity) | 57(49) |
| | | | | | | | KI 50G11 (furring cavity) | 59(51) |
| | | | 218 | 50 | Nil | 56(47) | | |
| | | | | | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 248 |
| 268 | 50 | KI 50G11 (furring cavity) | 59(50) | | | | | |

* KI 25G24 - 25 mm glasswool insulation 24 kg/m³ density
KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

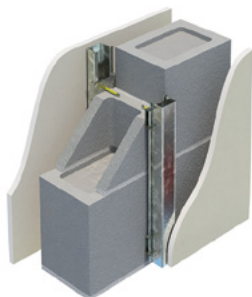
[^] Acoustic ratings are based on tests of lightweight concrete blocks by National Masonry

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector

ACOUSTIC UPGRADES – INTERNAL WALLS

MWI.3

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

**SYSTEM DESCRIPTION****Side 1:**

- One or more layers of non-fire resistant pbd
- 28 mm furring channels @ 600 mm ctrs fixed to masonry wall with direct fix clips, or BETAGRIP® clips for 50 mm furring cavities
- Insulation (refer to table)

Masonry:

- Refer to table

Side 2:

- One or more layers of non-fire resistant pbd
- 28 mm furring channels @ 600 mm ctrs fixed to masonry wall with direct fix clips, or BETAGRIP® clips for 50 mm furring cavities
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|--------|-----------------------|-----------------------|---|-------------------|-----------|--------------------------|--------------------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWI.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 150 mm Concrete Panel (360 kg/m ²) | 236 | 30 | 30 | Nil | 52(38) |
| | | | | | | KI 25G24 (both cavities) | 58(43) | |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 286 | 30 | 30 | Nil | 55(40) |
| | | | | | | KI 25G24 (both cavities) | 61(45) | |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 226 | 30 | 30 | Nil | 50(36) |
| | | | KI 25G24 (both cavities) | 56(42) | | | | |
| | | | 190 mm Concrete Block (Core Filled) | 276 | 30 | 30 | Nil | 53(38) |
| | | | | | | | KI 25G24 (both cavities) | 59(44) |
| | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 276 | 30 | 30 | Nil | 51(36) |
| | | | | | | | KI 25G24 (both cavities) | 57(42) |
| MWI.3F | 2x13 mm SHEETROCK ONE | 2x13 mm SHEETROCK ONE | 190 mm Concrete Block (Core Filled 400 kg/m ²) | 302 | 30 | 30 | KI 25G24 (both cavities) | 67(52) |
| | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 342 | 50 | 50 | KI 50G11 (both cavities) | 65(50) |

* KI 25G24 - 25 mm glasswool insulation 24 kg/m³ density

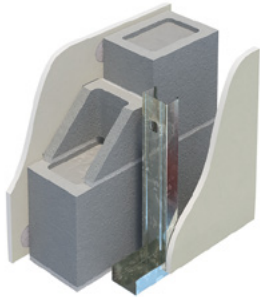
KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

[^] Acoustic ratings are based on tests of lightweight concrete blocks by National Masonry

ACOUSTIC UPGRADES – INTERNAL WALLS

MWI.4

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

**SYSTEM DESCRIPTION****Side 1:**

- 1x13 mm non-fire resistant pbd, adhesive fixed

Masonry:

- Refer to table

Side 2:

- 1x13 mm non-fire resistant pbd
- 64 mm C-studs @ 600 mm ctrs
- 20 mm gap between steel frame and masonry
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

DISCONTINUOUS CONSTRUCTION

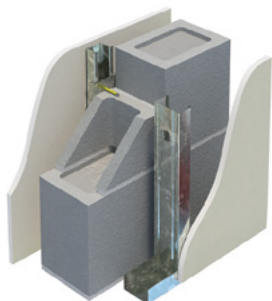
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|--------|-----------------------|-----------------------|---|-------------------|-----------|--------|------------------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWI.4A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 150 mm Concrete Panel (360 kg/m ²) | 260 | NA | 84 | Nil | 61(52) |
| | | | | | | | KI 75G11 (stud cavity) | 67(57) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 310 | NA | 84 | Nil | 64(54) |
| | | | | | | | KI 75G11 (stud cavity) | 70(59) |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 250 | NA | 84 | Nil | 59(50) |
| | | | | | | | KI 75G11 (stud cavity) | 63(54) |
| MWI.4G | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | 150 mm Concrete Panel (360 kg/m ²) | 260 | NA | 84 | Nil | 63(54) |
| | | | | | | | KI 75G11 (stud cavity) | 69(59) |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 250 | NA | 84 | Nil | 61(52) |
| | | | | | | | KI 75G11 (stud cavity) | 65(56) |
| | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 300 | NA | 84 | Nil | 62(52) |
| | | | | | | | KI 75G11 (stud cavity) | 65(55) |

* KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density[^] Acoustic ratings are based on tests of lightweight concrete blocks by National Masonry

ACOUSTIC UPGRADES – INTERNAL WALLS

MWI.5

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

**SYSTEM DESCRIPTION****Side 1:**

- 1x13 mm non-fire resistant pbd
- 28 mm furring channels @ 600 mm ctrs
fixed to masonry wall with direct fix clips

Masonry:

- Refer to table

Side 2:

- 1x13 mm non-fire resistant pbd
- 64 mm C-studs @ 600 mm ctrs
- 20 mm gap between steel frame
and masonry
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

DISCONTINUOUS CONSTRUCTION

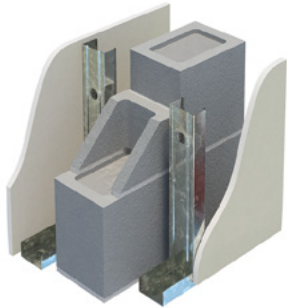
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|--------|--------------------------|--------------------------|--|----------------------------|--------------|--------|---------------------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWI.5A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 150 mm Concrete Panel (360 kg/m ²) | 290 | 30 | 84 | Nil | 60(50) |
| | | | | | | | KI 75G11 (stud cavity) | 66(55) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 340 | 30 | 84 | Nil | 63(53) |
| | | | | | | | KI 75G11 (stud cavity) | 69(58) |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 280 | 30 | 84 | Nil | 56(47) |
| | | | | | | | KI 75G11 (stud cavity) | 60(51) |
| | | | 190 mm Concrete Block (Core Filled 400 kg/m ²) | 330 | 30 | 84 | Nil | 59(49) |
| | | | | | | | KI 75G11 (stud cavity) | 63(53) |
| | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 330 | 30 | 84 | Nil | 57(47) |
| | | | | | | | KI 75G11 (stud cavity) | 60(50) |

* KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density[^] Acoustic ratings are based on tests of lightweight concrete blocks by National Masonry

ACOUSTIC UPGRADES – INTERNAL WALLS

MWI.6

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

**SYSTEM DESCRIPTION****Side 1:**

- 1x13 mm non-fire resistant pbd
- 64 mm C-studs @ 600 mm ctrs
- 20 mm gap between steel frame and masonry
- Insulation (refer to table)

Masonry:

- Refer to table

Side 2:

- 1x13 mm non-fire resistant pbd
- 64 mm C-studs @ 600 mm ctrs
- 20 mm gap between steel frame and masonry
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

DISCONTINUOUS CONSTRUCTION

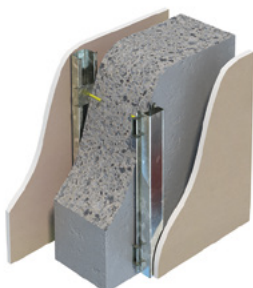
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|--------|-----------------------|-----------------------|---|-------------------|-----------|--------|--------------------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWI.6A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 150 mm Concrete Panel (360 kg/m ²) | 344 | 84 | 84 | Nil | 63(52) |
| | | | | | | | KI 75G11 (both cavities) | 69(57) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 394 | 84 | 84 | Nil | 66(54) |
| | | | | | | | KI 75G11 (both cavities) | 72(59) |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 334 | 84 | 84 | Nil | 59(48) |
| | | | | | | | KI 75G11 (both cavities) | 64(54) |
| | | | 190 mm Concrete Block (Core Filled 400 kg/m ²) | 384 | 84 | 84 | Nil | 62(50) |
| | | | | | | | KI 75G11 (one cavity) | 65(54) |
| | | | | | | | KI 75G11 (both cavities) | 67(56) |
| | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 384 | 84 | 84 | Nil | 60(48) |
| | | | | | | | KI 75G11 (one cavity) | 63(52) |

* KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density[^] Acoustic ratings are based on tests of lightweight concrete blocks by National Masonry

ACOUSTIC UPGRADES – BLADE COLUMNS

MWB.1

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)



SYSTEM DESCRIPTION

Side1:

- One or more layers of fire resistant pbd
- 28 mm furring channels @ 600 mm ctrs fixed to concrete wall with direct fix clips
- Insulation (refer to table)

Concrete panel:

- Refer to table

Lining Side 2:

- One or more layers of fire resistant pbd
- 28 mm furring channels @ 600 mm ctrs fixed to concrete wall with direct fix clips
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|--------|------------------|------------------|--|-------------------|-----------|--------|--------------------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWB.1A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 236 | 30 | 30 | Nil | 53(39) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 286 | 30 | 30 | KI 25G24 (both cavities) | 60(45) |
| MWB.1B | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 249 | 30 | 30 | Nil | 56(45) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 299 | 30 | 30 | KI 25G24 (both cavities) | 63(51) |
| MWB.1C | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 262 | 30 | 30 | Nil | 59(46) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 312 | 30 | 30 | KI 25G24 (both cavities) | 66(52) |
| MWB.1D | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 242 | 30 | 30 | Nil | 55(44) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 292 | 30 | 30 | KI 25G24 (both cavities) | 62(50) |
| MWB.1E | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 274 | 30 | 30 | Nil | 61(47) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 324 | 30 | 30 | KI 25G24 (both cavities) | 68(53) |

* KI 25G24 - 25 mm glasswool insulation 24 kg/m³ density

ACOUSTIC UPGRADES – BLADE COLUMNS

MWB.2

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

**SYSTEM DESCRIPTION****Side1:**

- One or more layers of fire resistant pbd
- 28 mm furring channels @ 600 mm ctrs fixed to concrete wall with direct fix clips

Concrete panel:

- Refer to table

Side 2:

- One or more layers of fire resistant pbd
- 64 mm steel studs @ 600 mm ctrs
- 20 mm gap between steel frame and concrete wall
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

DISCONTINUOUS CONSTRUCTION

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|--------|------------------|------------------|--|-------------------|-----------|--------|-----------------------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWB.2A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 290 | 30 | 84 | Nil | 61(51) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 340 | 30 | 84 | KI 75G11 (stud cavity only) | 68(55) |
| MWB.2B | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 303 | 30 | 84 | Nil | 64(54) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 353 | 30 | 84 | KI 75G11 (stud cavity only) | 71(58) |
| MWB.2C | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 316 | 30 | 84 | Nil | 67(57) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 366 | 30 | 84 | KI 75G11 (stud cavity only) | 74(61) |
| MWB.2D | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 296 | 30 | 84 | Nil | 67(56) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 346 | 30 | 84 | KI 75G11 (stud cavity only) | 74(60) |
| MWB.2E | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 328 | 30 | 84 | Nil | 70(59) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 378 | 30 | 84 | KI 75G11 (stud cavity only) | 77(63) |
| MWB.2A | 1x13 mm FIRESTOP | 1x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 296 | 30 | 84 | Nil | 63(53) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 346 | 30 | 84 | KI 75G11 (stud cavity only) | 70(57) |
| MWB.2B | 1x13 mm FIRESTOP | 2x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 303 | 30 | 84 | Nil | 65(55) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 353 | 30 | 84 | KI 75G11 (stud cavity only) | 72(59) |
| MWB.2C | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 316 | 30 | 84 | Nil | 69(58) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 366 | 30 | 84 | KI 75G11 (stud cavity only) | 76(62) |
| MWB.2D | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | 150 mm Concrete Panel (360 kg/m ²) | 296 | 30 | 84 | Nil | 72(61) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 346 | 30 | 84 | KI 75G11 (stud cavity only) | 79(65) |

* KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

ACOUSTIC UPGRADES – SHAFT/STAIR WALLS

MWS.1

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

**SYSTEM DESCRIPTION****Side 1:**

- Nil linings

Masonry:

- Refer to table

Side 2:

- 1x13 mm non-fire resistant pbd
- 28 mm furring channels
@ 600 mm ctrs fixed to masonry wall
with direct fix clips
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|--------|------------------|--------------------------|---|----------------------------|--------------|--------|------------------------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWS.1A | Nil | 1x13 mm SHEETROCK ONE | 150 mm Concrete Panel (360 kg/m ²) | 193 | NA | 30 | Nil | 53(44) |
| | | | | | | | KI 25G24 (furring cavity) | 57(47) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 243 | NA | 30 | Nil | 56(46) |
| | | | | | | | KI 25G24 (furring cavity) | 60(49) |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 183 | NA | 30 | Nil | 51(43) |
| | | | | | | | KI 25G24 (furring cavity) | 54(46) |
| | | | 190 mm Concrete Block (Core Filled 400 kg/m ²) | 233 | NA | 30 | Nil | 54(45) |
| | | | | | | | KI 25G24 (furring cavity) | 57(48) |
| | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 233 | NA | 30 | Nil | 53(44) |
| | | | | | | | KI 25G24 (furring cavity) | 56(47) |

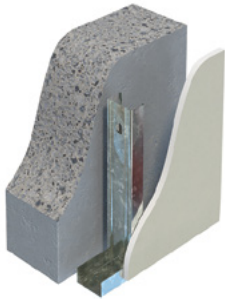
* KI 25G24 - 25 mm glasswool insulation 24 kg/m³ density

[^] Acoustic ratings are based on tests of lightweight concrete blocks by National Masonry

ACOUSTIC UPGRADES – SHAFT/STAIR WALLS

MWS.2

FIRE RESISTANCE LEVEL
(refer masonry manufacturer)

**SYSTEM DESCRIPTION****Side 1:**

- Nil linings

Masonry:

- Refer to table

Side 2:

- 1x13 mm non-fire resistant pbd
- 64 mm C-studs @ 600 mm ctrs
- 20 mm gap between steel frame and masonry
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S09(R4)

DISCONTINUOUS CONSTRUCTION

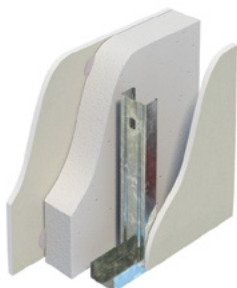
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | MASONRY TYPE | NOM WALL WIDTH mm | CAVITY mm | | INSULATION* | R _w (R _w +C _{tr}) |
|--------|---------------|-----------------------|---|------------------------|-----------|--------|------------------------|---|
| | | | | | SIDE 1 | SIDE 2 | | |
| MWS.2A | Nil | 1x13 mm SHEETROCK ONE | 150 mm Concrete Panel (360 kg/m ²) | 247 | NA | 84 | Nil | 58(52) |
| | | | | | | | KI 75G11 (stud cavity) | 64(57) |
| | | | 200 mm Concrete Panel (480 kg/m ²) | 297 | NA | 84 | Nil | 61(54) |
| | | | | | | | KI 75G11 (stud cavity) | 67(59) |
| | | | 140 mm Concrete Block (Core Filled 295 kg/m ²) | 237 | NA | 84 | Nil | 56(50) |
| | | | | KI 75G11 (stud cavity) | 60(54) | | | |
| | | | 190 mm Concrete Block (Core Filled 400 kg/m ²) | 287 | NA | 84 | Nil | 59(52) |
| | | | | | | | KI 75G11 (stud cavity) | 63(56) |
| | | | QLD MARKET [^] 190 mm Lightweight Block (Core Filled 360 kg/m ²) | 287 | NA | 84 | Nil | 57(50) |
| | | | | | | | KI 75G11 (stud cavity) | 60(53) |
| MWS.2E | Nil | 1x13 mm IMPACTSTOP | 150 mm Concrete Panel (360 kg/m ²) | 247 | NA | 84 | Nil | 59(53) |
| | | | | | | | KI 75G11 (stud cavity) | 65(58) |

* KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density[^] Acoustic ratings are based on tests of lightweight concrete blocks by National Masonry

ACOUSTIC UPGRADES – AAC PANELS

AAC.1

FIRE RESISTANCE LEVEL
(refer AAC panel manufacturer)



SYSTEM DESCRIPTION

Side 1:

- 1x13 mm pbd adhesive fixed to AAC panels (refer to table)

Fire Barrier:

- 75 mm AAC panel min 500 kg/m³ density

Side 2:

- 1x13 mm pbd (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- 20 or 35 mm gap between steel frame and AAC panels
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S11

DISCONTINUOUS CONSTRUCTION

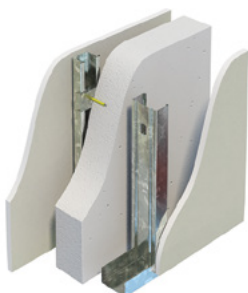
| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH (GAP) mm | INSULATION* | R _w (R _w +C _{tr}) |
|--------|-----------------------|-----------------------|-------------------------|-------------|---|
| AAC.1A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 185(20) | KI 50G11 | 58(48) |
| | | | 200(35) | KI 75G11 | 60(50) |
| AAC.1E | 1x13 mm MULTISTOP ONE | 1x13 mm MULTISTOP ONE | 185(20) | KI 50G11 | 61(50) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

AAC.2

FIRE RESISTANCE LEVEL
(refer AAC panel manufacturer)



SYSTEM DESCRIPTION

Side 1:

- 1x13 mm non-fire resistant pbd (refer to table)
- 28 mm furring channels @ 600 mm ctrs fixed to AAC panels with direct fix clips, or BETAGRIP® clips for 43 mm furring cavities

Fire Barrier:

- 75 mm AAC panels min 500 kg/m³ density

Side 2:

- 1x13 mm non-fire resistant pbd (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- 20 or 35 mm gap between steel frame and AAC panels
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S11

DISCONTINUOUS CONSTRUCTION

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH (GAP) mm | INSULATION* | R _w (R _w +C _{tr}) |
|--------|-----------------------|-----------------------|-------------------------|---|---|
| AAC.2A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 215(20) | KI 50G11 (stud cavity only) | 54(43) |
| | | | 243(35) | KI 75G11 (stud cavity) KI 50G11 (furring cavity 43 mm) | 60(50) |
| AAC.2I | 1x13 mm WETSTOP | 1x13 mm SHEETROCK ONE | 228(20) | KI 75G11 (stud cavity) KI 50G11 (furring cavity min 43 mm) | 60(50) |
| AAC.2L | 1x13 mm WETSTOP | 1x13 mm WETSTOP | 228(20) | KI 75G11 (stud cavity) KI 50G11 (furring cavity min 43 mm) | 60(50) |

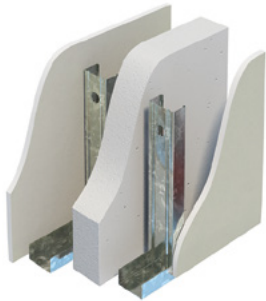
* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

ACOUSTIC UPGRADES – AAC PANELS

AAC.3

FIRE RESISTANCE LEVEL
(refer AAC panel manufacturer)



ACOUSTIC RATINGS BASIS: RT&A TE405-20S11

DISCONTINUOUS CONSTRUCTION

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH (GAP) mm | INSULATION* | R _w +C _{tr} |
|--------|-----------------------|-----------------------|-------------------------|--------------------------|---------------------------------|
| AAC.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 270(20) | KI 50G11 (both cavities) | 66(52) |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

SYSTEM DESCRIPTION

Side 1:

- 1x13 mm non-fire resistant pbd (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- 20 mm gap between steel frame and AAC panels
- Insulation (refer to table)

Fire Barrier:

- 75 mm AAC panels min 500 kg/m³ density

Side 2:

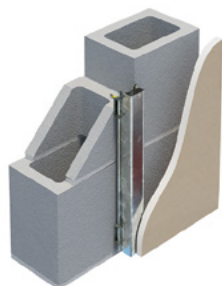
- 1x13 mm non-fire resistant pbd (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- 20 mm gap between steel frame and AAC panels
- Insulation (refer to table).

FIRE UPGRADES

MW

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195

**SYSTEM DESCRIPTION****Lining Side 1:**

- Refer to table

Masonry wall:

- fire rated or non-fire rated masonry wall

Lining Side 2:

- Refer to table.

FIRE RATINGS

| SYSTEM | ADDITIONAL FRL | LINING SIDE 1 | LINING SIDE 2 |
|----------------|-------------------------------------|---|---|
| MW30.1A | +30/+30/+30 from lined side only | 1x16 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs | Nil |
| MW30.2A | +30/+60/+60 from both sides | 1x16 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs | 1x16 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs |
| MW60.1A | +60/+60/+60 from lined side only | 2x13 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs | Nil |
| MW60.2A | +60/+120/+120 from both sides | 2x13 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs | 2x13 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs |
| MW90.1A | +90/+90/+90 from lined side only | 2x16 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs | Nil |
| MW90.2A | +90/+180/+180 from both sides | 2x16 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs | 2x16 mm FIRESTOP on 28 mm furring channels @ 600 mm ctrs |

Section G

Ceilings

10/2025

CEILINGS

Click on the links below to navigate to page

- [G 2 Introduction](#)
- [G 9 Ceilings Under Timber Floor](#)
- [G 16 Ceilings Under Concrete Floor](#)
- [G 25 Ceilings Under Roof](#)
- [G 29 Spanning Ceilings](#)
- [G 30 Acoustic Ceilings](#)
- [G 33 Over Partition Systems](#)



INTRODUCTION

CONVENTIONAL CEILINGS

Description

Knauf conventional ceilings comprise single or multiple-layer plasterboard linings attached to the underside of floor or roof structure above.

Design Options

Knauf offers a wide range of plasterboard ceiling systems for application under floors or roofs.

Ceilings under Timber Floors

Acoustic ratings are provided for ceilings under timber framed floors with min 240 mm joists, 19 mm particleboard and the following floor covering options:

- Timber flooring (min 8.5 kg/m²) with or without acoustic underlay
- Carpet with foam underlay
- Ceramic Floor Tiles on nom 6 mm Cement Sheet (total mass min 15 kg/m²).

Non-fire rated ceiling systems are available with acoustic ratings up to R_w 57 or $R_w + C_{tr}$ 51 and L_{nw} values as low as 38 (on carpeted floors).

Fire Rated Ceilings

Fire rated ceiling systems are available with Fire Resistance Levels up to 120/120/120, Resistance to Incipient Spread of Fire (RISF) up to 120min, and acoustic ratings up to R_w 65 and $R_w + C_{tr}$ 57, with L_{nw} values as low as 36 (on carpeted floors).

Ceilings under Concrete Floors

Acoustic ratings for ceilings under concrete floors are provided for 150 mm and 200 mm slab thicknesses and the following floor coverings:

- Timber flooring (min 8.5 kg/m²) with or without acoustic underlay.
- Carpet + underlay.
- Tiled floor with or without acoustic underlay.
- Acoustic performances of up to R_w 68 and $R_w + C_{tr}$ 62 can be achieved, with L_{nw} values as low as 29 (on carpeted floors).

Ceilings under Roofs

Acoustic ratings for ceilings under roofs are provided for:

- Tiled pitched roofs with sarking
- Metal pitched roofs with roofing blanket insulation
- Metal Flat Roofs with roofing blanket insulation and min 190 mm rafters.

Attachment Options

Ceiling attachment options vary depending on the structure above and include:

- Direct fixed
- Furred
- Furred with acoustic mounts
- Suspended
- Suspended with acoustic mounts.

Design Considerations

- Knauf ceiling systems are not designed to support the weight of construction or maintenance personnel, additional plant or storage of goods.
- Fire rated ceiling can be curved to a minimum radius of 6000 mm.
- Ceiling can be constructed to a pitch of up to 70 degrees from the Horizontal.
- Ceiling systems can incorporate the following approved features: Access Panels, Bulkheads, Light & Luminaire fittings, Plumbing Pipe penetrations, Power Cable penetrations, Loaded penetrations, Control Joints, Protection to Steel and Timber Beams, Changes in ceiling slope direction and a variety of Perimeter Details.
- The use of false ceilings may eliminate the need for penetrations in fire rated ceilings. Refer Knauf for acoustic rating of fire rated ceiling systems with false ceilings.
- Suspension grids must be installed in accordance with Rondo and Knauf specifications.

NOTES:

- Each suspension point must be capable of supporting the greater of 0.50 kN (50 kg) downwards, or the vertical actions determined in accordance with AS/NZS 2785 with an additional allowance of 50% of vertical actions.
- Extra suspension components must be provided to support light fittings, bulkheads and other fixtures.

- Plasterboard spans and total loads directly supported on ceiling linings must not exceed the values indicated in Table G1. Any additional loads must be independently supported from a roof or ceiling structure.
- Spans of Rondo 129 (28 mm) furring channels must not exceed the values indicated in Table G2.
- Spacings of acoustic ceiling mounts must not exceed the values indicated in Table G3.
- Refer to Rondo for maximum spans and spacing of Rondo XPRESS® Drywall Grid System.

INTRODUCTION

TABLE G1: MAXIMUM LOADS AND SPANS FOR INTERNAL CEILINGS

| PLASTERBOARD TYPE | SPAN (mm) | MAXIMUM TOTAL LOAD* FOR GIVEN WIND CLASS (kg/m ²) | | | |
|---|-----------|---|------------------|-----|-----|
| | | N1 | N2 | N3 | N4 |
| 10 mm SHEETROCK ONE | 600 (max) | 2.6 [†] | 2.6 [†] | 2.0 | 2.0 |
| 13 mm SHEETROCK ONE | 450 | 2.6 [†] | | | |
| 13 mm WetStop 13 mm ImpactStop | 600 (max) | 2.0 | | | |
| 13 mm & 16 mm FireStop 13 mm & 16 mm MultiStop ONE | 450 | 2.6 [†] | | | |
| 10 mm SHEETROCK ONE 10 mm SHEETROCK PLUS | 450 (max) | 2.0 | | | |

* Total Load includes weight of insulation and any fixtures directly supported on ceiling linings.

† 1/3 Fixing method or full screw fixing must be used for non-fire rated ceilings if directly supported load exceeds 2.0 kg/m² (maximum load 2.6 kg/m²).

NOTE:

Loads in excess of the above must be supported independently from a roof or ceiling structure.

TABLE G2: MAXIMUM SPANS OF CONTINUOUS RONDO 129 FURRING CHANNELS

| CEILING LINING | WIND CLASS N2 | | WIND CLASS N3 | |
|--------------------------------------|---------------|----------|---------------|----------|
| | @ 450 mm | @ 600 mm | @ 450 mm | @ 600 mm |
| 1x10 mm (7.2 kg/m ² max) | 1713 | 1580 | 1547 | 1428 |
| 1x13 mm (9.2 kg/m ² max) | 1670 | 1540 | 1519 | 1401 |
| 1x16 mm (13 kg/m ² max) | 1630 | 1503 | 1494 | 1378 |
| 2x13 mm (18.4 kg/m ² max) | 1552 | 1432 | 1440 | 1328 |
| 2x16 mm (26 kg/m ² max) | 1498 | 1381 | 1400 | 1292 |

Source: Rondo Building Services

TABLE G3: MAXIMUM SPANS AND SPACINGS OF CONTINUOUS FURRING CHANNELS WITH ACOUSTIC MOUNTS*

| PLASTERBOARD LININGS | JOISTS @ 450 mm | | JOISTS @ 600 mm | |
|-----------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|
| | FURRING CHANNEL SPAN mm | FURRING CHANNEL SPACING mm | FURRING CHANNEL SPAN mm | FURRING CHANNEL SPACING mm |
| 1x13 mm ImpactStop or FireStop | 1350 (R, B, W) | 600 | 1200 (R, B, W) | 600 |
| 1x16 mm FireStop | 1350 (R, B, W) | 600 | 1200 (R, B, W) | 600 |
| 2x13 mm ImpactStop or FireStop | 1350 (W) | 600 | 1200 (B, W) | 600 |
| 1x13 mm + 1x16 mm FireStop | 1350 (W) | 600 | 1200 (B, W) | 600 |
| 2x16 mm FireStop | 1350 (W) | 600 | 1200 (W) | 600 |
| | 900 (R, B, W) | 600 | 600 (R, B, W) | 600 |
| 3x16 mm FireStop | 900 (W) | 600 | 1200 (W) | 450 |
| 4x16 mm FireStop | 900 (W) | 450 | 600 (W) | 600 |
| | 450 (R, B, W) | 450 | 600 (R, B, W) | 450 |

* Based on maximum allowable loads with acoustic mounts

Legend:

R Rondo STWC Sound Isolation Mount (max load 16 kg/mount)

B Embelton Acoustic Mount – 'Blue' dot rubber element (max load 17 kg/mount with 5 mm static deflection)

W Embelton Acoustic Mount – 'White' dot rubber element (max load 25 kg/mount with 5 mm static deflection)

INTRODUCTION

Materials

The following materials and components are utilised in Knauf conventional ceiling systems listed in this manual:

Ceiling Linings

- 10 mm SHEETROCK ONE
- 10 mm SHEETROCK PLUS
- 13 mm SHEETROCK ONE
- 13 mm ImpactStop
- 13 mm / 16 mm FireStop .

Furring Channels and Fixing Clips



Figure G1: Rondo 129 Furring Channel

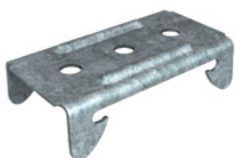


Figure G2: Rondo 237 Fixing Clip



Figure G3: Rondo STWC Sound Isolation Mount

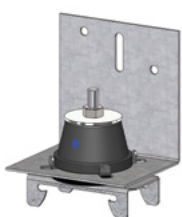


Figure G4: Embelton Ceiling Isolation Hanger LB Bracket (Blue Dot Rubber Element)



Figure G5: Embelton Ceiling Isolation Hanger HB Bracket (White Dot Rubber Element)

Suspended Ceiling Systems

- Rondo XPRESS® Drywall Grid System
- Rondo DONN® Exposed Grid System
- Rondo KEY-LOCK® Concealed Suspended Ceiling System.

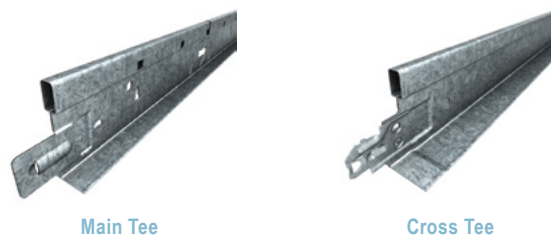


Figure G6: Rondo XPRESS® Drywall Grid Sections

Insulation

- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
- KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density
- KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density
- KI 90G14 - 90 mm glasswool insulation 14 kg/m³ density
- KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts
- KI 145G R3.0 - Knauf Insulation R3.0 Ceiling Batts
- Pliable building membrane to NCC requirements (for roof/ceiling systems)
- Foil-faced 60 mm (R1.4) nom roof insulation blanket (for roof/ceiling systems).

Installation

Direct Fixed Systems

Where fixing direct to timber or steel framing, framework spacing must not exceed plasterboard span values indicated in Table G1 or 600 mm for fire resistant boards.

NOTE:

Furred systems are recommended to minimise the risk of ceiling damage due to structural, thermal and seasoning movements.

INTRODUCTION

Furred and Suspended Systems

- Ensure that furring channels or suspended grid are installed to a true and level plane.
- Plasterboard supporting members must be spaced at max 600 mm ctrs.
- Furring channels should be taken to and provided within 100 mm of ceiling perimeter (min 15 mm end clearance is required at walls).
- Allow for an expansion gap at the rate of 3 mm per 1 metre run in abutting furring channels and Top Cross Rails in fire rated systems.
- Rondo KEY-LOCK concealed suspended ceiling system must be instanced in accordance with Rondo specifications.
- Rondo XPRESS® Drywall Grid System and DONN Exposed Grid System must be installed in accordance with Rondo specifications.

Penetrations

Penetrations in a fire rated system must be treated strictly in accordance with relevant test reports and approved installation details in order to maintain the system's Fire Resistance Level.

Where components by others are specified in Knauf fire rated penetration details (ie dampers, GPOs, fire collars, etc), such components must be installed in accordance with the manufacturer's specifications. It is the responsibility of the component manufacturer to ensure that the fire rating performance of the system is not affected.

Movement and Control Joints

- Control joints in internal ceilings should be spaced at 12 m max intervals in both directions. Control joints in external ceilings should be spaced at 6 m max intervals in both directions.
- Control joints must be provided over movement joints in the substrate or structural elements and at every change of lining or substrate material.
- Refer to Knauf online CAD Finder for control joint details in fire rated ceilings.
- Control joints in non-fire rated ceilings can be formed by fitting Rondo P35 Control Joint or plastic expansion beads.
- In multi-layer non-fire rated systems control joints can be provided in the face layer only.

Plasterboard Fixing

Fire Rated Ceilings

- Plasterboard linings in fire rated plasterboard ceilings must be installed using screw fixing only. Adhesives are not permitted.
- Apply plasterboard sheets with recessed edges at right angles to framing members.
- In single layer systems, place butt joints on framing or mid-way between the framing members and back-block as shown in the Knauf online CAD Finder.

- Screw fix the first (uppermost) layer sheets at 200 mm max centres in the field of the board and at 150 mm max centres along the board ends and edges. Stagger edge screw fixings in adjacent sheets.
- Screw fix additional plasterboard layers in the same manner as the first layer but with all joints in adjacent layers staggered min 200 mm. If butt joints in additional layers fall between the framing members, screw laminate sheet ends to the previous layer with appropriate Laminating screws at 200 mm max centres (refer to General Information — Materials — Screws).

Non-fire Rated Ceilings

- Apply plasterboard sheets with recessed edges at right angles to framing members.
- Single layer non-fire rated plasterboard ceiling systems can be fixed using combination of Adhesive and Mechanical Fasteners as outlined in Knauf Installation Manual or Mechanical Fasteners Only.
- Multi-layer non-fire rated plasterboard ceiling systems must be fixed using Mechanical Fasteners Only method.
- In single layer systems, butt joints must be between the framing members and back-blocked as described in Knauf Installation Manual. All recessed joints in an area containing three or more joints must also be back-blocked.

NOTE:

Knauf recommends back-blocking of all ceiling joints.

Jointing and finishing

- Stop and finish face layer plasterboard joints with Knauf jointing system as outlined in Knauf Plasterboard Installation Manual.
- Plasterboard joints in inner layers of multi-layer fire rated and non-fire rated systems are not required to be stopped.

NOTE:

Paper jointing tape must be used in fire rated systems.

To view the full range of installation details, scan QR code below.



INTRODUCTION

SPANNING CEILINGS

Description

Knauf Spanning Ceilings are self-supporting fire rated plasterboard ceilings utilising Rondo C-stud or CH-stud sections as joists.

While construction of C-stud ceilings requires access from above and below, CH-stud ceilings can be constructed from one side only.

Design Options

Knauf Spanning Ceilings are available in Fire Resistance Levels up to 120/120/120 from both directions and up to 120/120/120 from above only.

Materials

The following materials and components are utilised in Knauf Spanning Ceilings:

Ceiling Linings

- 13 mm / 16 mm FireStop
- 25 mm Shaftliner MouldStop

Ceiling Joists

- 150 mm Rondo lipped C-studs 0.75 mm Base Metal Thickness (BMT)
- 64 mm Rondo CH-studs 0.55 mm and 0.90 mm BMT
- 102 mm Rondo CH-studs 0.55 mm and 0.90 mm BMT

Insulation

- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
- KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density.

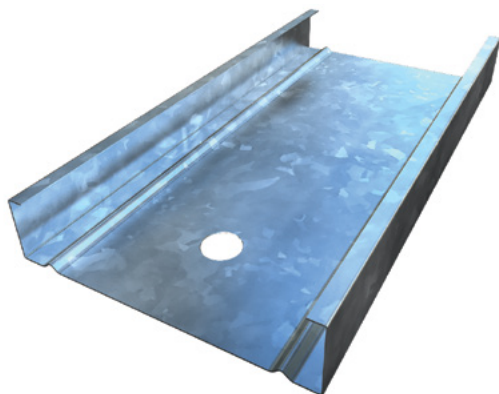


Figure G9: Rondo 150 mm C-stud

Ceiling Spans

Ceiling spans must not exceed the maximum values shown in the corresponding Maximum Spans tables.

Installation

- For screw fixing requirements refer plasterboard installation instructions for fire rated conventional ceilings.
- In spanning C-stud ceilings, stagger joints on opposite sides of the ceiling by 300 mm min.
- Stagger joints in adjacent plasterboard layers by 200 mm min.
- Caulk perimeter gaps with approved fire rated sealant.

Jointing and finishing

- Stop and finish visible plasterboard joints with Knauf jointing system as outlined in Knauf Installation Manual.
- Plasterboard joints in inner layers of multi-layer systems are not required to be stopped.

NOTE:

Paper jointing tape must be used in fire rated systems.

To view the full range of installation details, scan QR code below.



Figure G10: Rondo CH-Stud

INTRODUCTION

ACOUSTIC CEILINGS

Description

Knauf Acoustic Ceilings are available in a range of sound absorption and over partition ratings and include:

- Mineral Fibre Ceiling Tiles
- EchoStop plasterboard
- Stratopanel plasterboard.

This manual provides an outline of Knauf Acoustic Ceilings. For detailed information refer to Ceilings Products and Applications brochure and technical data sheets for various products.

Design Options

Mineral Fibre Ceiling Tiles

Knauf mineral fibre ceiling tiles offer designers and builders a range of options with respect to:

- Surface textures and colours
- Edge and Grid profiles
- Noise Reduction Coefficient (NRC)
- Ceiling Attenuation Class (CAC)
- Light Reflectance (LR)
- Volatile Organic Compound (VOC) emissions
- Mould and bacteria resistance
- Recycled content
- Cost.

Refer Acoustic Ceilings tables for the range of available Mineral Fibre Ceiling Tile products.

ECHOSTOP® Plasterboard Ceilings

EchoStop perforated plasterboard ceilings offer combined benefits of decorative finish and a high level of sound absorption.

EchoStop perforated plasterboard is suitable for full ceiling installation or feature panels on walls or ceilings.

Created for noise absorption treatment, EchoStop is available in a number of stylish designs to suit multiple applications.

Refer to EchoStop tables and datasheets for acoustic performance of various EchoStop panels.

STRATOPANEL® Plasterboard Ceiling

Stratopanel perforated acoustic plasterboard offers combined benefits of a decorative monolithic finish, a high level of sound absorption and Cleaneo® air purifying technology.

Stratopanel is the ideal solution for noise absorption treatment for commercial internal spaces and is available in a number of stylish designs for creative freedom.

Refer to Stratopanel tables and datasheets for acoustic performance of various Stratopanel.

More information available at www.knauf.com.

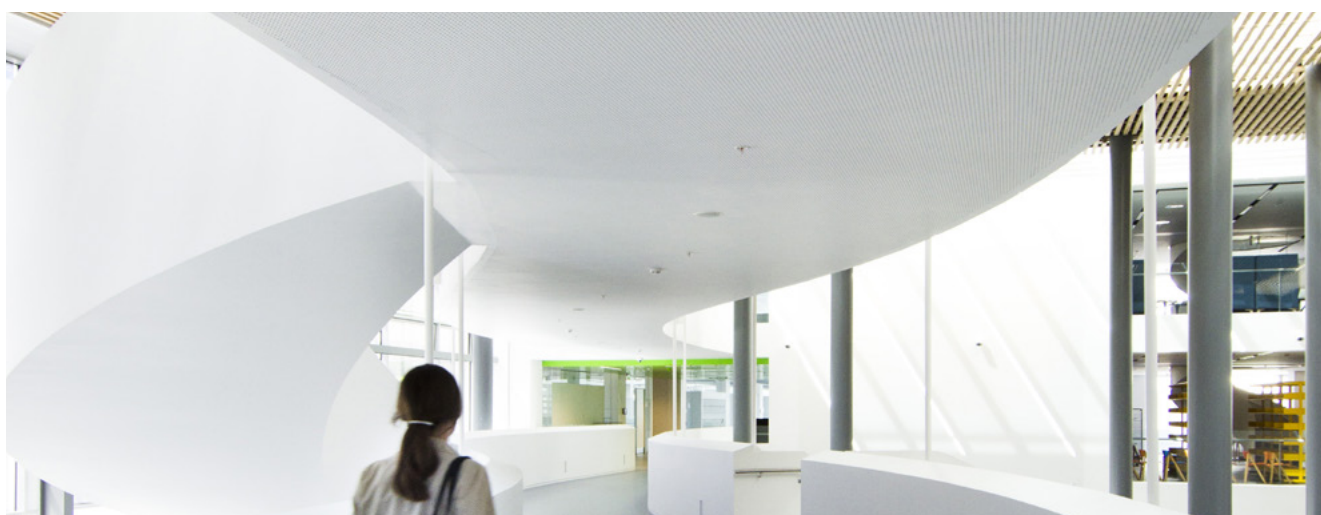


Figure G11: STRATOPANEL Circular 8/18 R

INTRODUCTION

Design Considerations

Selection of an appropriate acoustic ceiling solution may involve a large number of considerations such as aesthetics, acoustic performance, VOC emissions, mould and bacteria resistance, cost, etc.

Acoustic Ceilings tables included in this manual provide essential information on performance and features of Knauf acoustic panels. For additional information refer relevant Product Data Sheets at knauf.com

Materials

- Knauf Mineral Fibre Tile Ceilings comprise mineral fibre tiles laid into Rondo DONN Exposed Grid system.
- EchoStop panels can be screw fixed to Rondo XPRESS® Drywall Grid System or to Rondo Key-Lock® concealed ceiling system.
- Stratopanel can be screwed fixed (or screw caps) to Rondo Key-Lock concealed ceiling system with the inclusion of PN 605 furring channel.
- Knauf Insulation as specified.

Installation

Refer to the Knauf and Rondo installation specifications on:

- Rondo XPRESS® Drywall Grid System
- Rondo DONN suspension system
- Rondo KEY-LOCK concealed ceiling system
- Rondo DUO® Exposed grid ceiling systems
- EchoStop plasterboard
- Stratopanel plasterboard

To view the full range of installation details, scan QR code below.



OVER PARTITION CEILING SYSTEMS

Over partition performance of ceiling tiles is typically documented as a Ceiling Attenuation Class (CAC) value. More recently, this rating has been replaced by $D_{nc,w}$ – Weighted Suspended Ceiling Normalised Level Difference.

The solutions provided in the Over Partition Ceiling Systems tables are based on an extensive laboratory test program conducted at Acoustic Laboratories Australia Pty Ltd that comprised sixteen (16) configurations in total. Variables tested included:

- Differing heights of extended wall linings above the ceiling level
- Different ceiling types on one and both sides of the dividing wall
- With and without above ceiling treatments
- Effect of ceiling penetrations.

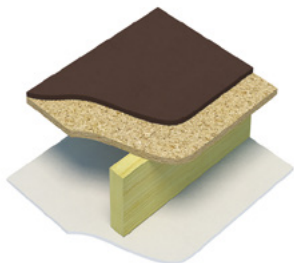
The following key findings were made as a result of the testing program:

- No acoustical benefit whether the wall linings extend 100 mm above the ceiling as opposed to a nominal distance of 20 mm
- Penetrations such as standard light troffers both sides of the dividing wall do not degrade the $D_{nc,w}$ of the ceiling (other types of ceiling penetrations will need to be assessed by a suitably qualified Acoustician).

CEILING UNDER TIMBER FLOOR

CT.1

NON-FIRE RATED



SYSTEM DESCRIPTION

Floor Covering: Refer to table**Floor Structure:** min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs**Insulation:** Refer to table**Ceiling Lining:** One or more layers of non-fire resistant pbd**Ceiling Fixing:** Direct fixed to ceiling joists

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|--------|------------------------|--------------|--|---------------------------|---|------------------|
| CT.1A | 1x10 mm SHEETROCK ONE | Direct Fixed | Timber Flooring (min 8.5 kg/m ²) | Nil | 42(35) | 77 |
| | | | | KI 90G R2.5 Ceiling Batts | 45(38) | 76 |
| | | | Carpet + Foam Underlay [†] | Nil | 41(34) | 42 |
| | | | | KI 90G R2.5 Ceiling Batts | 44(36) | 41 |
| CT.1D | 1x13 mm SHEETROCK ONE | Direct Fixed | Timber Flooring (min 8.5 kg/m ²) | Nil | 44(37) | 75 |
| | | | | KI 90G R2.5 Ceiling Batts | 47(40) | 74 |
| | | | Carpet + Foam Underlay [†] | Nil | 43(36) | 42 |
| | | | | KI 90G R2.5 Ceiling Batts | 46(39) | 41 |
| CT.1G | 1x10 mm SHEETROCK PLUS | Direct Fixed | Timber Flooring (min 8.5 kg/m ²) | Nil | 43(36) | 75 |
| | | | | KI 90G R2.5 Ceiling Batts | 46(39) | 74 |
| | | | Carpet + Foam Underlay [†] | Nil | 42(35) | 44 |
| | | | | KI 90G R2.5 Ceiling Batts | 45(38) | 43 |
| CT.1H | 2x10 mm SHEETROCK PLUS | Direct Fixed | Timber Flooring (min 8.5 kg/m ²) | Nil | 46(40) | 71 |
| | | | | KI 90G R2.5 Ceiling Batts | 49(43) | 70 |
| | | | Carpet + Foam Underlay [†] | Nil | 45(39) | 42 |
| | | | | KI 90G R2.5 Ceiling Batts | 48(42) | 41 |

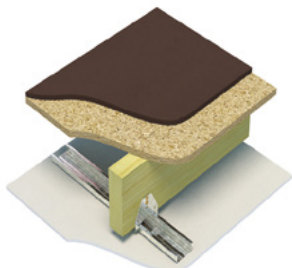
* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent.

CEILINGS UNDER TIMBER FLOOR

CT.2

NON-FIRE RATED



SYSTEM DESCRIPTION

Floor Covering: Refer to table**Floor Structure:** Min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs**Insulation:** Refer to table**Ceiling Lining:** One or more layers of non-fire resistant pbd**Ceiling Fixing:** 28 mm furring channels @ 600 mm ctrs

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

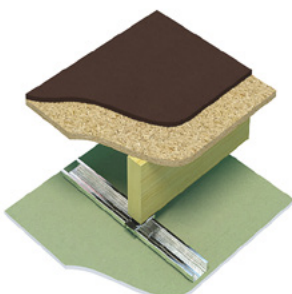
| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|--------|-----------------------|--------------------------------------|--|---------------------------|---|------------------|
| CT.2A | 1x10 mm SHEETROCK ONE | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) | Nil | 46(39) | 73 |
| | | | | KI 90G R2.5 Ceiling Batts | 51(43) | 71 |
| | | | Carpet + Foam Underlay [†] | Nil | 46(39) | 41 |
| | | | | KI 90G R2.5 Ceiling Batts | 51(43) | 39 |
| CT.2D | 1x13 mm SHEETROCK ONE | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) | Nil | 48(42) | 72 |
| | | | | KI 90G R2.5 Ceiling Batts | 53(45) | 70 |
| | | | Carpet + Foam Underlay [†] | Nil | 48(41) | 41 |
| | | | | KI 90G R2.5 Ceiling Batts | 53(45) | 39 |
| CT.2G | 1x13 mm IMPACTSTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) | Nil | 49(43) | 71 |
| | | | | KI 90G R2.5 Ceiling Batts | 54(47) | 69 |
| | | | Carpet + Foam Underlay [†] | Nil | 49(43) | 41 |
| | | | | KI 90G R2.5 Ceiling Batts | 54(47) | 39 |
| CT.2H | 2x13 mm IMPACTSTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) | Nil | 52(46) | 67 |
| | | | | KI 90G R2.5 Ceiling Batts | 57(51) | 65 |
| | | | Carpet + Foam Underlay [†] | Nil | 52(46) | 40 |
| | | | | KI 90G R2.5 Ceiling Batts | 56(50) | 38 |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

[†] Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent.

CT.3

NON-FIRE RATED



SYSTEM DESCRIPTION

Floor Covering: Refer to table**Floor Structure:** min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs**Insulation:** Refer to table**Ceiling Lining:** 1x13 mm non-fire resistant pbd**Ceiling Fixing:** 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|--------|--------------------|--|--|---------------------------|---|------------------|
| CT.3B | 1x13 mm IMPACTSTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts | Timber Flooring (min 8.5 kg/m ²) | Nil | 49(44) | 69 |
| | | | | KI 90G R2.5 Ceiling Batts | 55(49) | 66 |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector

Refer to Table G2 in Ceilings – Introduction for maximum spans of Rondo 129 furring channel.

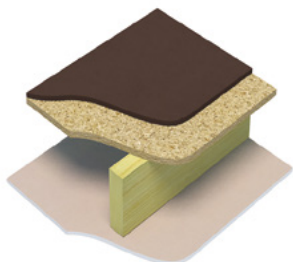
Refer to Table G3 in Ceilings – Introduction for maximum spans and spacings of furring channels with acoustic mounts.

CEILING UNDER TIMBER FLOOR

CT30.1

FIRE RESISTANCE LEVEL
30/30/30
 FROM BELOW
 Fire Protective Covering

FRL Basis: FC16109



Direct fixed system shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs
Insulation: Refer to table
Ceiling Lining: 1x13 mm fire resistant pbd
Ceiling Fixing: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|---------|------------------|--|--|--------------|---|------------------|
| CT30.1A | 1x13 mm FIRESTOP | Direct Fixed | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 48(42) | 73 |
| | | | Carpet + Foam Underlay† | KI 90G R2.5 | 47(41) | 41 |
| CT30.1B | 1x13 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 54(47) | 69 |
| | | | Carpet + Foam Underlay† | KI 90G R2.5 | 53(46) | 39 |
| CT30.1C | 1x13 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 145G R3.0 | 55(48) | 67 |

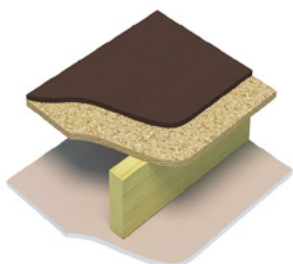
* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts
 KI 145G R3.0 - Knauf Insulation R3.0 Ceiling Batts

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent.

CT30.2

FIRE RESISTANCE LEVEL
30/30/30
 FROM BELOW
 Fire Protective Covering

FRL Basis: FC16109



Direct fixed system shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs
Insulation: Refer to table
Ceiling Lining: 1x16 mm fire resistant pbd
Ceiling Fixing: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|---------|------------------|--|--|--------------|---|------------------|
| CT30.2A | 1x16 mm FIRESTOP | Direct Fixed | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 49(43) | 72 |
| | | | Carpet + Foam Underlay† | KI 90G R2.5 | 48(42) | 41 |
| CT30.2B | 1x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 55(48) | 68 |
| | | | Carpet + Foam Underlay† | KI 90G R2.5 | 54(47) | 39 |
| CT30.2C | 1x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 145G R3.0 | 56(49) | 66 |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts
 KI 145G R3.0 - Knauf Insulation R3.0 Ceiling Batts

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Refer to Table G2 in Ceilings – Introduction for maximum spans of Rondo 129 furring channel.
 Refer to Table G3 in Ceilings – Introduction for maximum spans and spacings of furring channels with acoustic mounts.

CEILINGS UNDER TIMBER FLOOR

CT60.1

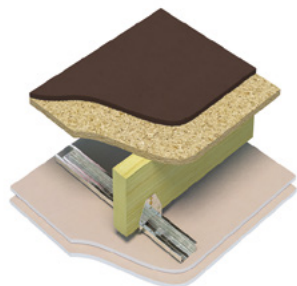
FIRE RESISTANCE LEVEL

60/60/60

FROM BELOW

RISF 30min

FRL Basis: FC16109



Furred system shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table**Floor Structure:** Min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs**Insulation:** Refer to table**Ceiling Lining:** 2x13 mm fire resistant pbd**Ceiling Fixing:** Refer to table

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|---------|---------------------|---|---|--------------|---|------------------|
| CT60.1A | 2x13 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) + min 4.5 mm Acoustic Underlay [#] | KI 90G R2.5 | 57(51) | 54 |
| | | | Carpet + Foam Underlay [†] | KI 90G R2.5 | 56(50) | 38 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) + min 4.5 mm Acoustic Underlay [#] | KI 90G R2.5 | 58(52) | 57 |
| CT60.1B | 2x13 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 145G R3.0 | 58(52) | 63 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) | KI 145G R3.0 | 59(53) | 62 |
| CT60.1C | 2x13 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Embelton Acoustic Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 58(52) | 61 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) | KI 90G R2.5 | 59(53) | 60 |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

KI 145G R3.0 - Knauf Insulation R3.0 Ceiling Batts

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

4.5 mm Acoustic Underlay - Regupol 4515 acoustic underlay or equivalent

CEILINGS UNDER TIMBER FLOOR

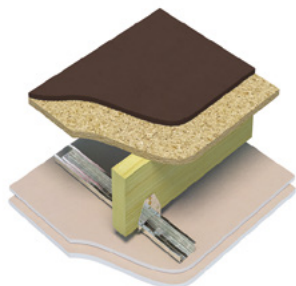
CT60.2

FIRE RESISTANCE LEVEL

60/60/60

FROM BELOW
RISF 60min

FRL Basis: FC16109



Furred system shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table**Floor Structure:** Min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs**Insulation:** Refer to table**Ceiling Lining:** 1x13 mm fire resistant pbd + 1x16 mm fire resistant pbd**Ceiling Fixing:** Refer to table

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|---------|-------------------------------------|--|---|--------------|---|------------------|
| CT60.2A | 1x13 mm FIRESTOP + 1x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) + min 4.5 mm Acoustic Underlay [#] | KI 90G R2.5 | 59(53) | 54 |
| | | | Carpet + Foam Underlay [†] | KI 90G R2.5 | 58(52) | 38 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) + min 4.5 mm Acoustic Underlay [#] | KI 90G R2.5 | 60(54) | 57 |
| CT60.2B | 1x13 mm FIRESTOP + 1x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 145G R3.0 | 60(54) | 63 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) | KI 145G R3.0 | 61(55) | 62 |
| CT60.2C | 1x13 mm FIRESTOP + 1x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Embelton Acoustic Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 60(54) | 61 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) | KI 90G R2.5 | 61(55) | 60 |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

KI 145G R3.0 - Knauf Insulation R3.0 Ceiling Batts

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

4.5 mm Acoustic Underlay - Regupol 4515 acoustic underlay or equivalent

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector

Refer to Table G2 in Ceilings – Introduction for maximum spans of Rondo 129 furring channel.

Refer to Table G3 in Ceilings – Introduction for maximum spans and spacings of furring channels with acoustic mounts.

CEILINGS UNDER TIMBER FLOOR

CT90.1

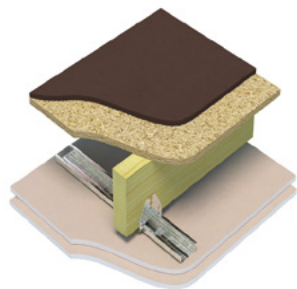
FIRE RESISTANCE LEVEL

90/90/90

FROM BELOW

RISF 60min

FRL Basis: FC16109



Furred system shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table**Floor Structure:** Min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs**Insulation:** Refer to table**Ceiling Lining:** 2x16 mm fire resistant pbd**Ceiling Fixing:** Refer to table

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|---------|------------------|--|---|--------------|---|------------------|
| CT90.1A | 2x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) + min 4.5 mm Acoustic Underlay# | KI 90G R2.5 | 58(52) | 53 |
| | | | Carpet + Foam Underlay † | KI 90G R2.5 | 57(51) | 38 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) + min 4.5 mm Acoustic Underlay# | KI 90G R2.5 | 59(53) | 57 |
| CT90.1B | 2x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 145G R3.0 | 59(53) | 62 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) | KI 145G R3.0 | 60(54) | 62 |
| CT90.1C | 2x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Embelton Acoustic Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 59(53) | 60 |
| | | | Min 6 mm Ceramic Floor Tiles + 6 mm Cement Sheet (total mass min 15 kg/m ²) | KI 90G R2.5 | 60(54) | 60 |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts
KI 145G R3.0 - Knauf Insulation R3.0 Ceiling Batts

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

4.5 mm Acoustic Underlay - Regupol 4515 acoustic underlay or equivalent

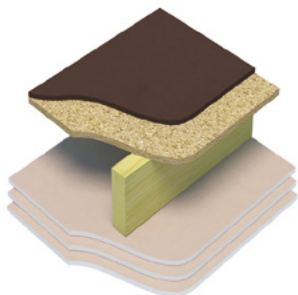
For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Refer to Table G2 in Ceilings – Introduction for maximum spans of Rondo 129 furring channel.
 Refer to Table G3 in Ceilings – Introduction for maximum spans and spacings of furring channels with acoustic mounts.

CEILING UNDER TIMBER FLOOR

CT120.1

FIRE RESISTANCE LEVEL
120/120/120
 FROM BELOW
 RISF 90min

FRL Basis: FC16109



Direct fixed system shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs
Insulation: Refer to table
Ceiling Lining: 3x16 mm fire resistant pbd
Ceiling Fixing: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

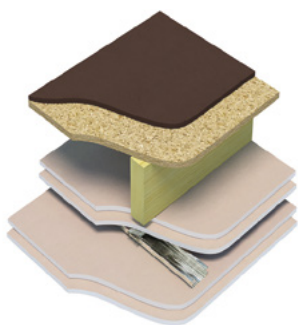
| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|----------|------------------|--|--|--------------|---|------------------|
| CT120.1A | 3x16 mm FIRESTOP | Direct Fixed | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 54(48) | 67 |
| | | | Carpet + Foam Underlay† | KI 90G R2.5 | 53(47) | 39 |
| CT120.1B | 3x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 60(53) | 63 |
| | | | Carpet + Foam Underlay† | KI 90G R2.5 | 59(52) | 37 |
| CT120.1C | 3x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 145G R3.0 | 61(54) | 61 |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts
 KI 145G R3.0 - Knauf Insulation R3.0 Ceiling Batts
 † Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

CT120.2

FIRE RESISTANCE LEVEL
120/120/120
 FROM BELOW
 RISF 120min

FRL Basis: FC16109



Direct fixed system shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Min 19 mm particleboard flooring on 240 mm deep joists @ 450 mm ctrs
Insulation: Refer to table
Ceiling Lining: 2x16 mm fire resistant pbd + 28 mm furring channels + 2x16 mm fire resistant pbd
Ceiling Fixing: Refer to table

ACOUSTIC RATINGS BASIS: RT&A TE405-20S01(R4)

| SYSTEM | CEILING LINING | FIXING | FLOORING TYPE | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} |
|----------|--|--|--|--------------|---|------------------|
| CT120.2A | 2x16 mm FIRESTOP + 28 mm furring channels + 2x16 mm FIRESTOP | Direct Fixed | Timber Flooring (min 8.5 kg/m ²) | KI 90G R2.5 | 58(51) | 60 |
| | | | Carpet + Foam Underlay† | KI 90G R2.5 | 57(50) | 40 |
| CT120.2B | 2x16 mm FIRESTOP + 28 mm furring channels + 2x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs | Timber Flooring (min 8.5 kg/m ²) | - | 64(56) | 56 |
| | | | Carpet + Foam Underlay† | KI 90G R2.5 | 63(55) | 36 |
| CT120.2C | 2x16 mm FIRESTOP + 28 mm furring channels + 2x16 mm FIRESTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts | Timber Flooring (min 8.5 kg/m ²) | KI 145G R3.0 | 65(57) | 54 |

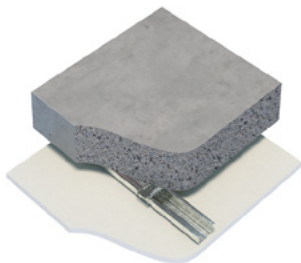
* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts
 KI 145G R3.0 - Knauf Insulation R3.0 Ceiling Batts
 † Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Refer to Table G2 in Ceilings – Introduction for maximum spans of Rondo 129 furring channel.
 Refer to Table G3 in Ceilings – Introduction for maximum spans and spacings of furring channels with acoustic mounts.

CEILINGS UNDER CONCRETE FLOOR

CC.1

FIRE RESISTANCE LEVEL
(refer to slab FRL)



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Concrete slab (refer to table)
Insulation: Refer to table
Ceiling Lining: 1x13 mm non-fire resistant pbd
Ceiling Fixing: 28 mm furring channels @ 600 mm ctrs + Rondo clip (for ceiling cavity refer to table)

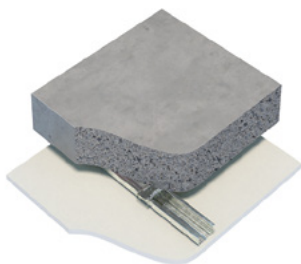
ACOUSTIC RATINGS BASIS: RT&A TE405-20S02(R2)

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm | | 200 mm | |
|--|-----------------------|--|----------------|----------------|---|------------------|---|------------------|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} |
| CC.1A | 1x13 mm SHEETROCK ONE | Timber Flooring (min 8.5 kg/m ²) + min 4.5 mm Acoustic Underlay [#] | 100 | Nil | 58(50) | 55 | 62(53) | 52 |
| | | | | KI 50G11 | 62(55) | 52 | 66(58) | 49 |
| | | Timber Flooring (min 8.5 kg/m ²) + Foam Underlay [†] | 50 | Nil | 57(48) | 61 | 61(51) | 58 |
| | | | | KI 50G11 | 61(53) | 58 | 65(56) | 55 |
| | | | 100 | Nil | 58(50) | 58 | 62(53) | 55 |
| | | | | KI 50G11 | 62(55) | 55 | 66(58) | 52 |
| | | Carpet + Foam Underlay [†] | 50 | Nil | 57(48) | 34 | 61(51) | 31 |
| | | | | KI 50G11 | 61(53) | 33 | 65(56) | 30 |
| | | | 100 | Nil | 58(50) | 33 | 62(53) | 30 |
| | | | | KI 50G11 | 62(55) | 32 | 66(58) | 29 |
| | | Tiled Floor + min 4.5 mm Acoustic Underlay [#] | 100 | Nil | 58(50) | 56 | 62(53) | 53 |
| | | | | KI 50G11 | 62(55) | 53 | 66(58) | 50 |
| 50 | Nil | | 57(48) | 68 | 61(51) | 65 | | |
| | KI 50G11 | | 61(53) | 65 | 65(56) | 62 | | |
| Tiled Floor + Flexible Adhesive [^] | 100 | Nil | 58(50) | 65 | 62(53) | 62 | | |
| | | KI 50G11 | 62(55) | 62 | 66(58) | 59 | | |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
[#] 4.5 mm Acoustic Underlay – Regupol 4515 acoustic underlay or equivalent
[†] Foam underlay: Min 3 mm Dunlop DB3 foam underlay or equivalent
[^] Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

CC.2

FIRE RESISTANCE LEVEL
(refer to slab FRL)



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Concrete slab (refer to table)
Insulation: Refer to table
Ceiling Lining: 1x13 mm non-fire resistant pbd
Ceiling Fixing: 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Insulation Mounts (for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02(R2)

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm | | 200 mm | |
|--------|-----------------------|--|----------------|----------------|---|------------------|---|------------------|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} |
| CC.2A | 1x13 mm SHEETROCK ONE | Bare Concrete | 100 | Nil | 58(50) | 65 | 62(53) | 62 |
| | | | | KI 50G11 | 62(55) | 62 | 66(58) | 59 |
| | | Timber Flooring (min 8.5 kg/m ²) | 100 | Nil | 58(50) | 61 | 62(53) | 58 |
| | | | | KI 50G11 | 62(55) | 58 | 66(58) | 55 |
| | | Tiled Floor | 100 | Nil | 58(50) | 65 | 62(53) | 62 |
| | | | | KI 50G11 | 62(55) | 62 | 66(58) | 59 |

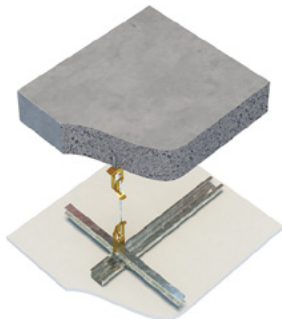
* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Refer to Table G2 in Ceilings – Introduction for maximum spans of Rondo 129 furring channel.

CEILINGS UNDER CONCRETE FLOOR

CC.3

FIRE RESISTANCE LEVEL
(refer to slab FRL)



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Concrete slab
(refer to table)
Insulation: Refer to table
Ceiling Lining: 1x13 mm non-fire
resistant pbd
Ceiling Fixing: Suspended
(for ceiling cavity refer to table)

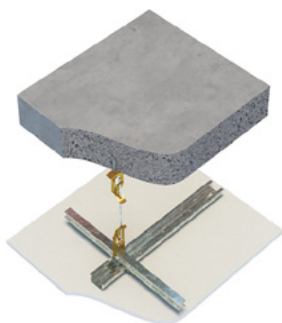
ACOUSTIC RATINGS BASIS: RT&A TE405-20F04

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm | | 200 mm | |
|--------|-----------------------|--|----------------|----------------|---|------------------|---|------------------|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} |
| CC.3A | 1x13 mm SHEETROCK ONE | Timber Flooring (min 8.5 kg/m ²) + min 4.5 mm Acoustic Underlay [#] | 300 | Nil | 60(54) | 51 | 64(57) | 48 |
| | | | | KI 50G11 | 64(59) | 48 | 68(62) | 45 |
| | | Timber Flooring (min 8.5 kg/m ²) + Foam Underlay [†] | 200 | Nil | 59(52) | 56 | 63(55) | 53 |
| | | | | KI 50G11 | 63(57) | 53 | 67(60) | 50 |
| | | Carpet + Foam Underlay [†] | 300 | Nil | 60(54) | 54 | 64(57) | 51 |
| | | | | KI 50G11 | 64(59) | 51 | 68(62) | 48 |
| | | Tiled Floor + Flexible Adhesive [^] | 200 | Nil | 59(52) | 33 | 63(55) | 30 |
| | | | | KI 50G11 | 63(57) | 32 | 67(60) | 29 |
| | | 300 | Nil | 60(54) | 32 | 64(57) | 29 | |
| | | | KI 50G11 | 64(59) | 31 | 68(62) | 28 | |
| | | 200 | Nil | 59(52) | 63 | 63(55) | 60 | |
| | | | KI 50G11 | 63(57) | 60 | 67(60) | 57 | |
| 300 | Nil | 60(54) | 61 | 64(57) | 58 | | | |
| | KI 50G11 | 64(59) | 58 | 68(62) | 55 | | | |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
4.5 mm Acoustic Underlay – Regupol 4515 acoustic underlay or equivalent
† Foam underlay: Min 3 mm Dunlop DB3 foam underlay or equivalent
^ Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

CC.4

FIRE RESISTANCE LEVEL
(refer to slab FRL)



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Concrete slab
(refer to table)
Insulation: Refer to table
Ceiling Lining: 1x13 mm
non-fire resistant pbd
Ceiling Fixing: Suspended + Rondo STSU
Sound Isolation Hangers
(for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02(R2)

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm | | 200 mm | |
|--------|-----------------------|--|----------------|----------------|---|------------------|---|------------------|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} |
| CC.4A | 1x13 mm SHEETROCK ONE | Bare Concrete | 300 | Nil | 60(54) | 61 | 64(57) | 58 |
| | | | | KI 50G11 | 64(59) | 58 | 68(62) | 55 |
| | | Tiled Floor + Flexible adhesive [^] | 300 | Nil | 60(54) | 61 | 64(57) | 58 |
| | | | | KI 50G11 | 64(59) | 58 | 68(62) | 55 |

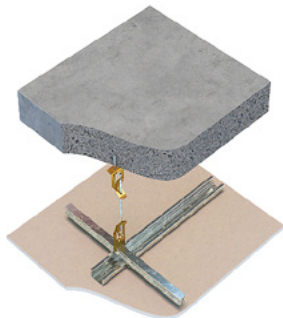
* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
^ Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

CEILINGS UNDER CONCRETE FLOOR

CC30.1

FIRE RESISTANCE LEVEL
30/30/30
FROM BELOW

FRL Basis: FC16109



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Concrete slab (refer to table)
Insulation: Refer to table
Ceiling Lining: 1x13 mm fire resistant pbd
Ceiling Fixing: 28 mm furring channels @ 600 mm ctrs + Rondo clip or Suspended as required (for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02A

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm Concrete | | 200 mm Concrete | |
|---------|------------------|--|----------------|----------------|---|------------------|---|------------------|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} |
| CC30.1A | 1x13 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 50 | Nil | 57(49) | 61 | 61(52) | 58 |
| | | | | KI 50G11 | 61(54) | 58 | 65(57) | 55 |
| | | | 100 | Nil | 58(51) | 58 | 62(54) | 55 |
| | | | | KI 50G11 | 62(56) | 55 | 66(59) | 52 |
| | | Timber Flooring + Acoustic Underlay [#] | 50 | Nil | 57(49) | 58 | 61(52) | 55 |
| | | | | KI 50G11 | 61(54) | 55 | 65(57) | 52 |
| | | | 100 | Nil | 58(51) | 55 | 62(54) | 52 |
| | | | | KI 50G11 | 62(56) | 52 | 66(59) | 49 |
| | | Carpet Floor + Foam Underlay [†] | 50 | Nil | 57(49) | 34 | 61(52) | 31 |
| | | | | KI 50G11 | 61(54) | 33 | 65(57) | 30 |
| | | | 100 | Nil | 58(51) | 33 | 62(54) | 30 |
| | | | | KI 50G11 | 62(56) | 32 | 66(59) | 29 |
| | | Tiled Floor + Flexible adhesive [^] | 50 | Nil | 57(49) | 68 | 61(52) | 65 |
| | | | | KI 50G11 | 61(54) | 65 | 65(57) | 62 |
| | | | 100 | Nil | 58(51) | 65 | 62(54) | 62 |
| | | | | KI 50G11 | 62(56) | 62 | 66(59) | 59 |
| | | Tiled Floor + Acoustic Underlay [#] | 50 | Nil | 57(49) | 59 | 61(52) | 56 |
| | | | | KI 50G11 | 61(54) | 56 | 65(57) | 53 |
| 100 | Nil | | 58(51) | 56 | 62(54) | 53 | | |
| | KI 50G11 | | 62(56) | 53 | 66(59) | 50 | | |
| CC30.1B | 1x13 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 200 | Nil | 59(53) | 56 | 63(56) | 53 |
| | | | | KI 50G11 | 63(58) | 53 | 67(61) | 50 |
| | | | 300 | Nil | 60(55) | 54 | 64(58) | 51 |
| | | | | KI 50G11 | 64(60) | 51 | 68(63) | 48 |
| | | Timber Flooring + Acoustic Underlay [#] | 200 | Nil | 59(53) | 53 | 63(56) | 50 |
| | | | | KI 50G11 | 63(58) | 50 | 67(61) | 47 |
| | | | 300 | Nil | 60(55) | 51 | 64(58) | 48 |
| | | | | KI 50G11 | 64(60) | 48 | 68(63) | 45 |
| | | Carpet Floor + Foam Underlay [†] | 200 | Nil | 59(53) | 33 | 63(56) | 30 |
| | | | | KI 50G11 | 63(58) | 32 | 67(61) | 29 |
| | | | 300 | Nil | 60(55) | 32 | 64(58) | 29 |
| | | | | KI 50G11 | 64(60) | 31 | 68(63) | 28 |
| | | Tiled Floor + Flexible adhesive [^] | 200 | Nil | 59(53) | 63 | 63(56) | 60 |
| | | | | KI 50G11 | 63(58) | 60 | 67(61) | 57 |
| | | | 300 | Nil | 60(55) | 61 | 64(58) | 58 |
| | | | | KI 50G11 | 64(60) | 58 | 68(63) | 55 |
| | | Tiled Floor + Acoustic Underlay [#] | 200 | Nil | 59(53) | 54 | 63(56) | 51 |
| | | | | KI 50G11 | 63(58) | 51 | 67(61) | 48 |
| | | | 300 | Nil | 60(55) | 52 | 64(58) | 49 |
| | | | | KI 50G11 | 64(60) | 49 | 68(63) | 46 |

CC30.1A - Ceilings on furring channels and Rondo clip

CC30.1B - Ceilings on suspended ceiling grid

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

^ Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

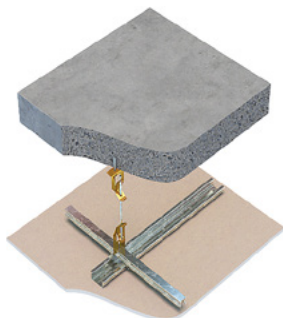
Acoustic Underlay: Regupol 4515 or equivalent

CEILINGS UNDER CONCRETE FLOOR

CC30.2

FIRE RESISTANCE LEVEL
30/30/30
FROM BELOW

FRL Basis: FC16109



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Concrete slab
 (refer to table)
Insulation: Refer to table
Ceiling Lining: 1x16 mm fire resistant pbd
Ceiling Fixing: 28 mm furring channels @
 600 mm ctrs + Rondo clip or
 Suspended as required
 (for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02A

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm Concrete | | 200 mm Concrete | | |
|---------|------------------|--|--|----------------|---|------------------|---|------------------|----|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} | |
| CC30.2A | 1x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 50 | Nil | 57(50) | 61 | 61(53) | 58 | |
| | | | | KI 50G11 | 61(55) | 58 | 65(58) | 55 | |
| | | | 100 | Nil | 58(52) | 58 | 62(55) | 55 | |
| | | | | KI 50G11 | 62(57) | 55 | 66(60) | 52 | |
| | | | Timber Flooring + Acoustic Underlay [#] | 50 | Nil | 57(50) | 58 | 61(53) | 55 |
| | | | | | KI 50G11 | 61(55) | 55 | 65(58) | 52 |
| | | 100 | | Nil | 58(52) | 55 | 62(55) | 52 | |
| | | | | KI 50G11 | 62(57) | 52 | 66(60) | 49 | |
| | | Carpet Floor + Foam Underlay [†] | | 50 | Nil | 57(50) | 34 | 61(53) | 31 |
| | | | | | KI 50G11 | 61(55) | 33 | 65(58) | 30 |
| | | | 100 | Nil | 58(52) | 33 | 62(55) | 30 | |
| | | | | KI 50G11 | 62(57) | 32 | 66(60) | 29 | |
| | | | Tiled Floor + Flexible adhesive [^] | 50 | Nil | 57(50) | 68 | 61(53) | 65 |
| | | | | | KI 50G11 | 61(55) | 65 | 65(58) | 62 |
| | | 100 | | Nil | 58(52) | 65 | 62(55) | 62 | |
| | | | | KI 50G11 | 62(57) | 62 | 66(60) | 59 | |
| | | Tiled Floor + Acoustic Underlay [#] | | 50 | Nil | 57(50) | 59 | 61(53) | 56 |
| | | | | | KI 50G11 | 61(55) | 56 | 65(58) | 53 |
| 100 | Nil | | 58(52) | 56 | 62(55) | 53 | | | |
| | KI 50G11 | | 62(57) | 53 | 66(60) | 50 | | | |
| CC30.2B | 1x16 mm FIRESTOP | | Timber Flooring + Foam Underlay [†] | 200 | Nil | 59(54) | 56 | 63(57) | 53 |
| | | | | | KI 50G11 | 63(59) | 53 | 67(62) | 50 |
| | | 300 | | Nil | 60(56) | 54 | 64(59) | 51 | |
| | | | | KI 50G11 | 64(61) | 51 | 68(64) | 48 | |
| | | Timber Flooring + Acoustic Underlay [#] | | 200 | Nil | 59(54) | 53 | 63(57) | 50 |
| | | | | | KI 50G11 | 63(59) | 50 | 67(62) | 47 |
| | | | 300 | Nil | 60(56) | 51 | 64(59) | 48 | |
| | | | | KI 50G11 | 64(61) | 48 | 68(64) | 45 | |
| | | | Carpet Floor + Foam Underlay [†] | 200 | Nil | 59(54) | 33 | 63(57) | 30 |
| | | | | | KI 50G11 | 63(59) | 32 | 67(62) | 29 |
| | | 300 | | Nil | 60(56) | 32 | 64(59) | 29 | |
| | | | | KI 50G11 | 64(61) | 31 | 68(64) | 28 | |
| | | Tiled Floor + Flexible adhesive [^] | | 200 | Nil | 59(54) | 63 | 63(57) | 60 |
| | | | | | KI 50G11 | 63(59) | 60 | 67(62) | 57 |
| | | | 300 | Nil | 60(56) | 61 | 64(59) | 58 | |
| | | | | KI 50G11 | 64(61) | 58 | 68(64) | 55 | |
| | | | Tiled Floor + Acoustic Underlay [#] | 200 | Nil | 59(54) | 54 | 63(57) | 51 |
| | | | | | KI 50G11 | 63(59) | 51 | 67(62) | 48 |
| | | 300 | | Nil | 60(56) | 52 | 64(59) | 49 | |
| | | | | KI 50G11 | 64(61) | 49 | 68(64) | 46 | |

CC30.2A - Ceilings on furring channels and Rondo clip

CC30.2B - Ceilings on suspended ceiling grid

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

† Foam underlay: Minimumm 3 mm Dunlop DB3 foam underlay or equivalent

^ Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

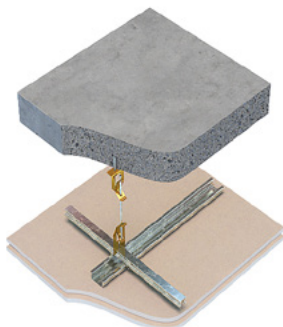
Acoustic Underlay: Regupol 4515 or equivalent

CEILINGS UNDER CONCRETE FLOOR

CC60.1

FIRE RESISTANCE LEVEL
60/60/60
FROM BELOW
RISF 30min

FRL Basis: FC16109



Bare concrete floor shown

SYSTEM DESCRIPTION

- Floor Covering:** Refer to table
Floor Structure: Concrete slab (refer to table)
Insulation: Refer to table
Ceiling Lining: 2x13 mm fire resistant pbd
Ceiling Fixing: 28 mm furring channels @ 600 mm ctrs + Rondo clip or Suspended as required (for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02A

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm Concrete | | 200 mm Concrete | |
|---------|------------------|--|----------------|----------------|---|------------------|---|------------------|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} |
| CC60.1A | 2x13 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 50 | Nil | 58(50) | 60 | 62(53) | 57 |
| | | | | KI 50G11 | 62(55) | 57 | 66(58) | 54 |
| | | | 100 | Nil | 59(52) | 57 | 63(55) | 54 |
| | | | | KI 50G11 | 63(57) | 54 | 67(60) | 51 |
| | | Timber Flooring + Acoustic Underlay [#] | 50 | Nil | 58(50) | 57 | 62(53) | 54 |
| | | | | KI 50G11 | 62(55) | 54 | 66(58) | 51 |
| | | | 100 | Nil | 59(52) | 54 | 63(55) | 51 |
| | | | | KI 50G11 | 63(57) | 51 | 67(60) | 48 |
| | | Carpet Floor + Foam Underlay [†] | 50 | Nil | 58(50) | 33 | 62(53) | 30 |
| | | | | KI 50G11 | 62(55) | 32 | 66(58) | 29 |
| | | | 100 | Nil | 59(52) | 32 | 63(55) | 29 |
| | | | | KI 50G11 | 63(57) | 31 | 67(60) | 28 |
| | | Tiled Floor + Flexible adhesive [^] | 50 | Nil | 58(50) | 67 | 62(53) | 64 |
| | | | | KI 50G11 | 62(55) | 64 | 66(58) | 61 |
| | | | 100 | Nil | 59(52) | 64 | 63(55) | 61 |
| | | | | KI 50G11 | 63(57) | 61 | 67(60) | 58 |
| | | Tiled Floor + Acoustic Underlay [#] | 50 | Nil | 58(50) | 58 | 62(53) | 55 |
| | | | | KI 50G11 | 62(55) | 55 | 66(58) | 52 |
| 100 | Nil | | 59(52) | 55 | 63(55) | 52 | | |
| | KI 50G11 | | 63(57) | 52 | 67(60) | 49 | | |
| CC60.1B | 2x13 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 200 | Nil | 60(54) | 55 | 64(57) | 52 |
| | | | | KI 50G11 | 64(59) | 52 | 68(62) | 49 |
| | | | 300 | Nil | 61(56) | 53 | 65(59) | 50 |
| | | | | KI 50G11 | 65(61) | 50 | 69(64) | 47 |
| | | Timber Flooring + Acoustic Underlay [#] | 200 | Nil | 60(54) | 52 | 64(57) | 49 |
| | | | | KI 50G11 | 64(59) | 49 | 68(62) | 46 |
| | | | 300 | Nil | 61(56) | 50 | 65(59) | 47 |
| | | | | KI 50G11 | 65(61) | 47 | 69(64) | 44 |
| | | Carpet Floor + Foam Underlay [†] | 200 | Nil | 60(54) | 32 | 64(57) | 29 |
| | | | | KI 50G11 | 64(59) | 31 | 68(62) | 28 |
| | | | 300 | Nil | 61(56) | 31 | 65(59) | 28 |
| | | | | KI 50G11 | 65(61) | 30 | 69(64) | 27 |
| | | Tiled Floor + Flexible adhesive [^] | 200 | Nil | 60(54) | 62 | 64(57) | 59 |
| | | | | KI 50G11 | 64(59) | 59 | 68(62) | 56 |
| | | | 300 | Nil | 61(56) | 60 | 65(59) | 57 |
| | | | | KI 50G11 | 65(61) | 57 | 69(64) | 54 |
| | | Tiled Floor + Acoustic Underlay [#] | 200 | Nil | 60(54) | 53 | 64(57) | 50 |
| | | | | KI 50G11 | 64(59) | 50 | 68(62) | 47 |
| | | | 300 | Nil | 61(56) | 51 | 65(59) | 48 |
| | | | | KI 50G11 | 65(61) | 48 | 69(64) | 45 |

CC60.1A - Ceilings on furring channels and Rondo clip

CC60.1B - Ceilings on suspended ceiling grid

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

[^] Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

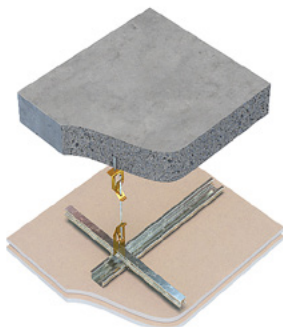
[#] Acoustic Underlay: Regupol 4515 or equivalent

CEILINGS UNDER CONCRETE FLOOR

CC60.2

FIRE RESISTANCE LEVEL
60/60/60
FROM BELOW
RISF 60min

FRL Basis: FC16109



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table

Floor Structure: Concrete slab
(refer to table)

Insulation: Refer to table

Ceiling Lining: 1x13 mm + 1x16 mm
fire resistant pbd

Ceiling Fixing: 28 mm furring channels @
600 mm ctrs + Rondo clip or
Suspended as required
(for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02A

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm Concrete | | 200 mm Concrete | |
|---|--|---|----------------|----------------|---|------------------|---|------------------|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} |
| CC60.2A | 1x13 mm FIRESTOP + 1x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 50 | Nil | 58(50) | 60 | 62(53) | 57 |
| | | | | KI 50G11 | 62(55) | 57 | 66(58) | 54 |
| | | | 100 | Nil | 59(52) | 57 | 63(55) | 54 |
| | | | | KI 50G11 | 63(57) | 54 | 67(60) | 51 |
| | | Timber Flooring + Acoustic Underlay [#] | 50 | Nil | 58(50) | 57 | 62(53) | 54 |
| | | | | KI 50G11 | 62(55) | 54 | 66(58) | 51 |
| | | | 100 | Nil | 59(52) | 54 | 63(55) | 51 |
| | | | | KI 50G11 | 63(57) | 51 | 67(60) | 48 |
| | | Carpet Floor + Foam Underlay [†] | 50 | Nil | 58(50) | 33 | 62(53) | 30 |
| | | | | KI 50G11 | 62(55) | 32 | 66(58) | 29 |
| | | | 100 | Nil | 59(52) | 32 | 63(55) | 29 |
| | | | | KI 50G11 | 63(57) | 31 | 67(60) | 28 |
| Tiled Floor + Flexible adhesive [^] | 50 | Nil | 58(50) | 67 | 62(53) | 64 | | |
| | | KI 50G11 | 62(55) | 64 | 66(58) | 61 | | |
| | 100 | Nil | 59(52) | 64 | 63(55) | 61 | | |
| | | KI 50G11 | 63(57) | 61 | 67(60) | 58 | | |
| Tiled Floor + Acoustic Underlay [#] | 50 | Nil | 58(50) | 58 | 62(53) | 55 | | |
| | | KI 50G11 | 62(55) | 55 | 66(58) | 52 | | |
| | 100 | Nil | 59(52) | 55 | 63(55) | 52 | | |
| | | KI 50G11 | 63(57) | 52 | 67(60) | 49 | | |
| CC60.2B | 1x13 mm FIRESTOP + 1x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 200 | Nil | 60(54) | 55 | 64(57) | 52 |
| | | | | KI 50G11 | 64(59) | 52 | 68(62) | 49 |
| | | | 300 | Nil | 61(56) | 53 | 65(59) | 50 |
| | | | | KI 50G11 | 65(61) | 50 | 69(64) | 47 |
| | | Timber Flooring + Acoustic Underlay [#] | 200 | Nil | 60(54) | 52 | 64(57) | 49 |
| | | | | KI 50G11 | 64(59) | 49 | 68(62) | 46 |
| | | | 300 | Nil | 61(56) | 50 | 65(59) | 47 |
| | | | | KI 50G11 | 65(61) | 47 | 69(64) | 44 |
| | | Carpet Floor + Foam Underlay [†] | 200 | Nil | 60(54) | 32 | 64(57) | 29 |
| | | | | KI 50G11 | 64(59) | 31 | 68(62) | 28 |
| | | | 300 | Nil | 61(56) | 31 | 65(59) | 28 |
| | | | | KI 50G11 | 65(61) | 30 | 69(64) | 27 |
| | | Tiled Floor + Flexible adhesive [^] | 200 | Nil | 60(54) | 62 | 64(57) | 59 |
| | | | | KI 50G11 | 64(59) | 59 | 68(62) | 56 |
| | | | 300 | Nil | 61(56) | 60 | 65(59) | 57 |
| | | | | KI 50G11 | 65(61) | 57 | 69(64) | 54 |
| | | Tiled Floor + Acoustic Underlay [#] | 200 | Nil | 60(54) | 53 | 64(57) | 50 |
| | | | | KI 50G11 | 64(59) | 50 | 68(62) | 47 |
| | | | 300 | Nil | 61(56) | 51 | 65(59) | 48 |
| | | | | KI 50G11 | 65(61) | 48 | 69(64) | 45 |

CC60.2A - Ceilings on furring channels and Rondo clip

CC60.2B - Ceilings on suspended ceiling grid

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

† Foam underlay: Minimumm 3 mm Dunlop DB3 foam underlay or equivalent

^ Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

Acoustic Underlay: Regupol 4515 or equivalent

CEILINGS UNDER CONCRETE FLOOR

CC90.1

FIRE RESISTANCE LEVEL
90/90/90
FROM BELOW
RISF 60min

FRL Basis: FC16109



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table
Floor Structure: Concrete slab (refer to table)
Insulation: Refer to table
Ceiling Lining: 2x16 mm fire resistant pbd
Ceiling Fixing: 28 mm furring channels @ 600 mm ctrs + Rondo clip or Suspended as required (for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02A

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm Concrete | | 200 mm Concrete | | |
|--|------------------|--|--|----------------|---|------------------|---|------------------|----|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} | |
| CC90.1A | 2x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 50 | Nil | 58(51) | 60 | 62(54) | 57 | |
| | | | | KI 50G11 | 62(56) | 57 | 66(59) | 54 | |
| | | | 100 | Nil | 59(53) | 57 | 63(56) | 54 | |
| | | | | KI 50G11 | 63(58) | 54 | 67(61) | 51 | |
| | | Timber Flooring + Acoustic Underlay [#] | 50 | Nil | 58(51) | 57 | 62(54) | 54 | |
| | | | | KI 50G11 | 62(56) | 54 | 66(59) | 51 | |
| | | | 100 | Nil | 59(53) | 54 | 63(56) | 51 | |
| | | | | KI 50G11 | 63(58) | 51 | 67(61) | 48 | |
| | | Carpet Floor + Foam Underlay [†] | 50 | Nil | 58(51) | 33 | 62(54) | 30 | |
| | | | | KI 50G11 | 62(56) | 32 | 66(59) | 29 | |
| | | | 100 | Nil | 59(53) | 32 | 63(56) | 29 | |
| | | | | KI 50G11 | 63(58) | 31 | 67(61) | 28 | |
| | | Tiled Floor + Flexible adhesive [^] | 50 | Nil | 58(51) | 67 | 62(54) | 64 | |
| | | | | KI 50G11 | 62(56) | 64 | 66(59) | 61 | |
| | | | 100 | Nil | 59(53) | 64 | 63(56) | 61 | |
| | | | | KI 50G11 | 63(58) | 61 | 67(61) | 58 | |
| Tiled Floor + Acoustic Underlay [#] | 50 | Nil | 58(51) | 58 | 62(54) | 55 | | | |
| | | KI 50G11 | 62(56) | 55 | 66(59) | 52 | | | |
| | 100 | Nil | 59(53) | 55 | 63(56) | 52 | | | |
| | | KI 50G11 | 63(58) | 52 | 67(61) | 49 | | | |
| CC90.1B | 2x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 200 | Nil | 60(55) | 55 | 64(58) | 52 | |
| | | | | KI 50G11 | 64(60) | 52 | 68(63) | 49 | |
| | | | 300 | Nil | 61(57) | 53 | 65(60) | 50 | |
| | | | | KI 50G11 | 65(62) | 50 | 69(65) | 47 | |
| | | | Timber Flooring + Acoustic Underlay [#] | 200 | Nil | 60(55) | 52 | 64(58) | 49 |
| | | | | | KI 50G11 | 64(60) | 49 | 68(63) | 46 |
| | | 300 | | Nil | 61(57) | 50 | 65(60) | 47 | |
| | | | | KI 50G11 | 65(62) | 47 | 69(65) | 44 | |
| | | Carpet Floor + Foam Underlay [†] | 200 | Nil | 60(55) | 32 | 64(58) | 29 | |
| | | | | KI 50G11 | 64(60) | 31 | 68(63) | 28 | |
| | | | 300 | Nil | 61(57) | 31 | 65(60) | 28 | |
| | | | | KI 50G11 | 65(62) | 30 | 69(65) | 27 | |
| | | Tiled Floor + Flexible adhesive [^] | 200 | Nil | 60(55) | 62 | 64(58) | 59 | |
| | | | | KI 50G11 | 64(60) | 59 | 68(63) | 56 | |
| | | | 300 | Nil | 61(57) | 60 | 65(60) | 57 | |
| | | | | KI 50G11 | 65(62) | 57 | 69(65) | 54 | |
| | | Tiled Floor + Acoustic Underlay [#] | 200 | Nil | 60(55) | 53 | 64(58) | 50 | |
| | | | | KI 50G11 | 64(60) | 50 | 68(63) | 47 | |
| | | | 300 | Nil | 61(57) | 51 | 65(60) | 48 | |
| | | | | KI 50G11 | 65(62) | 48 | 69(65) | 45 | |

CC90.1A - Ceilings on furring channels and Rondo clip

CC90.1B - Ceilings on suspended ceiling grid

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

^ Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

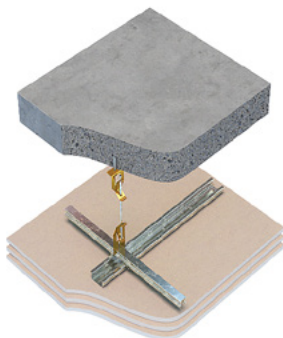
Acoustic Underlay: Regupol 4515 or equivalent

CEILINGS UNDER CONCRETE FLOOR

CC120.1

FIRE RESISTANCE LEVEL
120/120/120
FROM BELOW
RISF 90min

FRL Basis: FC16109



Bare concrete floor shown

SYSTEM DESCRIPTION

Floor Covering: Refer to table

Floor Structure: Concrete slab
(refer to table)

Insulation: Refer to table

Ceiling Lining: 3x16 mm fire resistant pbd

Ceiling Fixing: 28 mm furring channels @
600 mm ctrs + Rondo clip or
Suspended as required
(for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02A

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm Concrete | | 200 mm Concrete | |
|----------|---------------------|---|----------------|----------------|---|------------------|---|------------------|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} |
| CC120.1A | 3x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 50 | Nil | 58(52) | 70 | 62(54) | 67 |
| | | | | KI 50G11 | 62(57) | 67 | 66(59) | 64 |
| | | | 100 | Nil | 59(54) | 67 | 63(56) | 64 |
| | | | | KI 50G11 | 63(59) | 64 | 67(61) | 61 |
| | | Timber Flooring + Acoustic Underlay [#] | 50 | Nil | 58(52) | 57 | 62(54) | 54 |
| | | | | KI 50G11 | 62(57) | 54 | 66(59) | 51 |
| | | | 100 | Nil | 59(54) | 54 | 63(56) | 51 |
| | | | | KI 50G11 | 63(59) | 51 | 67(61) | 48 |
| | | Carpet Floor + Foam Underlay [†] | 50 | Nil | 58(52) | 33 | 62(54) | 30 |
| | | | | KI 50G11 | 62(57) | 32 | 66(59) | 29 |
| | | | 100 | Nil | 59(54) | 32 | 63(56) | 29 |
| | | | | KI 50G11 | 63(59) | 31 | 67(61) | 28 |
| | | Tiled Floor + Flexible adhesive [^] | 50 | Nil | 58(52) | 67 | 62(54) | 64 |
| | | | | KI 50G11 | 62(57) | 64 | 66(59) | 61 |
| | | | 100 | Nil | 59(54) | 64 | 63(56) | 61 |
| | | | | KI 50G11 | 63(59) | 61 | 67(61) | 58 |
| | | Tiled Floor + Acoustic Underlay [#] | 50 | Nil | 58(52) | 58 | 62(54) | 55 |
| | | | | KI 50G11 | 62(57) | 55 | 66(59) | 52 |
| 100 | Nil | | 59(54) | 55 | 63(56) | 52 | | |
| | KI 50G11 | | 63(59) | 52 | 67(61) | 49 | | |
| CC120.1B | 3x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 200 | Nil | 60(56) | 65 | 64(58) | 62 |
| | | | | KI 50G11 | 64(61) | 62 | 68(63) | 59 |
| | | | 300 | Nil | 61(58) | 63 | 65(60) | 60 |
| | | | | KI 50G11 | 65(63) | 60 | 69(65) | 57 |
| | | Timber Flooring + Acoustic Underlay [#] | 200 | Nil | 60(56) | 52 | 64(58) | 49 |
| | | | | KI 50G11 | 64(61) | 49 | 68(63) | 46 |
| | | | 300 | Nil | 61(58) | 50 | 65(60) | 47 |
| | | | | KI 50G11 | 65(63) | 47 | 69(65) | 44 |
| | | Carpet Floor + Foam Underlay [†] | 200 | Nil | 60(56) | 32 | 64(58) | 29 |
| | | | | KI 50G11 | 64(61) | 31 | 68(63) | 28 |
| | | | 300 | Nil | 61(58) | 31 | 65(60) | 28 |
| | | | | KI 50G11 | 65(63) | 30 | 69(65) | 27 |
| | | Tiled Floor + Flexible adhesive [^] | 200 | Nil | 60(56) | 62 | 64(58) | 59 |
| | | | | KI 50G11 | 64(61) | 59 | 68(63) | 56 |
| | | | 300 | Nil | 61(58) | 60 | 65(60) | 57 |
| | | | | KI 50G11 | 65(63) | 57 | 69(65) | 54 |
| | | Tiled Floor + Acoustic Underlay [#] | 200 | Nil | 60(56) | 53 | 64(58) | 50 |
| | | | | KI 50G11 | 64(61) | 50 | 68(63) | 47 |
| | | | 300 | Nil | 61(58) | 51 | 65(60) | 48 |
| | | | | KI 50G11 | 65(63) | 48 | 69(65) | 45 |

CC120.1A - Ceilings on furring channels and Rondo clip

CC120.1B - Ceilings on suspended ceiling grid

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

[^] Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

[#] Acoustic Underlay: Regupol 4515 or equivalent

CEILINGS UNDER CONCRETE FLOOR

CC120.2

FIRE RESISTANCE LEVEL
120/120/120
 FROM BELOW
 RISF 120min

FRL Basis: FC16109



Bare concrete floor shown

SYSTEM DESCRIPTION

- Floor Covering:** Refer to table
Floor Structure: Concrete slab (refer to table)
Insulation: Refer to table
Ceiling Lining: 2x16 mm fire resistant pbd + 28 mm furring channels + 2x16 mm fire resistant pbd
Ceiling Fixing: 28 mm furring channels @ 600 mm ctrs + Rondo clip or Suspended as required (for ceiling cavity refer to table)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S02A

| SYSTEM | CEILING LINING | FLOORING TYPE | CEILING CAVITY | SLAB THICKNESS | 150 mm Concrete | | 200 mm Concrete | | | |
|----------|---|--|---|--|---|------------------|---|------------------|--------|----|
| | | | | INSULATION* | R _w (R _w +C _{tr}) | L _{n,w} | R _w (R _w +C _{tr}) | L _{n,w} | | |
| CC120.2A | 2x16 mm FIRESTOP + 28 mm Furring Channel + 2x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 50 | Nil | 62(53) | 60 | 66(56) | 57 | | |
| | | | 100 | KI 50G11 | 66(58) | 57 | 70(61) | 54 | | |
| | | | Timber Flooring + Acoustic Underlay [‡] | 50 | Nil | 62(53) | 57 | 66(56) | 54 | |
| | | | | 100 | KI 50G11 | 66(58) | 54 | 70(61) | 51 | |
| | | | Carpet Floor + Foam Underlay [†] | 50 | Nil | 62(53) | 33 | 66(56) | 30 | |
| | | | | 100 | KI 50G11 | 66(58) | 32 | 70(61) | 29 | |
| | | | Tiled Floor + Flexible adhesive [^] | 50 | Nil | 62(53) | 67 | 66(56) | 64 | |
| | | | | 100 | KI 50G11 | 66(58) | 64 | 70(61) | 61 | |
| | | | Tiled Floor + Acoustic Underlay [‡] | 50 | Nil | 62(53) | 58 | 66(56) | 55 | |
| | | | | 100 | KI 50G11 | 66(58) | 55 | 70(61) | 52 | |
| | | CC120.2B | 2x16 mm FIRESTOP + 28 mm Furring Channel + 2x16 mm FIRESTOP | Timber Flooring + Foam Underlay [†] | 200 | Nil | 64(57) | 55 | 68(60) | 52 |
| | | | | | 300 | KI 50G11 | 68(62) | 52 | 72(65) | 49 |
| | Timber Flooring + Acoustic Underlay [‡] | | | 200 | Nil | 64(57) | 53 | 69(62) | 50 | |
| | | | | 300 | KI 50G11 | 69(64) | 50 | 73(67) | 47 | |
| | Carpet Floor + Foam Underlay [†] | | | 200 | Nil | 64(57) | 52 | 68(60) | 49 | |
| | | | | 300 | KI 50G11 | 68(62) | 49 | 72(65) | 46 | |
| | Tiled Floor + Flexible adhesive [^] | | | 200 | Nil | 64(57) | 50 | 69(62) | 47 | |
| | | | | 300 | KI 50G11 | 69(64) | 47 | 73(67) | 44 | |
| | Tiled Floor + Acoustic Underlay [‡] | | | 200 | Nil | 64(57) | 32 | 68(60) | 29 | |
| | | | | 300 | KI 50G11 | 68(62) | 31 | 72(65) | 28 | |
| | Tiled Floor + Acoustic Underlay [‡] | | | 200 | Nil | 65(59) | 31 | 69(62) | 28 | |
| | | | | 300 | KI 50G11 | 69(64) | 30 | 73(67) | 27 | |
| | Tiled Floor + Acoustic Underlay [‡] | 200 | Nil | 64(57) | 62 | 68(60) | 59 | | | |
| | | 300 | KI 50G11 | 68(62) | 59 | 72(65) | 56 | | | |
| | Tiled Floor + Acoustic Underlay [‡] | 200 | Nil | 65(59) | 60 | 69(62) | 57 | | | |
| | | 300 | KI 50G11 | 69(64) | 57 | 73(67) | 54 | | | |
| | Tiled Floor + Acoustic Underlay [‡] | 200 | Nil | 64(57) | 53 | 68(60) | 50 | | | |
| | | 300 | KI 50G11 | 68(62) | 50 | 72(65) | 47 | | | |
| | Tiled Floor + Acoustic Underlay [‡] | 200 | Nil | 65(59) | 51 | 69(62) | 48 | | | |
| | | 300 | KI 50G11 | 69(64) | 48 | 73(67) | 45 | | | |

CC120.2A - Ceilings on furring channels and Rondo clip

CC120.2B - Ceilings on suspended ceiling grid

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

† Foam underlay: Minimum 3 mm Dunlop DB3 foam underlay or equivalent

^ Flexible adhesive: Laticrete 335 Premium flexible adhesive or equivalent

Acoustic Underlay: Regupol 4515 or equivalent

CEILING UNDER ROOF

CR.1

NON-FIRE RATED



Pitched roof shown

SYSTEM DESCRIPTION

Roof Type: Refer to table
Insulation: Refer to table
Ceiling Lining: One or more layers of non-fire resistant pbd (refer to table)
Ceiling Fixing: Direct fixed

ACOUSTIC RATINGS BASIS: RT&A TE405-20S08

| SYSTEM | LINING | FIXING | ROOF TYPE | TILED PITCHED ROOF WITH BUILDING MEMBRANE TO NCC REQUIREMENTS | METAL PITCHED ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET | METAL FLAT ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET (190 mm RAFTERS) |
|--------|-----------------------|--|-------------|---|---|---|
| | | | INSULATION* | | | |
| CR.1A | 1x10 mm SHEETROCK ONE | Direct fixed to roof trusses @ 600 mm ctrs | KI 90G R2.5 | 42(33) | NA | NA |
| CR.1G | 1x13 mm IMPACTSTOP | Direct fixed to roof trusses @ 600 mm ctrs | KI 90G R2.5 | 48(41) | NA | NA |
| CR.1H | 2x10 mm SHEETROCK ONE | Direct fixed to roof trusses @ 600 mm ctrs | KI 90G R2.5 | 47(39) | NA | NA |
| CR.1I | 2x13 mm IMPACTSTOP | Direct fixed to roof trusses @ 600 mm ctrs | KI 90G R2.5 | 54(47) | NA | NA |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

CR.2

NON-FIRE RATED



Pitched roof shown

SYSTEM DESCRIPTION

Roof Type: Refer to table
Insulation: Refer to table
Ceiling Lining: One or more layers of non-fire resistant pbd (refer to table)
Ceiling Fixing: 28 mm furring channels @ 600 mm ctrs (nom 30 mm gap)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S08

| SYSTEM | LINING | FIXING | ROOF TYPE | TILED PITCHED ROOF WITH BUILDING MEMBRANE TO NCC REQUIREMENTS | METAL PITCHED ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET | METAL FLAT ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET (190 mm RAFTERS) |
|--------|-----------------------|--|-------------|---|---|---|
| | | | INSULATION* | | | |
| CR.2A | 1x10 mm SHEETROCK ONE | 28 mm furring channels @ 600 mm ctrs (nom 30 mm gap) | KI 90G R2.5 | 43(35) | 42(33) | 40(31) |
| CR.2G | 1x13 mm IMPACTSTOP | 28 mm furring channels @ 600 mm ctrs (nom 30 mm gap) | KI 90G R2.5 | 49(42) | 48(40) | 46(38) |
| CR.2H | 2x10 mm SHEETROCK ONE | 28 mm furring channels @ 600 mm ctrs (nom 30 mm gap) | KI 90G R2.5 | 48(40) | 47(38) | 45(35) |
| CR.2I | 2x13 mm IMPACTSTOP | 28 mm furring channels @ 600 mm ctrs (nom 30 mm gap) | KI 90G R2.5 | 55(48) | 54(46) | 52(44) |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Refer to Table G2 in Ceilings – Introduction for maximum spans of Rondo 129 furring channel.
 Refer to Table G3 in Ceilings – Introduction for maximum spans and spacings of furring channels with acoustic mounts.

CEILINGS UNDER ROOF

CR.3

NON-FIRE RATED



Pitched roof shown

SYSTEM DESCRIPTION

- Roof Type:** Refer to table
Insulation: Refer to table
Ceiling Lining: One or more layers of non-fire resistant pbd (refer to table)
Ceiling Fixing: 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts (nom 50 mm gap)

ACOUSTIC RATINGS BASIS: RT&A TE405-20S08

| SYSTEM | LINING | FIXING | ROOF TYPE | TILED PITCHED ROOF WITH BUILDING MEMBRANE TO NCC REQUIREMENTS | METAL PITCHED ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET | METAL FLAT ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET (190 mm RAFTERS) |
|--------|-----------------------|--|--------------|---|---|---|
| | | | INSULATION* | | | |
| CR.3A | 1x10 mm SHEETROCK ONE | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts (nom 50 mm gap) | KI 90G R2.5 | 47(37) | 46(37) | 44(33) |
| CR.3F | 1x13 mm IMPACTSTOP | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts (nom 50 mm gap) | KI 90 G R2.5 | 54(44) | 53(42) | 51(40) |
| CR.3G | 2x10 mm SHEETROCK ONE | 28 mm furring channels @ 600 mm ctrs + Rondo STWC Sound Isolation Mounts (nom 50 mm gap) | KI 90G R2.5 | 53(42) | 52(40) | 50(38) |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

CR.4

NON-FIRE RATED



Pitched roof shown

SYSTEM DESCRIPTION

- Roof Type:** Refer to table
Insulation: Refer to table
Ceiling Lining: One or more layers of non-fire resistant pbd (refer to table)
Ceiling Fixing: Suspended

ACOUSTIC RATINGS BASIS: RT&A TE405-20S08

| SYSTEM | LINING | FIXING | ROOF TYPE | TILED PITCHED ROOF WITH BUILDING MEMBRANE TO NCC REQUIREMENTS | METAL PITCHED ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET | METAL FLAT ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET (190 mm RAFTERS) |
|--------|-----------------------|-----------|-------------|---|---|---|
| | | | INSULATION* | | | |
| CR.4A | 1x10 mm SHEETROCK ONE | Suspended | KI 90G R2.5 | NA | 47(36) | 45(34) |
| CR.4G | 1x13 mm IMPACTSTOP | Suspended | KI 90G R2.5 | NA | 53(43) | 51(41) |
| CR.4H | 2x10 mm SHEETROCK ONE | Suspended | KI 90G R2.5 | NA | 52(41) | 50(39) |
| CR.4I | 2x13 mm IMPACTSTOP | Suspended | KI 90G R2.5 | NA | 59(49) | 57(47) |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Refer to Table G2 in Ceilings – Introduction for maximum spans of Rondo 129 furring channel.
 Refer to Table G3 in Ceilings – Introduction for maximum spans and spacings of furring channels with acoustic mounts.

CEILINGS UNDER ROOF

CR.5

NON-FIRE RATED



Pitched roof shown

SYSTEM DESCRIPTION

- Roof Type:** Refer to table
Insulation: Refer to table
Ceiling Lining: One or more layers of non-fire resistant pbd (refer to table)
Ceiling Fixing: Suspended + Rondo STSU Sound Isolation Hangers

ACOUSTIC RATINGS BASIS: RT&A TE405-20S08

| SYSTEM | LINING | FIXING | ROOF TYPE | R _w (R _w +C _{tr}) | | |
|--------|-----------------------|--|-------------|---|---|---|
| | | | INSULATION* | TILED PITCHED ROOF WITH BUILDING MEMBRANE TO NCC REQUIREMENTS | METAL PITCHED ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET | METAL FLAT ROOF WITH FOIL-FACED 60 mm (R1.4) NOM ROOF INSULATION BLANKET (190 mm RAFTERS) |
| CR.5A | 1x10 mm SHEETROCK ONE | Suspended + Rondo Sound Isolation Hangers | KI 90G R2.5 | NA | 50(38) | 48(36) |
| CR.5F | 1x13 mm IMPACTSTOP | Suspended + Rondo Sound Isolation Hangers | KI 90G R2.5 | NA | 56(45) | 54(43) |
| CR.5G | 2x10 mm SHEETROCK ONE | Suspended with Rondo Sound Isolation Hangers | KI 90G R2.5 | NA | 55(43) | 53(41) |

* KI 90G R2.5 - Knauf Insulation R2.5 Ceiling Batts

CEILING UNDER ROOF – FIRE UPGRADE

CR

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16109



Pitched roof shown

SYSTEM DESCRIPTION

Roof Type: Any
Ceiling Lining: One or more layers of fire resistant pbd (refer to table)
Ceiling Fixing: Direct fix, furred or suspended ceiling

FIRE RATINGS

| SYSTEM | FIRE RESISTANT LEVEL | RISF | LINING |
|----------|---------------------------|--------|--|
| CR30.1A | 30/30/30 from below | NA | 1x13 mm FIRESTOP |
| CR30.2A | 30/30/30 from below | NA | 1x16 mm FIRESTOP |
| CR60.1A | 60/60/60 from below | 30min | 2x13 mm FIRESTOP |
| CR60.2A | 60/60/60 from below | 60min | 1x13 mm FIRESTOP + 1x16 mm FIRESTOP |
| CR90.1A | 90/90/90 from below | 60min | 2x16 mm FIRESTOP |
| CR120.1A | 120/120/120 from below | 90min | 3x16 mm FIRESTOP |
| CR120.2A | 120/120/120 from below | 120min | 2x16 mm FIRESTOP + Furring +2x16 mm FIRESTOP |

SPANNING CEILINGS

CS

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16109



System CS60.1A shown

SYSTEM DESCRIPTION

- Top Lining:** One or more layers of fire resistant pbd
- Framing:** 150 mm C-studs
0.75 mm BMT
@ 600 mm ctrs
- Bottom Lining:** One or more layers of fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&ATE405-20S08, TK778-06S01

| SYSTEM | FRL | TOP LINING | BOTTOM LINING | STUD SIZE mm | 150 | MAX SPANS FOR POINT LOAD AT MIDSPAN [†] mm | |
|----------|---|---------------------|---|--------------|---|---|------|
| | | | | BMT mm | 0.75 | 1400N | 900N |
| | | | | INSULATION* | R _w (R _w +C _{tr}) | | |
| CS60.1A | 60/60/60 from above only | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 39(33) | 2000 | 3000 |
| | | | | KI 90G11 | 46(42) | | |
| CS90.1A | 90/90/90 from above only | 2x13 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 40(34) | 2000 | 2900 |
| | | | | KI 90G11 | 49(43) | | |
| CS90.2A | 90/90/90 from both sides | 2x13 mm FIRESTOP | 3x13 mm FIRESTOP | Nil | 48(40) | 2000 | 2900 |
| | | | | KI 90G11 | 53(48) | | |
| CS120.1A | 120/120/120 from above only | 2x16 mm FIRESTOP | 1x16 mm FIRESTOP + 1x10 mm SHEETROCK ONE | Nil | 46(37) | 1900 | 2650 |
| | | | | KI 90G11 | 52(47) | | |
| CS120.2A | 120/120/120 from above 60/60/60 from below | 2x16 mm FIRESTOP | 2x16 mm FIRESTOP | Nil | 47(38) | 1900 | 2650 |
| | | | | KI 90G11 | 52(47) | | |
| CS120.3A | 120/120/120 from both sides | 2x16 mm FIRESTOP | 3x16 mm FIRESTOP | Nil | 49(41) | 1850 | 2500 |
| | | | | KI 90G11 | 54(50) | | |

* KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density† Maximum spans are based on non trafficable ceilings in accordance with AS 1170.1 cl 3.5.2
End connections using Rondo SWC3 or 201 web cleats

CH

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16109



System CH120.1A shown

SYSTEM DESCRIPTION

- Top Lining:** One or more layers of fire resistant pbd
- Framing:** CH-studs @ 600 mm ctrs
(refer to table)
- Bottom Lining:** One or more layers of fire resistant pbd

ACOUSTIC RATINGS BASIS: RT&A TE405-20S08

| SYSTEM | FRL | TOP LINING | BOTTOM LINING | STUD SIZE mm | 64 | | 102 | |
|----------|--------------------------------|------------------------------------|------------------------------------|--------------|---|--------|--------|--------|
| | | | | BMT mm | 0.55 | 0.90 | 0.55 | 0.90 |
| | | | | INSULATION* | R _w (R _w +C _{tr}) | | | |
| CH60.1A | 60/60/60 from both sides | 1x25 mm SHAFTLINER MOULDSTOP | 2x16 mm FIRESTOP | Nil | 43(34) | 40(31) | 45(36) | 42(33) |
| | | | | KI 50G11 | 50(40) | 47(37) | 51(42) | 48(39) |
| CH120.1A | 120/120/120 from both sides | 1x25 mm SHAFTLINER MOULDSTOP | 3x16 mm FIRESTOP | Nil | 45(36) | 42(33) | 46(37) | 43(34) |
| | | | | KI 50G11 | 52(42) | 49(39) | 52(43) | 49(40) |
| CH120.2A | 120/120/120 from both sides | 3x16 mm FIRESTOP | 1x25 mm SHAFTLINER MOULDSTOP | Nil | 45(36) | 42(33) | 46(37) | 43(34) |
| | | | | KI 50G11 | 52(42) | 49(39) | 52(43) | 49(40) |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

MAXIMUM SPANS

| STUD SIZE mm | 64 | 64 | 102 | 102 | 64 | 64 | 102 | 102 |
|---------------|---------------------------------|------|------|------|---------------------------------|------|------|------|
| | BMT mm | 0.55 | 0.90 | 0.55 | 0.90 | 0.55 | 0.90 | 0.55 |
| FRAME SPACING | 0.00kPa SERVICEABILITY PRESSURE | | | | 0.25kPa SERVICEABILITY PRESSURE | | | |
| | 300 | 2000 | 2530 | 2690 | 3410 | 2000 | 2530 | 2690 |
| 600 | 1760 | 2200 | 2360 | 2960 | 1480 | 1850 | 1980 | 2500 |

Maximum spans are based on:

- 600Pa self weight
- Maximum working stress of steel of 80MPa under fire load
- Non trafficable ceilings and no additional loadings from construction or maintenance personnel
- Simply supported, laterally restrained joists

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

ACOUSTIC CEILINGS – CEILING TILES

SUGGESTED APPLICATIONS

| PANEL | Airports | Banks | Boardrooms / Conference | Cinemas / Theatres | Computer Rooms | Factories / Workshops | Foodhalls | Gymnasiums | Hospitals / Medical Centres | Laboratories / Cleanrooms | Libraries | Light Industrial Construction | Lobbies / Receptions | Offices | Open Plan Offices | Restaurants/ Cafes | Retail | Schools | Service Stations | Shopping Centres | Showrooms / Exhibition Areas | Swimming Pools | Washrooms | Fire Rated | Face Texture | Cost |
|-------------------|----------|-------|-------------------------|--------------------|----------------|-----------------------|-----------|------------|-----------------------------|---------------------------|-----------|-------------------------------|----------------------|---------|-------------------|--------------------|--------|---------|------------------|------------------|------------------------------|----------------|-----------|------------|--------------|------|
| IMPRESSIONS™ | | ✓ | ✓ | | | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | M | \$ |
| OLYMPUS MAX™ | ✓ | ✓ | ✓ | ✓ | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | F | \$\$ |
| MARS™ CLEAN ROOM™ | | | | | | | ✓ | | ✓ | ✓ | | | | | | ✓ | | | | | | ✓ | | S | \$\$\$ | |

Indicative Installed \$ Value Guide per m² (grid, acoustical panel labour)

Costs are calculated from national average ranges for a typical installation under ideal height and job site conditions. Actual installed costs may vary based on several installation factors.

Economical
Mid Range
Premium

\$
\$\$
\$\$\$

F - Fine texture
M - Medium texture
S - Smooth texture

REFER TO PRODUCT DATA SHEETS FOR COMPLETE TECHNICAL DATA

| PANEL | NRC | CAC | LR | VOC EMISSIONS | ANTI-MOULD & MILDEW | RECYCLED CONTENTS | PANEL WEIGHT kg/m ² | EDGE | CEILING GRID |
|-------------------|------|-----|------|---------------|---------------------|-------------------|--------------------------------|------|--------------|
| IMPRESSIONS™ | 0.60 | 35 | 0.84 | Low | ○ | 45% | 3.86-4.23 | SQ | DX, DXT |
| OLYMPUS MAX™ | 0.70 | 35 | 0.88 | Low | ○ | 61% | 4.08-4.18 | SQ | DX, DXT |
| MARS™ CLEAN ROOM™ | 0.75 | 35 | 0.90 | Low | ○ | 69% | 5.0-5.3 | SQ | DX, DXT, CE |

○ CLIMAPLUS™ Inherent Performance

Low Emissions (VOC Class)

Classified as low-emitting per standards established by the Collaborative for High-Performance Schools (CHPS), following California Specification 01350 testing methods. Low-emitting is defined as having less than 13.5 ppb/0.017 mg/m³.

Edge Profiles

SQ Square Edge

CLIMAPLUS Superior Performance



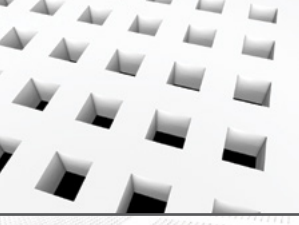
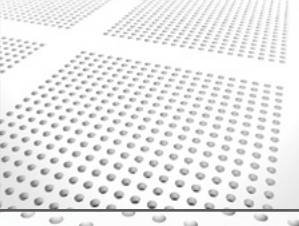
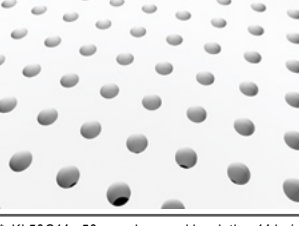
Contains a broad-spectrum antimicrobial treatment on the face and back of the panel that provides resistance against the growth of mould/mildew, fungi, yeast, and odour/stain-causing Gram-positive and Gram-negative bacteria.

CLIMAPLUS Inherent Performance

Substrate is inherently resistant to the growth of mould, mildew and bacteria.

ACOUSTIC CEILINGS – ECHOSTOP® PERFORATED PLASTERBOARD

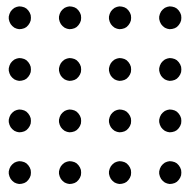
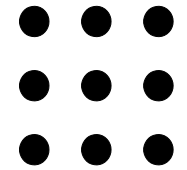
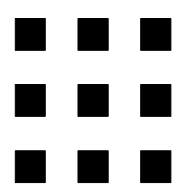
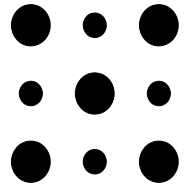
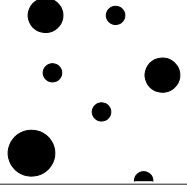
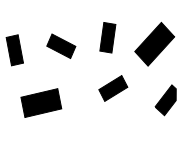
EchoStop has been extensively tested in a 'full scale reverberation chamber' to AS ISO 354-2006. The table below outlines the different air gaps and insulation tested, together with the α_w and NRC rating achieved. Copies of the test reports can be supplied upon request.

| ECHOSTOP PROPERTIES | | | | | | | | |
|--|---|---------------------------|-------------|---|-------|------|------|------------------|
| TABLE 1. | PERFORATION | OVERALL CAVITY DEPTH (mm) | INSULATION* | α_w | CLASS | SAA | NRC | RMIT Test Report |
|  | 82 mm Slotted Rectangular (10.9% open area) | 50 mm | KI 50G14 | 0.40(LM) | D | 0.67 | 0.70 | 12-041/JW |
| | | 90 mm | KI 90G14 | 0.40(LM) | D | 0.66 | 0.65 | 12-040/JW |
| | | 400 mm | KI 90G14 | 0.45(LM) | D | 0.61 | 0.65 | 12-046/JW |
| | | 700 mm | KI 90G14 | 0.50(LM) | D | 0.62 | 0.60 | 12-056/JW |
|  | 101.5 mm Slotted Rectangular (11.8% open area) | 400 mm | KI 90G14 | 0.45(LM) | D | 0.63 | 0.65 | 12-047/JW |
| | | 700 mm | KI 90G14 | 0.50(LM) | D | 0.63 | 0.65 | 12-054/JW |
|  | 12 mm Square Hole (16% open area) | 90 mm | KI 90G14 | 0.60(LM) | C | 0.80 | 0.80 | 12-038/JW |
| | | 400 mm | KI 90G14 | 0.60(LM) | C | 0.74 | 0.75 | 12-045/JW |
| | | 700 mm | KI 90G14 | 0.60(LM) | C | 0.75 | 0.75 | 12-053/JW |
|  | 6 mm Round Hole (8.6% open area) | 400 mm | KI 90G14 | 0.45(LM) | D | 0.62 | 0.65 | 12-043/JW |
| | | 700 mm | KI 90G14 | 0.50(LM) | D | 0.64 | 0.65 | 12-052/JW |
|  | 13.5 mm Round Hole | 90 mm | KI 90G14 | Refer to EchoStop 12 mm Square Hole for indicative acoustic performance | | | | |
| | | 400 mm | KI 90G14 | | | | | |
| | | 700 mm | KI 90G14 | | | | | |

* KI 50G14 - 50 mm glasswool insulation 14 kg/m³ density

* KI 90G14 - 90 mm glasswool insulation 14 kg/m³ density

STRATOPANEL® PRODUCT RANGE

| STRATOPANEL® PROPERTIES | | | | | | | | | | | |
|---------------------------------|---|-----------|----------------------|--------------------------|--------------|-------------|------------|-------|------|------|-------------------------------|
| PRODUCT NAME | PERFORATION | OPEN AREA | Thickness (w x l) mm | WEIGHT kg/m ² | CAVITY DEPTH | INSULATION* | α_w | CLASS | SAA | NRC | CSIRO Acoustic Test Report No |
| CIRCULAR 8/18 R |  | 15.5% | 12.5 (1188x1998) | 8.2 | 200 | Nil | 0.70 | C | 0.70 | 0.70 | AC356-01-2 |
| | | | | | | KI 50G11 | 0.75(L) | C | 0.78 | 0.80 | AC356-02-2 |
| | | | | | 400 | Nil | 0.70(L) | C | 0.72 | 0.70 | AC356-04-2 |
| | | | | | | KI 50G11 | 0.80 | B | 0.78 | 0.80 | AC356-03-2 |
| CIRCULAR 12/25 R |  | 18.1% | 12.5 (1200x2000) | 7.9 | 200 | Nil | 0.70(L) | C | 0.73 | 0.75 | AC359-09-1 |
| | | | | | | KI 50G11 | 0.80 | B | 0.81 | 0.80 | AC359-16-1 |
| | | | | | 400 | Nil | 0.70(L) | C | 0.73 | 0.70 | AC359-08-1 |
| | | | | | | KI 50G11 | 0.80 | B | 0.81 | 0.80 | AC359-01-1 |
| SQUARE 12/25 Q |  | 23.0% | 12.5 (1200x2000) | 7.4 | 200 | Nil | 0.70(L) | C | 0.77 | 0.75 | AC359-11-1 |
| | | | | | | KI 50G11 | 0.90(L) | A | 0.92 | 0.90 | AC359-14-1 |
| | | | | | 400 | Nil | 0.75(L) | C | 0.75 | 0.75 | AC359-06-1 |
| | | | | | | KI 50G11 | 0.90 | A | 0.90 | 0.90 | AC359-03-1 |
| ALTERNATING CIRCULAR 12/20/66 R |  | 19.6% | 12.5 (1188x1980) | 7.7 | 200 | Nil | 0.65(LM) | C | 0.73 | 0.75 | AC359-12-1 |
| | | | | | | KI 50G11 | 0.75(L) | C | 0.83 | 0.85 | AC359-13-1 |
| | | | | | 400 | Nil | 0.75(L) | C | 0.72 | 0.70 | AC359-05-1 |
| | | | | | | KI 50G11 | 0.80(L) | B | 0.82 | 0.80 | AC359-04-1 |
| RANDOM PLUS 8/15/20 R |  | 9.9% | 12.5 (1200x2000) | 8.6 | 200 | Nil | 0.50(L) | D | 0.57 | 0.60 | AC359-10-1 |
| | | | | | | KI 50G11 | 0.55(L) | D | 0.60 | 0.60 | AC359-15-1 |
| | | | | | 400 | Nil | 0.55(L) | D | 0.57 | 0.55 | AC359-07-1 |
| | | | | | | KI 50G11 | 0.55(L) | D | 0.60 | 0.60 | AC359-02-1 |
| RANDOM RECTANGULAR RE |  | 13.6% | 12.5 (1199x1999) | 8.4 | 200 | Nil | 0.50(LM) | D | 0.64 | 0.65 | AC359-20-1 |
| | | | | | | KI 50G11 | 0.60(L) | C | 0.70 | 0.70 | AC359-19-1 |
| | | | | | 400 | Nil | 0.55(L) | D | 0.65 | 0.60 | AC359-17-1 |
| | | | | | | KI 50G11 | 0.65(L) | C | 0.70 | 0.70 | AC359-18-1 |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

OVER PARTITION SYSTEMS

| OVER PARTITION CEILING SYSTEMS | | | | | |
|--------------------------------|--------|---|--|------------------------------------|--|
| WALL ACOUSTIC RATING | SYSTEM | ACCEPTABLE CEILING CONFIGURATION TO MAINTAIN WALL ACOUSTIC RATING | | | |
| | | SIDE A | SIDE B | CONTINUOUS / DISCONTINUOUS CEILING | ABOVE CEILING TREATMENT |
| $R_w \leq 35$ | OP.1 | Mineral Fibre Ceiling Tiles Group A or B | Mineral Fibre Ceiling Tiles Group A or B | Continuous or Discontinuous | None |
| | OP.2 | 1x10 mm SHEETROCK ONE | 1x10 mm SHEETROCK ONE | Continuous or Discontinuous | None |
| $R_w 40$ | OP.3 | Mineral Fibre Ceiling Tiles Group A or B | Mineral Fibre Ceiling Tiles Group A or B | Discontinuous | 13 mm plasterboard wall lining on one side of stud only continued up to u/s of concrete slab or roof lining |
| | OP.5 | 1x13 mm SHEETROCK ONE | Mineral Fibre Ceiling Tiles Group A or B | Discontinuous | KI 50G11 extend min 1200 mm each side of wall |
| | OP.7 | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Continuous or Discontinuous | None |
| $R_w 45$ | OP.8 | Mineral Fibre Ceiling Tiles Group A or B | Mineral Fibre Ceiling Tiles Group A or B | Discontinuous | Plasterboard wall lining min. density 8.5 kg/m ² on one side of stud only continued up to u/s of concrete slab or roof lining + KI 50G11 extend min 1200 mm each side of wall |
| | OP.9 | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Discontinuous | KI 50G11 over entire ceiling both sides of wall |
| $R_w 50$ | OP.10 | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | Discontinuous | Plasterboard wall lining min. density 10.5 kg/m ² on both sides of stud to extend full height to u/s of concrete slab or roof lining |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density.

Notes:

- Acoustic ratings based on nom. 700 mm plenum depth
- For continuous ceilings, junction of wall to suspended ceiling to be acoustically sealed
- For continuous or discontinuous ceilings, no acoustical treatment required to shadowline stopping angle at head of wall
- Other acceptable materials (ie. barium loaded vinyl) can be used in lieu of a plasterboard barrier in ceiling space
- Insulation blankets must not be in direct contact with mineral fibre panels and must be supported by the suspension system only
- Insulation batts can be laid directly on mineral fibre panels only to the extent required in the above over partition systems and provided that the batts are the same size as the panels

| KNAUF ACOUSTIC CEILING PANELS CLASSIFICATION | | | | |
|--|-----------------|-----------------|------|-----|
| CEILING PANEL GROUP | PRODUCT NAME | PANEL THICKNESS | NRC | CAC |
| GROUP A | IMPRESSIONS | 16 mm | 0.60 | 35 |
| | OLYMPUS MAX | 19 mm | 0.70 | 35 |
| GROUP B | MARS CLEAN ROOM | 19 mm | 0.75 | 35 |

OVER PARTITION SYSTEMS

TYPICAL LAYOUTS

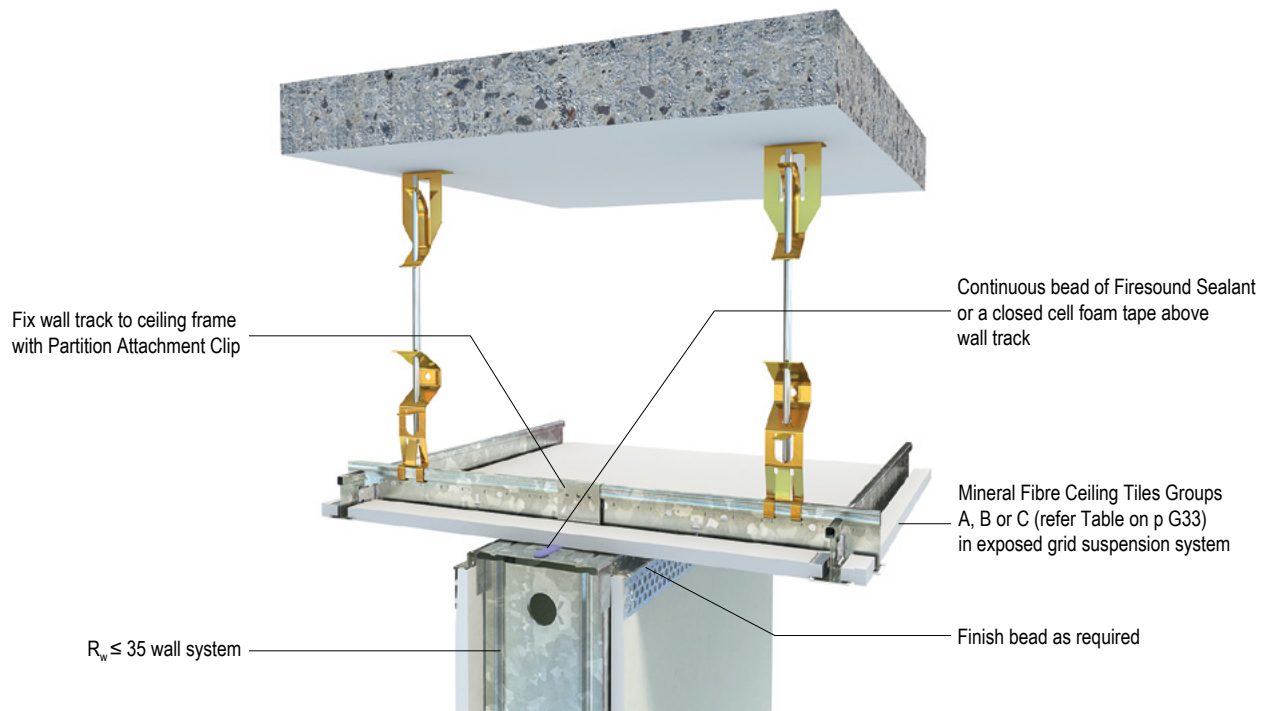


Figure G12: Ceiling configuration to maintain an $R_w \leq 35$ wall acoustic rating
(System OP.1 shown)

OVER PARTITION SYSTEMS

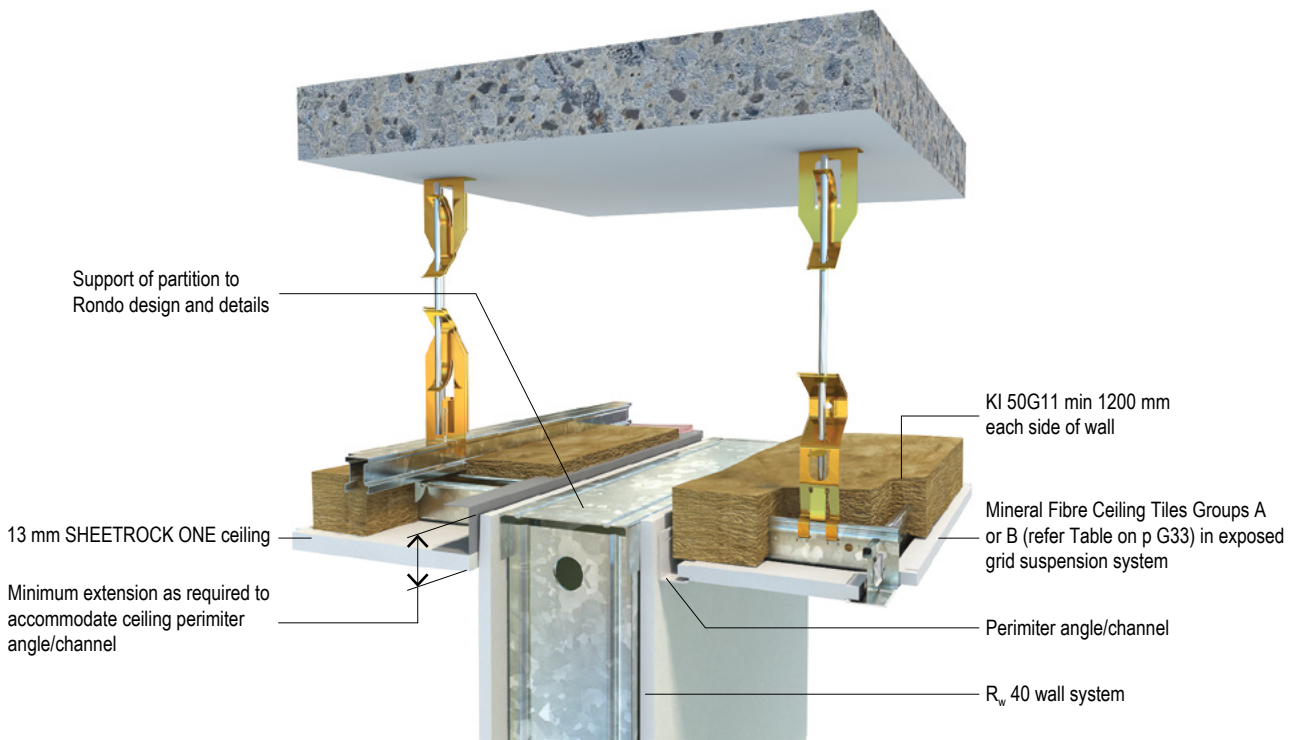


Figure G13: Ceiling configuration to maintain an R_w 40 wall acoustic rating
(System OP.5 shown)

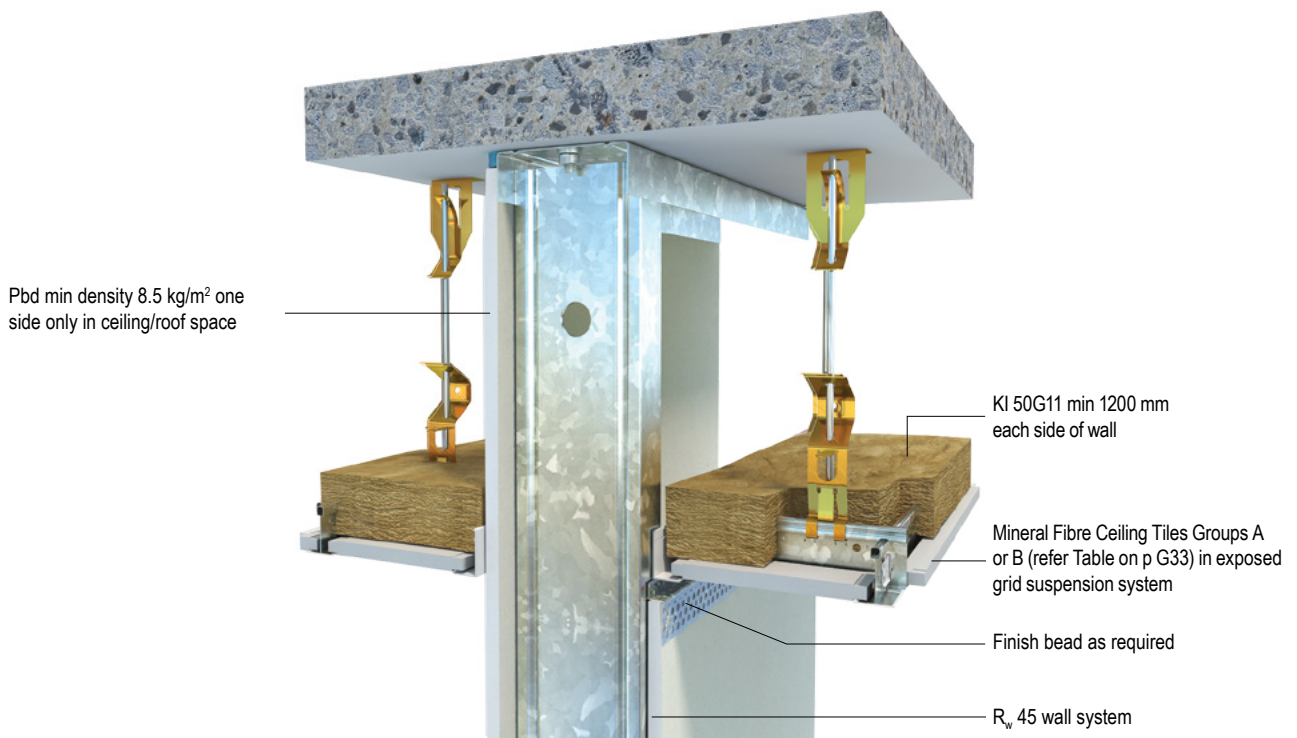


Figure G14: Ceiling configuration to maintain an R_w 45 wall acoustic rating
(System OP.8 shown)

OVER PARTITION SYSTEMS

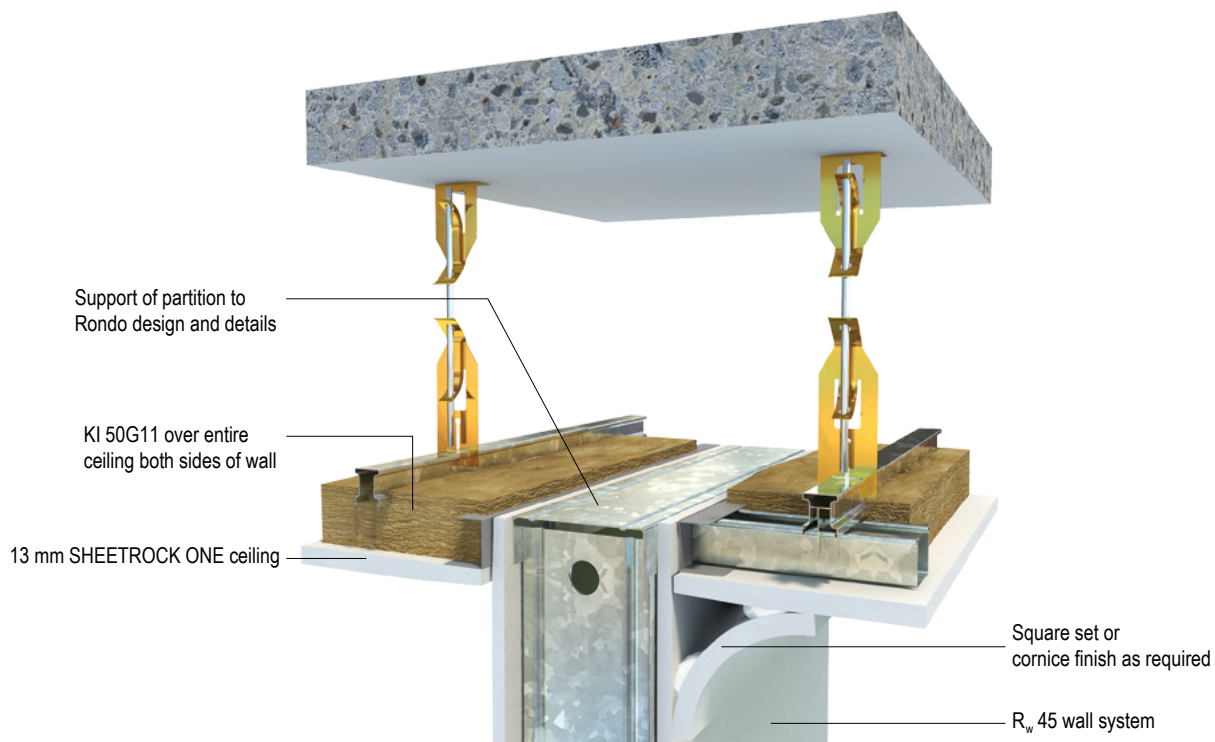


Figure G15: Ceiling configuration to maintain an R_w 45 wall acoustic rating (System OP.9 shown)

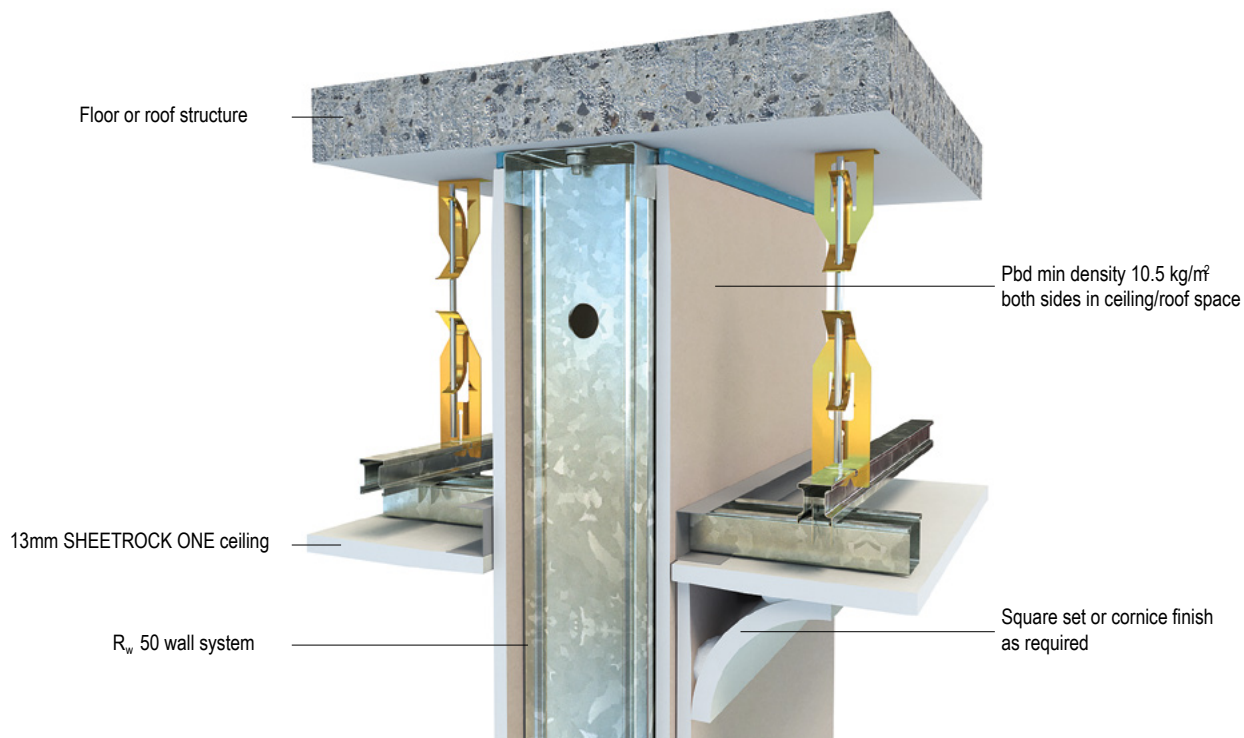


Figure G16: Ceiling configuration to maintain an R_w 50 wall acoustic rating (System OP.10 shown)

Section H

Multi-Residential

10/2025

MULTI-RESIDENTIAL

Click on the links below to navigate to page

- H 2 Introduction
- H 12 Multiframe™
- H 15 Services Separation
- H 16 PartiWall®
- H 21 IntRwall®



INTRODUCTION

Knauf offers a range of NCC compliant fire and acoustic rated building systems for the Multi-Residential sector. These include:

- PartiWall separating walls for Class 1 attached dwellings
- IntRwall separating and corridor walls for Class 2 and 3 buildings with concrete slabs
- Multiframe timber framed construction system for low rise buildings Class 2 and 3.

A brief overview of the above systems and NCC requirements for Multi-Residential buildings is provided below. For more information on various systems refer to the relevant Knauf publications and knauf.com

NCC REQUIREMENTS

NOTE

Extracts of NCC requirements provided below are intended for guidance only and should not be used as a substitute for professional advice. Refer to NCC for the full set of performance requirements for Multi-Residential buildings.

Fire Resistance

Fire Resistance Levels

In accordance with NCC, certain elements in multi-residential buildings must achieve stipulated Fire Resistance Levels (FRL).

Class 1 Buildings

Separating walls between Class 1 buildings (ie attached villa units and townhouses) must have an FRL of not less than 60/60/60 from both sides.

Class 2 and 3 Buildings

Building elements in Class 2 and 3 buildings (ie apartments, boarding houses, hotels) must have minimum FRLs depending the type of fire resisting construction ranging from Type A (the most fire resistant) to Type C (the least fire resistant):

TABLE H1: TYPES OF FIRE RESISTING CONSTRUCTION FOR CLASS 2 AND 3 BUILDINGS

| RISE IN STOREYS | TYPE OF CONSTRUCTION |
|-----------------|----------------------|
| 4 or more | A |
| 3 | A |
| 2 | B |
| 1 | C |

Refer to NCC for:
 - Calculations of rise in storeys.
 - Treatment of buildings with multiple classifications.
 - Concession for Class 2 and 3 Buildings.

Minimum FRL's for Class 2 and 3 buildings are outlined in tables H3 and H4.

Class 9c Buildings

Refer to the NCC for fire resistance requirements for Class 9c buildings.

Fire Hazard Properties of Lining Materials

Under the NCC, wall and ceiling lining materials are assigned a group number from Group 1 (best performing) to Group 3 (worst performing) based on their Fire Hazard Properties.

The following table outlines permitted group numbers of wall and ceiling lining materials in Class 2 and 3 buildings (excluding Class 3 buildings used for accommodation for the aged, people with disabilities and children):

TABLE H2: PERMITTED GROUPS FOR WALL AND CEILING LININGS

| CLASS 2 AND 3 BUILDINGS | FIRE-ISOLATED EXITS & FIRE CONTROL ROOMS | PUBLIC CORRIDORS | SOLE OCCUPANCY UNITS | OTHER AREAS |
|-------------------------|--|------------------|----------------------|-------------|
| | WALL/CEILING | | | |
| Unsprinklered | 1 | 1, 2 | 1, 2, 3 | 1, 2, 3 |
| Sprinklered | 1 | 1, 2, 3 | 1, 2, 3 | 1, 2, 3 |

In addition to the group number, wall and ceiling linings used in a building not fitted with a sprinkler system complying with the NCC must have a smoke growth rate index not more than 100 or an average specific extinction area less than 250m²/kg.

All Knauf plasterboard linings are Group 1 and comply with the additional requirements for non-sprinklered buildings. Refer to Knauf for details and relevant reports.

Smoke-proof Walls

Public corridors in Class 2 or 3 buildings must be divided at intervals of not more than 40 m with smoke-proof walls complying with Specification S11C3 of NCC.

Structural Tests for Lightweight Construction

Fire-resisting walls of lightweight construction must satisfy the structural test criteria outlined in Specification 6 of NCC.

Non-Combustible Materials

Under Deemed-to-Satisfy Provision C2D10 of the NCC, plasterboard may be used wherever a non-combustible material is required. Where a Class 2 building is constructed using timber framing as permitted in Specification S5C20 of the NCC, insulation in the cavity of a fire-resisting wall must be non-combustible.

INTRODUCTION

| TABLE H3: MINIMUM FRLs OF BUILDING ELEMENTS IN A CLASS 2 AND 3 BUILDING WITHOUT SPRINKLERS | | | | | |
|---|-------------------------------------|------------------|--------------|------------------|-------------------------------|
| BUILDING ELEMENT | TYPE OF FIRE RESISTING CONSTRUCTION | | | | |
| | TYPE A | | TYPE B | | TYPE C |
| | LOAD-BEARING | NON LOAD-BEARING | LOAD-BEARING | NON LOAD-BEARING | LOAD-BEARING |
| External wall (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is: | | | | | |
| Less than 1.5 m | 90/90/90 | -/90/90 | 90/90/90 | -/90/90 | 90/90/90 from outside only |
| 1.5 m to less than 3 m | 90/60/60 | -/60/60 | 90/60/30 | -/60/30 | -/-/- |
| 3 m to less than 9 m | 90/60/30 | -/-/- | 90/30/30 | -/-/- | -/-/- |
| 9 m to less than 18 m | 90/60/30 | -/-/- | 90/30/- | -/-/- | -/-/- |
| 18 m or more | 90/60/30 | -/-/- | -/-/- | -/-/- | -/-/- |
| External Column (not incorporated in an external wall) Distance from a fire-source feature: | | | | | |
| Less than 1.5 m | 90/-/- | -/-/- | 90/-/- | -/-/- | 90/-/- |
| 1.5 m to less than 3 m | 90/-/- | -/-/- | 90/-/- | -/-/- | -/-/- |
| 3 m or more | 90/-/- | -/-/- | 90/-/- | -/-/- | -/-/- |
| 18 m or more | 90/-/- | -/-/- | -/-/- | -/-/- | -/-/- |
| Common walls and fire walls | 90/90/90 | -/90/90 | 90/90/90 | -/90/90 | 90/90/90 |
| Internal Walls | | | | | |
| Fire-resisting lift shafts | 90/90/90 | -/90/90 | 90/90/90 | -/90/90 | NA |
| Fire-resisting stair shafts | 90/90/90 | -/90/90 | 90/90/90 | -/90/90 | 60/60/60 |
| Bounding public corridors, public lobbies and the like | 90/90/90 | -/60/60 | 60/60/60 | -/60/60 | 60/60/60 |
| Between or bounding sole-occupancy units | 90/90/90 | -/60/60 | 60/60/60 | -/60/60 | 60/60/60 |
| Ventilating, pipe, garbage and like shafts not used for the discharge of hot products of combustion | 90/90/90 | -/90/90 | -/-/- | -/-/- | -/-/- |
| Other Load-bearing Internal Walls | 90/-/- | NA | 60/-/- | NA | -/-/- |
| Load-bearing Internal Columns | 90/-/- | NA | 60/-/- | NA | -/-/- |
| Internal Beams | 90/-/- | NA | Ref NCC | NA | Ref NCC |
| Floors | 90/90/90 | NA | Ref NCC | NA | NA |
| Roofs | 90/60/30 | NA | -/-/- | -/-/- | -/-/- |

- Where fire rated internal wall extends to the underside of a ceiling immediately below the roof where concession is given for the roof to be non-fire rated, such ceiling must have Resistance to Incipient Spread of Fire (RISF) of not less than 60 minutes.
- Where the lowest storey is used solely for car parking or some other ancillary purpose, such storey must be separated from the storey above by construction having an FRL of not less than 90/90/90.
- Refer to NCC for concessions for Class 2 and 3 buildings without sprinklers.

INTRODUCTION

TABLE H4: MINIMUM FRLs OF BUILDING ELEMENTS IN A CLASS 2 AND 3 BUILDING WITH SPRINKLERS

| BUILDING ELEMENT | TYPE OF FIRE RESISTING CONSTRUCTION | | | | |
|---|---|------------------|---|------------------|-------------------------------|
| | TYPE A | | TYPE B | | TYPE C |
| | LOAD-BEARING | NON LOAD-BEARING | LOAD-BEARING | NON LOAD-BEARING | LOAD-BEARING |
| External wall (including any column and other building element incorporated therein) or other external building element Distance from a fire-source feature: | | | | | |
| Less than 1.5 m | 90/90/90 from outside 60/60/60 from inside | -/90/90 | 90/90/90 from outside 60/60/30 from inside | -/90/90 | 90/90/90 from outside only |
| 1.5 m to less than 3 m | 90/60/60 from outside 60/60/60 from inside | -/60/60 | 90/60/30 from outside 60/60/30 from inside | -/60/30 | -/-/- |
| 3 m to less than 9 m | 90/60/30 from outside 60/60/30 from inside | -/-/- | 90/30/30 from outside 60/30/30 from inside | -/-/- | -/-/- |
| 9 m to less than 18 m | 90/60/30 from outside 60/60/30 from inside | -/-/- | 90/30/- from outside 60/30/- from inside | -/-/- | -/-/- |
| 18 m or more | 90/60/30 from outside 60/60/30 from inside | -/-/- | -/-/- | -/-/- | -/-/- |
| External Column (not incorporated in an external wall) Distance from a fire-source feature: | | | | | |
| Less than 1.5 m | 90/-/- | -/-/- | 90/-/- | -/-/- | 90/-/- |
| 1.5 m to less than 3 m | 90/-/- | -/-/- | 90/-/- | -/-/- | -/-/- |
| 3 m or more | 90/-/- | -/-/- | 90/-/- | -/-/- | -/-/- |
| 18 m or more | 90/-/- | -/-/- | -/-/- | -/-/- | -/-/- |
| Common walls and fire walls | 90/90/90 | -/90/90 | 90/90/90 | -/90/90 | 90/90/90 |
| Internal Walls | | | | | |
| Fire-resisting lift shafts | 60/60/60 | -/-/- | 60/60/60 | -/-/- | NA |
| Fire-resisting stair shafts | 60/60/60 | -/-/- | 60/60/60 | -/-/- | 60/60/60 |
| Bounding public corridors, public lobbies and the like | 60/60/60 | -/-/- | 60/60/60 | -/-/- | 60/60/60 |
| Between or bounding sole-occupancy units | 60/60/60 | -/-/- | 60/60/60 | -/-/- | 60/60/60 |
| Ventilating, pipe, garbage and like shafts not used for the discharge of hot products of combustion | 60/60/60 | -/-/- | -/-/- | -/-/- | -/-/- |
| Other Load-bearing Internal Walls | 60/-/- | NA | 60/-/- | NA | -/-/- |
| Load bearing Internal Columns | 90/-/- | NA | 60/-/- | NA | -/-/- |
| Internal Beams | 90/-/- | NA | Ref NCC | NA | Ref NCC |
| Floors | 60/60/60 | NA | Ref NCC | NA | Ref NCC |
| Roofs | 90/60/30 | NA | -/-/- | -/-/- | -/-/- |

- Where fire rated internal wall extends to the underside of a ceiling immediately below the roof, where concession is given for the roof to be non-fire rated, such ceiling must have Resistance to Incipient Spread of Fire (RISF) of not less than 60 minutes.

- Where the lowest storey is used solely for car parking or some other ancillary purpose, such storey must be separated from the storey above by construction having an FRL of not less than 90/90/90.

- Non load-bearing internal walls must be lined with 13 mm standard plasterboard each side, be filled with non-combustible insulation (where applicable), and extend in accordance with NCC requirements.

- Refer to NCC for concessions for Class 2 and 3 buildings with sprinklers.

INTRODUCTION

Acoustics

In accordance with the NCC, separating walls and floors in multi-residential buildings must provide minimum levels of acoustic insulation as summarised below:

TABLE H5: CLASS 9C BUILDINGS

| BUILDING ELEMENT | IMPACT SOUND INSULATION (Separate Leaves) | R_w (min) |
|---|--|----------------|
| Floor | NA | 45 |
| Wall separating sole occupancy units or sole occupancy unit from a bathroom, sanitary compartment (not being associated with ensuite), plant room or utilities room | No | 45 |
| Wall separating sole occupancy unit from kitchen or laundry | Yes | 45 |

TABLE H6: CLASS 1 BUILDINGS

| WALL TYPE | DISCONTINUOUS CONSTRUCTION | R_w+C_{tr} (min) |
|--|----------------------------|--------------------|
| Separating wall between bathroom, sanitary compartment, laundry or kitchen and habitable room (other than kitchen) in adjoining Class 1 building | Yes | 50 |
| In all other cases to those listed above | No | 50 |
| Duct, soil, waste or water supply pipe or storm water pipe that passes through a separating wall between class 1 buildings if the adjacent room is a habitable room (other than a kitchen) | No | 40 |
| As above, if the adjacent room is a kitchen or any other room | No | 25 |

INTRODUCTION

TABLE H7: SUMMARY OF NCC ACOUSTIC REQUIREMENTS FOR FLOORS, WALLS AND SERVICES IN CLASS 2 AND 3 BUILDINGS

| APPLICATION | NCC DEEMED-TO-SATISFY PROVISION (Laboratory performance) | | | | NCC VERIFICATION METHOD (in-situ performance) | | |
|---|---|-----------------------------------|---|---|--|---|--|
| | R_w (not less than) | $R_{w+C_{tr}}$ (not less than) | IMPACT SOUND INSULATION (discontinuous construction, walls only) | $L'_{n,w}$ (not more than – floor only) | $D_{n,Tw}$ (not less than) | $D_{n,Tw+C_{tr}}$ (not less than) | $L'_{n,Tw}$ (not more than – floor only) |
| Floors separating sole-occupancy units | – | 50 | – | 62 | – | 45 | 62 |
| Floors separating a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification | – | 50 | – | 62 | – | 45 | 62 |
| Walls separating sole-occupancy units ie habitable rooms adjoining or, non-habitable rooms adjoining | – | 50 | No | – | – | 45 | – |
| Walls separating a sole-occupancy unit from a stairway, public corridor, public lobby or the like | 50 | – | No | – | 45 | – | – |
| Walls separating a sole-occupancy unit from a plant room or lift shaft | 50 | – | Yes | – | 45 | – | – |
| Walls separating a bathroom, sanitary compartment, laundry or kitchen in one sole-occupancy from a habitable room (other than a kitchen) in an adjoining unit | – | 50 | Yes | – | – | 45 | – |
| Duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, that serves or passes through more than one sole-occupancy unit if the adjacent room is a habitable room (other than a kitchen) | – | 40 | – | – | – | – | – |
| Duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, that serves or passes through more than one sole-occupancy unit if the adjacent room is a kitchen or non-habitable room | – | 25 | – | – | – | – | – |

NOTES:

- Refer to General Information - Acoustics for:
- Explanation of various sound insulation terms.
 - Definition of discontinuous construction.
 - Sound insulation ratings of services.

Wet Areas

Wet areas as defined in NCC is an area within a building supplied with water from a water supply system and includes bathrooms, showers, laundries and sanitary compartments.

According to NCC, building elements in wet areas must be waterproof or water resistant depending on the location within a wet area and must comply with AS 3740 *Waterproofing of Domestic Wet Areas*.

INTRODUCTION

Thermal Insulation

Energy efficiency and thermal requirements for buildings are set out in the NCC and are dependent on many design factors such as geographical Climate Zones, solar absorptance, roof ventilation and construction of building elements. In this Multi-residential section, Knauf have not provided thermal performance of wall systems as described below. Thermal performance information can be made available by contacting our technical support services at tecassist@knauf.com.

Class 1 – Domestic separating walls

For internal residential separating wall system such as Knauf PartiWall system, there is no thermal requirement for separating between two habitable compartments, unless being specifically designed by the Architect or ESD Consultant.

Class 2 – Commercial Multi-residential separating walls.

For internal separating wall system in commercial multi-residential buildings such as IntRwall systems, thermal insulation may be required for each Sole-occupancy unit to comply with Green Star or NatHERS requirement. Consult with Architect or ESD Consultant.

Class 2 and 3

For conventional multi-residential construction, walls, roof and ceilings that form part of a building envelop of Class 2 and 3 must achieve the minimum R-values for various Climate Zones, as outlined in Table H8 below.

| TABLE H8: MINIMUM R VALUES FOR CLASS 2 & 3 BUILDINGS | | | | | |
|--|----------------------------------|--|---|---|---------|
| CLIMATE ZONE | EXAMPLE CITY | ROOF/CEILING CONSTRUCTION (DIRECTION OF HEAT FLOW) | INTERNAL FLOORS WITHOUT AN IN - SLAB HEATING OR COOLING SYSTEM (DIRECTION OF HEAT FLOW) | EXTERNAL WALLS (WHERE THE WALL IS 80% OR MORE OF WALL - GLAZING CONSTRUCTION) | |
| | | | | CLASS 2 COMMON AREAS | CLASS 3 |
| 1 | Darwin | 3.7 (down) | 2.0 (up) | 2.4 | 3.3 |
| 2 | Brisbane | 3.7 (down) | 2.0 (down and up) | 1.4 | 1.4 |
| 3 | Alice Springs | 3.7 (down) | 2.0 (down and up) | 1.4 | 3.3 |
| 4 | Broken Hill, Mildura | 3.7 (down) | 2.0 (down) | 1.4 | 2.8 |
| 5 | Sydney East, Adelaide, Perth | 3.7 (down) | 2.0 (down) | 1.4 | 1.4 |
| 6 | Melbourne, Sydney West, Ballarat | 3.2 (down) | 2.0 (down) | 1.4 | 2.8 |
| 7 | Canberra, Hobart | 3.7 (up) | 2.0 (down) | 1.4 | 2.8 |
| 8 | Mount Buller | 4.8 (up) | 3.5 (down) | 1.4 | 3.8 |

Notes to Tables H8

Refer to the NCC for:

- Full set of Deemed-to-Satisfy Energy Efficiency provisions
- NCC Volume 1 J4D4 Thermal requirement for roof and ceiling construction
- NCC Volume 1 Table J4D6a for minimum wall Total R-Value
- Definition of a building envelope for the purposes of thermal design
- Thermal construction compliance and installation requirements
- Adjustments of minimum R-values for roofs and ceilings to account for loss of ceiling insulation due to exhaust fans, flues, recessed downlights, etc
- Reduction of minimum R-value requirements for external walls to account for their thermal mass, orientation, shading and composition.
- "Wall glazing construction" means the combination of wall and glazing components comprising the envelope of a building, excluding display glazing and opaque non glazed openings such as doors, vents, penetrations and shutters
- Solar absorptance of the upper surface of a roof must not be more than 0.45 for Class 2 and 3 buildings in Climate Zones 1 to 7
- Thermal performance requirements for external walls of Class 2 sole occupancy units must be determined using house energy rating software with load limits as specified in the ABCB Standard for NatHERS Heating and Cooling Load Limits.
- The information shown is for reference only. Refer to ESD engineer or check with local building authorities for minimum insulation and thermal requirements.

INTRODUCTION – PARTIWALL®

MULTI-RESIDENTIAL SYSTEMS

PARTIWALL®

Description

Knauf PartiWall is a family of separating wall systems for Class 1 buildings.

Purpose-designed to suit Australian construction techniques, PartiWall is a twin stud wall system incorporating a 25 mm Shaftliner MouldStop plasterboard fire barrier within the wall cavity. Cavity insulation is placed on one or both sides of the wall as required to achieve stated acoustic ratings.

Shaftliner MouldStop panels are held in position by lightweight H-studs that are fixed to timber or steel framing on both sides with aluminium clips. In the case of fire, aluminium clips on the fire side will melt, while the Shaftliner MouldStop fire barrier is supported by, and provides protection to the structure on the opposite side.



Figure H1: PartiWall System PWT60.1



Figure H2: PartiWall System PWS60.1

Features and Benefits

- No wet trades required.
- No additional trades required at framing stage.
- Permits easy incorporation of services and service penetrations in internal linings without the need for fire treatment.
- Wall linings are installed at the plastering stage as per normal installation specifications.

NOTE

PartiWall system is designed to provide fire protection to the adjacent dwelling and not to dwellings above or below. As such, PartiWall system is not suitable for use in Class 2 or 3 buildings.

Design Options

PartiWall systems are available in three basic fire rated configurations:

TABLE H9: PARTIWALL SYSTEM TYPES

| SYSTEM TYPE | FIRE BARRIER | FRL |
|-------------------|--|----------|
| PWT60.1 / PWS60.1 | 1x25 mm Shaftliner MouldStop | 60/60/60 |
| PWT90.1 / PWS90.1 | 1x25 mm Shaftliner MouldStop + 1x16 mm FireStop | 90/90/90 |

All fire rated configurations are available with a wide range of outer linings, including hybrid linings with different impact and/or water resistance properties on each side of the wall.

All PartiWall systems listed in this manual achieve acoustic ratings equal to or exceeding R_w+C_{tr} 50 and provide acoustic impact isolation as defined in the NCC (Discontinuous Construction).

Timber and steel framed PartiWall systems have been listed in this manual.

Materials

Fire Barrier

- 25 mm Shaftliner MouldStop
- 16mm FireStop
- 25 mm H-studs
- Rondo 25 mm steel track
- PartiWall aluminium clips
- Knauf Firepack mineral wool packer.

Linings

- 10 mm / 13 mm SHEETROCK ONE
- 10 mm SHEETROCK PLUS
- 13 mm WetStop
- 13 mm ImpactStop
- 6 mm Villaboard fibre cement

PARTIWALL®

Insulation

- KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density
- KI 90G14 - 90 mm glasswool insulation 14 kg/m³ density
- KI 90G24 - 90 mm glasswool insulation 24 kg/m³ density.

Sealant

H.B. Fuller Firesound sealant.

Fasteners

Refer PartiWall brochure for fastener types used in construction of PartiWall system.

Design Considerations

Maximum Heights and Loads

- Overall height of Shaftliner MouldStop fire barrier must not exceed 12.0m using standard installation specifications. Special detailing can be adopted to permit PartiWall heights up to 15.0m maximum. Refer to Knauf for details.
- Spacing between aluminium clips supporting H-studs or I-studs must not exceed 3.0m vertically and 600 mm horizontally.
- Timber framing is to be designed for normal service conditions and must comply with AS 1684 *Residential Timber-Framed Construction*.
- Steel framing must be designed by a suitably qualified Structural Engineer to meet NCC requirements, and in accordance with AS 4600 Cold-formed steel structures and other relevant Australian Standards.
- PartiWall is suitable for wind classification N1 and N2 as determined by AS 4055 *Wind Loads for Housing*. Where PartiWall is proposed for higher wind classification areas contact Knauf for advice.

Fire Rating

- Linings in the occupancy areas do not need be fire rated and are constructed using the normal installation and finishing methods outlined in Knauf Plasterboard Installation Manual.
- Normal service penetrations are allowed through outer linings and are not required to be fire rated.
- Service penetrations through Shaftliner MouldStop fire barrier are allowed only in the roof space (refer PartiWall brochure for details of approved penetrations). There should be no other penetrations through the fire barrier.
- Use only the specified PartiWall aluminium clips to attach the H-studs or I-studs to framing members. Other than the clips, there should be no attachments to the fire barrier.

Acoustics

- All PartiWall systems outlined in this manual are covered by acoustical opinion RT&A TK778-21F01 from Acoustical Consultants Renzo Tonin & Associates.
- PartiWall satisfies NCC acoustic requirements for separating walls of $R_w + C_{tr}$ not less than 50 and acoustic impact isolation, and $R_w + C_{tr}$ not less than 25 and $R_w + C_{tr}$ not less than 40 acoustic separation of adjoining soil and waste pipes within the wall cavity. To maintain acoustic performance, service pipes must not be in contact with the Shaftliner MouldStop fire barrier.
- Small penetrations in outer linings (ie switches, power points, light fittings and pipes) do not need to be acoustically sealed, however Shaftliner MouldStop fire barrier base and internal lining junctions with floors must be sealed with H.B. Fuller Firesound sealant.
- Stair stringers and treads should be kept clear of the separating wall in order to reduce the likelihood of stair impact sound travelling through the wall.

Wet Areas

Wet areas (as defined in the NCC) must be waterproofed as per the wet area details contained in Knauf Installation Manual.

PartiWall Systems extending into wet areas must incorporate water resistant linings.

Installation

PartiWall system must be installed strictly in accordance with Knauf installation specifications in order to achieve design fire and acoustic ratings. Refer to PartiWall brochure for installation specifications.

To view the full range of system CAD details, scan QR code below.



INTRODUCTION – INTRWALL®

INTRWALL®

Description

IntRwall system is a non load-bearing separating wall system utilising 25 mm Shaftliner MouldStop plasterboard fire barrier with various configurations of outer linings on both sides. Cavity insulation is placed on one or both sides of the wall as required to achieve stated acoustic ratings.

Shaftliner MouldStop panels are held in position by light gauge steel or H-studs.

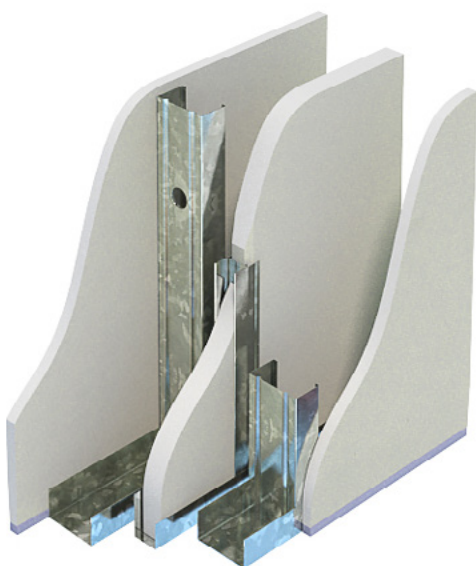


Figure H2: IntRwall System IW60.3

Features and Benefits

- A simple, panelised lightweight system that can be installed by a plastering contractor.
- All components are manually handled and do not require heavy lifting equipment.
- Easy inspection of acoustic and fire sealing.
- Services can be easily incorporated in the wall cavities.
- If required, the stud centres of the separate lipped stud rows can be reduced so that the system can be used in areas subject to higher than normal pressures.

Design Options

IntRwall systems are available in three primary configurations for intertenancy and corridor walls to achieve FRL -/60/60 from both sides and acoustic ratings up to $R_w + C_{tr}$ 54 with acoustic impact insulation.

Various IntRwall configurations represent different options in regard to the type and fixing of outer linings to suit acoustic performance and service cavity requirements.

Each configuration also provides a number of options in regard to moisture resistance of outer linings on one or both sides of the wall.

Materials

The following materials are used in Knauf IntRwall intertenancy and corridor wall systems:

Linings

- 25 mm Shaftliner MouldStop
- 16 mm FireStop (where required for overpartition and penetration details)
- 13 mm SHEETROCK ONE
- 13 mm WetStop
- 13 mm ImpactStop
- 6 mm Villaboard fibre cement.

Rondo Steel Components

- 25 mm H-stud
- 64 mm C-stud
- 35x35x0.70 mm angle.
- Deflection J-Track (PN 341)

Insulation

- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
- KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density
- KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density
- KI 90G14 - 90 mm glasswool insulation 14 kg/m³ density.

Sealants

- H.B. Fuller Firesound sealant.

Fasteners

Refer to Table A10 in Section A for fasteners used to fix plasterboard to steel framing.

INTRWALL®

Design Considerations

Fire Rating

- IntRwall intertenancy and corridor wall systems have been tested and subsequently assessed at CSIRO laboratories at North Ryde in Sydney. Refer to IntRwall tables for relevant fire reports for both intertenancy and corridor wall systems.
- Services penetrations in Shaftliner MouldStop fire barrier must be treated to maintain fire rating. Refer to Knauf for details.
- Services penetrations in non-fire resistant outer linings are not required to be fire rated.

Structural

The IntRwall system has been tested in Knauf NATA accredited laboratory and satisfies the requirements of the NCC Specification 6.

All intertenancy and corridor IntRwall systems meet NCC requirements for walls generally (max deflection $L/240 @ 250 \text{ Pa}$ lateral serviceability pressure).

For maximum heights of independent studs in IntRwall systems refer to Steel Stud Walls Lined One Side.

NOTE

In high-rise apartment construction, confirmation of internal design pressures should be obtained from the project Structural Engineer, especially where there are large openings such as sliding glass doors onto balconies. Consult Rondo for stud sizes, heights and spacing for design pressures other than those specified above.

Wet Areas

Wet Areas (as defined in the NCC) must be waterproofed as per the wet area details contained in Knauf Installation Manual.

IntRwall Systems extending into wet areas must incorporate water resistant linings.

Acoustics

The IntRwall system has been the subject of a series of acoustic tests at the CSIRO Acoustic Laboratory at Highett, Victoria.

All IntRwall systems outlined in this manual are covered by Acoustical Opinion TK778-21F01 from Acoustic Consultants Renzo Tonin & Associates.

IntRwall intertenancy wall systems with free standing framing on either side satisfy NCC Discontinuous Construction requirements where a separating wall must provide impact sound isolation.

If services (duct, soil, waste or water supply pipe) are to be located within an IntRwall system and the adjacent dwelling is a habitable room (other than a kitchen), minimum construction on the adjacent dwelling's side in order to achieve NCC acoustic isolation requirement of $R_w + C_{tr} 40$ must be as follows:

- Minimum 13 mm SHEETROCK ONE plasterboard (or heavier)
- 64 mm free-standing studs
- Minimum 20 mm gap between Shaftliner MouldStop barrier and free standing studs
- Minimum KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

All IntRwall systems achieve minimum $R_w + C_{tr} 25$ required for separation of services where the adjacent room is a kitchen or non-habitable room.

Limitations

- IntRwall is not suitable for use in lift shafts or in other applications where it would be subjected to cyclical loading.
- Independent studs must be checked for pressure and other imposed loads (including shelf loads) as determined by the Project Structural Engineer.
- Penetrations in Shaftliner MouldStop panels are only permitted when installed in accordance with relevant Knauf installation details. Contact Knauf for further information.

Installation

IntRwall system must be installed strictly in accordance with Knauf installation specifications in order to achieve design fire and acoustic ratings. Refer to Knauf IntRwall installation details for further information.

To view the full range of system CAD details, scan QR code below.



INTRODUCTION - MULTIFRAME™

MULTIFRAME™

Description

Multiframe™ is a family of timber framed wall and ceiling systems satisfying NCC Fire Resistance and Acoustic requirements for low rise multi-residential buildings Class 2 and 3 (refer to NCC for height restrictions for timber framed Multi-Residential buildings).

Design Options

Multiframe includes a range of wall and ceiling systems as outlined below. Refer the relevant sections of this manual for configurations and acoustic ratings of various systems.

TABLE H10: SEPARATING WALLS

| SYSTEM TYPE | NON LOAD-BEARING FRL | LOAD-BEARING FRL |
|-------------|----------------------|------------------|
| TT60.6 | -/60/60 | 60/60/60 |
| TT90.1 | -/90/90 | 90/90/90 |
| TT120.1 | -/120/120 | 120/120/120 |

TABLE H11: CORRIDOR WALLS

| SYSTEM TYPE | NON LOAD-BEARING FRL | LOAD-BEARING FRL |
|-------------|----------------------|------------------|
| TT60.6 | -/60/60 | 60/60/60 |
| TT90.1 | -/90/90 | 90/90/90 |
| TF90.1 | -/90/90 | 90/90/90 |
| TF120.1 | -/120/120 | 120/120/120 |

TABLE H12: LOAD-BEARING INTERNAL WALLS

| SYSTEM TYPE | NON LOAD-BEARING FRL | LOAD-BEARING FRL |
|-------------|----------------------|------------------|
| TB90.1 | -/90/90 | 90/90/90 |
| TB120.1 | -/120/120 | 120/120/120 |

TABLE H13: EXTERNAL WALLS - BRICK VENEER

| SYSTEM TYPE | FRL FORM INSIDE | FRL FROM OUTSIDE |
|-------------|-----------------|---------------------------------|
| BVT.1 | -/-/- | Brick veneer FRL as req'd |
| BVT30.1 | 30/30/30 | Brick veneer FRL 30/30/30 |
| BVT60.1 | 60/60/60 | Brick veneer FRL 60/60/60 |
| BVT90.1 | 90/90/90 | Brick veneer FRL 90/90/90 |
| BVT120.1 | 120/120/120 | Brick veneer FRL 120/120/120 |

TABLE H14: FLOOR/CEILINGS

| SYSTEM TYPE | FRL FROM BELOW | RISF |
|-------------|----------------|--------|
| CT60.1 | 60/60/60 | 30 min |
| CT60.2 | 60/60/60 | 60 min |
| CT90.1 | 90/90/90 | 60 min |

Features and Benefits

- Cost effective (independent costings are available from Aquenta Consulting)
- Lightweight
- Comprehensive solution (full range of systems to meet NCC requirements)
- Ease of incorporating Knauf thermal and acoustic insulation.

Materials

Refer to the relevant sections of this manual for materials used in Multiframe wall and ceiling systems.

Design Considerations

Fire Rating

Charfactor - Load Bearing Walls

Where relevant load bearing timber framed wall systems are assigned a Charfactor number (CF) to assist Engineers to determine load bearing capacity of timber studs under fire condition. Refer to section D for systems information and Charfactor Design Tables

Insulation Materials

Knauf glasswool insulation satisfies the requirement for non-combustible insulation in fire rated walls in timber framed Class 2 and 3 buildings.

Fire Rated Walls under Ceilings

Where in accordance with NCC a fire rated wall can terminate at the underside of the ceiling with Resistance to Incipient Spread of Fire (RISF) of not less than 60 min, Knauf ceiling systems with 1x13 mm FireStop plasterboard + 1x16 mm FireStop plasterboard satisfy this requirement.

Penetrations

Penetrations in a fire rated system must be treated strictly in accordance with relevant test reports and approved installation details in order to maintain the system's Fire Resistance Level.

Where components by others are specified in Knauf fire rated penetration details (ie. dampers, GPOs, fire collars, etc), such components must be installed in accordance with the manufacturer's specifications. It is the responsibility of the component manufacturer to ensure that the fire rating performance of the system is not affected.

MULTIFRAME™

Acoustics

Structural Flanking

One of the main flanking routes occurs around the wall and floor structure as shown in Figure H3. These routes particularly apply to walls and floors between sole occupancy units but may also apply to external and internal walls within the sole-occupancy unit.

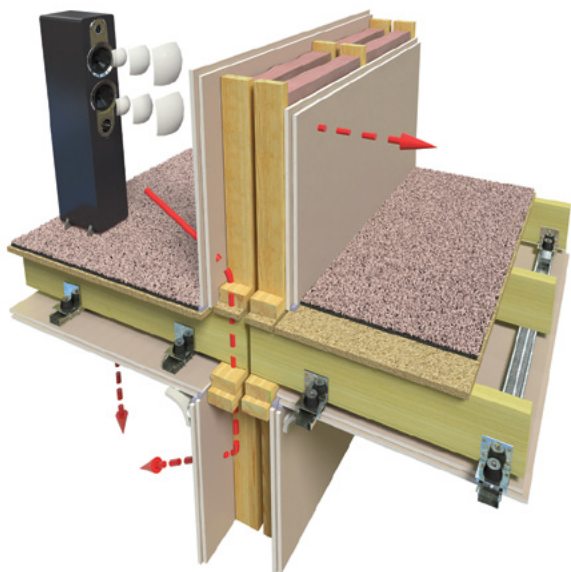


Figure H3: Flanking and Airborne Noise Pathways Through Floor/Wall Junction

A recommended solution to minimise structural flanking at wall floor intersections is to fix plasterboard linings to timber studs via 28 mm furring channels with resilient mounts.

Rondo STWC Sound Isolation Mounts fixed to every stud @ 1200 mm max vertical ctrs

One or two layers of Knauf plasterboard fixed to Furring Channels. Plasterboard thickness and type selected as required to achieve required fire and/or acoustic performance

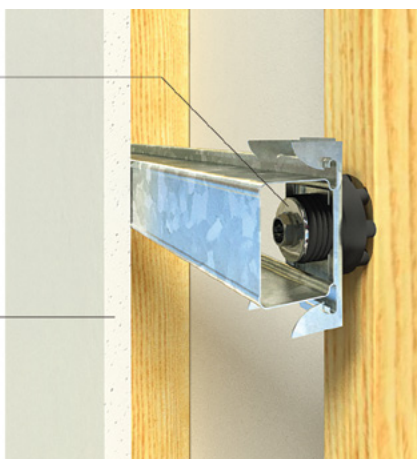


Figure H4: Furred Lining With Sound Isolation Mounts

NOTE:

Sound Isolation Mounts may be required to both sides of wall system. Refer to the project Acoustic Consultant for advice on appropriate detailing for flanking sound control.

Floors

The floor systems in this manual are provided with three types of floor coverings; bare timber floor with or without acoustic underlay, carpet and underlay, and ceramic floor tiles with or without acoustic underlay. These floor coverings, in combination with the specified acoustic underlays/mounts and fire rated ceilings underneath, contribute to the overall acoustic performance of the system in order to achieve the minimum acoustic provisions of the NCC.

Consideration should be given to the possibility of occupants changing floor coverings from one type to another that may affect the acoustic performance of the total system. For instance, replacing carpet with timber or another type of floor covering (eg tiles, linoleum), may result in a reduction in acoustic performance that no longer meets the minimum acoustic provisions of the NCC.

Appliances

Noise producing appliances such as dishwashers, clothes dryers, washing machines and pumps should not be affixed to separating walls or should be isolated from the structure with resilient mountings and flexible service leads and connections.

Recessed Light Fittings, Electrical Outlets and Service Pipe Penetrations

Penetrations in fire rated separating walls and ceilings such as recessed light fittings, electrical outlets and supply and return air grilles must themselves be fire rated. The associated detailing of these penetrations for fire rating purposes will also provide an adequate acoustic seal ensuring that the acoustic integrity of the system is maintained.

MULTIFRAME™

Sound Isolation Within Roof Space

In accordance with the NCC, where a wall required to have a minimum sound insulation performance has a roof above, the wall must continue to:

- the underside of the roof or
- a ceiling that provides the sound insulation required for the wall.

Where option (b) is adopted, the ceiling must be designed to ensure that the acoustic rating of over partition flanking path matches the performance of the wall.

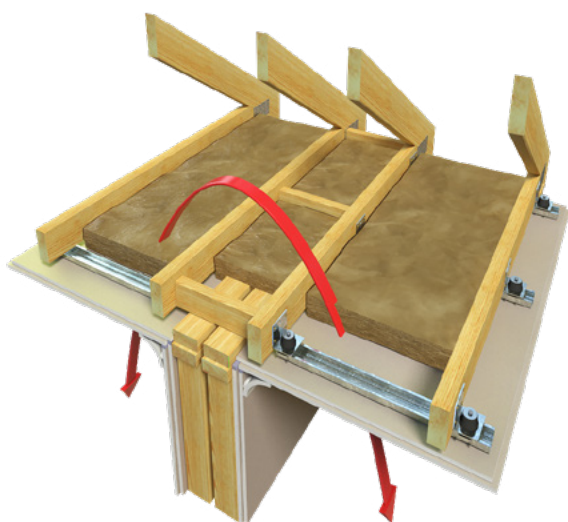


Figure H5: Sound Isolation in Roof Space

The following ceiling treatment is required to achieve over partition acoustic rating of R_w+C_{tr} 50 where separating wall terminates at the ceiling:

- The minimum ceiling lining is 1x13 mm FireStop + 1x16 mm FireStop (FRL 60/60/60, RISF 60 min).
- Insulation must be laid over the entire ceiling either side of the wall and must be either minimum KI 90G14 - 90 mm glasswool insulation 14 kg/m³ density or minimum KI 145G R3.0 - R3.0 Knauf Insulation Ceiling Batts.
- The plasterboard ceiling must not be continuous over the separating wall.
- In the case where ceiling members/roof trusses run perpendicular over the party wall, the ceiling on both sides must be fixed via 28 mm furring channels on Rondo STWC Sound Isolation Mounts or Embelton Ceiling Isolation Hangers to minimise the effects of flanking sound.
- Ceiling penetrations such as A/C ducts and recessed light fittings are required to be fire rated. The associated detailing will provide adequate acoustic seal ensuring that the acoustic integrity of the system is maintained.

Additional treatments will be required for separating walls with specified acoustic performance above R_w+C_{tr} 50. Contact Knauf for further advice.

Structural

Design Loads

Multiframe™ fire rated and acoustic systems are heavier than regular internal partitions and ceilings due to the use of specialised plasterboard linings and other components (ie insulation and furring channels). This increase in weight, together with the weight of the timber framing, must be taken into account when determining dead loads on Multiframe™ systems and supporting structure.

Refer General Information – Materials for weights of various Knauf plasterboard products.

Wet Areas

Wet Areas (as defined in the NCC) must be waterproofed as per the Wet Areas details contained in Knauf Installation Manual and in the Knauf online CAD Finder.

Multiframe wall systems extending into Wet Areas must incorporate water resistant linings.

Installation

Refer to the Knauf online CAD Finder installation instructions for various Multiframe systems.



Services Separation

MULTIFRAME™

As demonstrated in Table H17, fire rated linings of Knauf Multiframe™ systems incorporating lagged or unlagged pipes meet or exceed the minimum NCC requirement of $R_w + C_{tr}$ 25 and $R_w + C_{tr}$ 40 respectively:

| TABLE H15: $R_w + C_{tr}$ ACOUSTIC RATINGS OF KNAUF MULTIFRAME™ PLASTERBOARD LININGS | | |
|--|----------------|-------------------|
| PLASTERBOARD LINING CONFIGURATION | UNLAGGED PIPES | LAGGED/CLAD PIPES |
| 1x16 mm FireStop | 30 | 40 |
| 1x16 mm FireStop + 1x10 mm SHEETROCK ONE | 32 | 42 |
| 2x13 mm FireStop | 33 | 42 |
| 1x13 mm FireStop + 1x16 mm FireStop | 34 | 42 |

- For lagged and clad pipes, any insulation that is listed as part of the system assembly is acceptable.
 - Acoustic ratings based on pipe lagged and clad with Soundlag 4525C from Pyrotek Noise Control or similar.

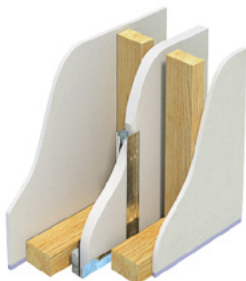
Designers should be aware of the reduction in acoustic performance of wall and ceiling linings due to penetrations such as downlights, exhaust grills, etc. Acoustic advice should be sought from an experienced Acoustician on minimising any reduction in acoustic performance due to penetrations in the wall or ceiling lining.

PARTIWALL®

PWT60.1

FIRE RESISTANCE LEVEL
LB 60/60/60
 FROM BOTH SIDES

FRL Basis: FCO-3359



SYSTEM DESCRIPTION

Side 1:

- Lining (refer to table)
- Timber framing
- 20 mm min gap between timber frame and fire barrier
- Insulation (refer to table)

Fire Barrier:

- 1x25 mm SHAFTLINER MOULDSTOP between 25 mm H-studs @ 600 mm ctrs

Side 2:

- Lining (refer to table)
- Timber framing
- 20 mm min gap between timber frame and fire barrier
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TK778-26F01

DISCONTINUOUS CONSTRUCTION

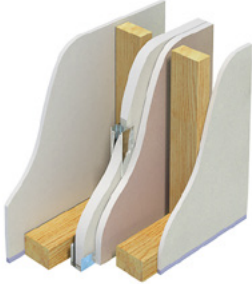
| SYSTEM | SIDE 1 | | SIDE 2 | | Insulation (both cavities) | Nom. Wall Width (mm) | R _w (R _w +C _{tr}) |
|----------|------------------------|--------------------|------------------------|--------------------|-------------------------------|----------------------|---|
| | LINING | STUD SIZE (GAP) mm | LINING | STUD SIZE (GAP) mm | | | |
| PWT60.1A | 1x10 mm SHEETROCK PLUS | 70(40) | 1x10 mm SHEETROCK PLUS | 70(40) | KI 90G14 | 265 | 63(50) |
| | 1x10 mm SHEETROCK PLUS | 90(20) | 1x10 mm SHEETROCK PLUS | 90(20) | | | |
| PWT60.1D | 1x13 mm SHEETROCK ONE | 70(40) | 1x13 mm SHEETROCK ONE | 70(40) | KI 90G14 | 271 | 63(50) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x13 mm SHEETROCK ONE | 90(20) | | | |
| PWT60.1E | 1x13 mm SHEETROCK ONE | 70(40) | 1x13 mm WETSTOP | 70(40) | KI 90G11 | 271 | 63(50) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWT60.1F | 1x13 mm SHEETROCK ONE | 70(40) | 1x6 mm VILLABOARD | 70(40) | KI 90G14 | 264 | 63(50) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |
| PWT60.1G | 1x13 mm WETSTOP | 70(40) | 1x13 mm WETSTOP | 70(40) | KI 90G11 | 271 | 62(50) |
| | 1x13 mm WETSTOP | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWT60.1H | 1x13 mm IMPACTSTOP | 70(20) | 1x13 mm IMPACTSTOP | 70(20) | KI 90G11 (one cavity only) | 231 | 65(52) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x13 mm IMPACTSTOP | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x13 mm IMPACTSTOP | 90(20) | | | |
| PWT60.1I | 1x13 mm IMPACTSTOP | 70(20) | 1x13 mm WETSTOP | 70(20) | KI 90G11 (one cavity only) | 231 | 60(50) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x13 mm WETSTOP | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWT60.1J | 1x13 mm IMPACTSTOP | 70(20) | 1x6 mm VILLABOARD | 70(20) | KI 90G11 (one cavity only) | 224 | 60(50) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x6 mm VILLABOARD | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |
| PWT60.1Q | 1x6 mm VILLABOARD | 70(40) | 1x6 mm VILLABOARD | 70(40) | KI 90G11 | 257 | 63(50) |
| | 1x6 mm VILLABOARD | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |

* KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density
 KI 90G14 - 90 mm glasswool insulation 14 kg/m³ density

PWT90.1

FIRE RESISTANCE LEVEL
LB 90/90/90
 FROM BOTH SIDES

FRL Basis: FC16905-01-1

**SYSTEM DESCRIPTION****Side 1:**

- Lining (refer to table)
- Timber framing
- 20 mm min gap between timber frame and fire barrier
- Insulation (refer to table)

Fire Barrier:

- 1x25 mm SHAFTLINER MOULDSTOP between 25 mm H-studs @ 600 mm ctrs + 1x16 mm FIRESTOP direct laminated to SHAFTLINER MOULDSTOP

Side 2:

- Lining (refer to table)
- Timber framing
- 20 mm min gap between timber frame and fire barrier
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TK778-26F01**DISCONTINUOUS CONSTRUCTION**

| SYSTEM | SIDE 1 | | SIDE 2 | | Insulation (both cavities) | Nom. Wall Width (mm) | R _w (R _w +C _{tr}) |
|----------|------------------------|--------------------|------------------------|--------------------|----------------------------|----------------------|---|
| | LINING | STUD SIZE (GAP) mm | LINING | STUD SIZE (GAP) mm | | | |
| PWT90.1A | 1x10 mm SHEETROCK PLUS | 70(20) | 1x10 mm SHEETROCK PLUS | 70(20) | KI 90G11 | 241 | 63(50) |
| | 1x10 mm SHEETROCK PLUS | 70(40) | 1x10 mm SHEETROCK PLUS | 70(40) | KI 90G11 | 281 | 64(52) |
| | 1x10 mm SHEETROCK PLUS | 90(20) | 1x10 mm SHEETROCK PLUS | 90(20) | | | |
| PWT90.1E | 1x13 mm SHEETROCK ONE | 70(40) | 1x13 mm SHEETROCK ONE | 70(40) | KI 90G11 | 287 | 69(55) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x13 mm SHEETROCK ONE | 90(20) | | | |
| PWT90.1F | 1x13 mm SHEETROCK ONE | 70(40) | 1x13 mm WETSTOP | 70(40) | KI 90G11 | 284 | 70(57) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWT90.1G | 1x13 mm SHEETROCK ONE | 70(40) | 1x6 mm VILLABOARD | 70(40) | KI 90G11 | 277 | 70(57) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |
| PWT90.1I | 1x13 mm IMPACTSTOP | 70(20) | 1x13 mm IMPACTSTOP | 70(20) | KI 90G11 (one cavity only) | 287 | 66(54) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x13 mm IMPACTSTOP | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x13 mm IMPACTSTOP | 90(20) | | | |
| PWT90.1K | 1x13 mm IMPACTSTOP | 70(20) | 1x13 mm WETSTOP | 70(20) | KI 90G11 (one cavity only) | 280 | 65(55) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x13 mm WETSTOP | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWT90.1L | 1x13 mm IMPACTSTOP | 70(20) | 1x6 mm VILLABOARD | 70(20) | KI 90G11 (one cavity only) | 287 | 61(52) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x6 mm VILLABOARD | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |
| PWT90.1R | 1x6 mm VILLABOARD | 70(40) | 1x6 mm VILLABOARD | 70(40) | KI 90G11 | 273 | 66(53) |
| | 1x6 mm VILLABOARD | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |

* KI 90G11- 90 mm glasswool insulation 11 kg/m³ density

PWT90.1 systems require 16 mm FIRESTOP to be laminated at the floor plenum and roof void on the opposite side of the SHAFTLINER MOULDSTOP Fire Barrier. Refer to Knauf for details.

PARTIWALL®

PWS60.1

FIRE RESISTANCE LEVEL
LB 60/60/60
 FROM BOTH SIDES

FRL Basis: FCO-3359



SYSTEM DESCRIPTION

Side 1:

- Lining (refer to table)
- Steel framing
- 20 mm min gap between steel frame and fire barrier
- Insulation (refer to table)

Fire Barrier:

- 1x25 mm SHAFTLINER MOULDSTOP between 25 mm H-studs @ 600 mm ctrs

Side 2:

- Lining (refer to table)
- Steel framing
- 20 mm min gap between steel frame and fire barrier
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TK778-26F01

DISCONTINUOUS CONSTRUCTION

| SYSTEM | SIDE 1 | | SIDE 2 | | Insulation (both cavities) | Nom. Wall Width (mm) | R _w (R _w +C _{tr}) |
|----------|------------------------|--------------------|------------------------|--------------------|----------------------------|----------------------|---|
| | LINING | STUD SIZE (GAP) mm | LINING | STUD SIZE (GAP) mm | | | |
| PWS60.1A | 1x10 mm SHEETROCK PLUS | 70(40) | 1x10 mm SHEETROCK PLUS | 70(40) | KI 90G14 | 265 | 63(50) |
| | 1x10 mm SHEETROCK PLUS | 90(20) | 1x10 mm SHEETROCK PLUS | 90(20) | | | |
| PWS60.1D | 1x13 mm SHEETROCK ONE | 70(40) | 1x13 mm SHEETROCK ONE | 70(40) | KI 90G14 | 271 | 63(50) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x13 mm SHEETROCK ONE | 90(20) | | | |
| PWS60.1E | 1x13 mm SHEETROCK ONE | 70(40) | 1x13 mm WETSTOP | 70(40) | KI 90G11 | 271 | 63(50) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWS60.1F | 1x13 mm SHEETROCK ONE | 70(40) | 1x6 mm VILLABOARD | 70(40) | KI 90G14 | 264 | 63(50) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |
| PWS60.1G | 1x13 mm WETSTOP | 70(40) | 1x13 mm WETSTOP | 70(40) | KI 90G11 | 271 | 62(50) |
| | 1x13 mm WETSTOP | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWS60.1H | 1x13 mm IMPACTSTOP | 70(20) | 1x13 mm IMPACTSTOP | 70(20) | KI 90G11 (one cavity only) | 231 | 65(52) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x13 mm IMPACTSTOP | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x13 mm IMPACTSTOP | 90(20) | | | |
| PWS60.1I | 1x13 mm IMPACTSTOP | 70(20) | 1x13 mm WETSTOP | 70(20) | KI 90G11 (one cavity only) | 231 | 60(50) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x13 mm WETSTOP | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWS60.1J | 1x13 mm IMPACTSTOP | 70(20) | 1x6 mm VILLABOARD | 70(20) | KI 90G11 (one cavity only) | 224 | 60(50) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x6 mm VILLABOARD | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |
| PWS60.1Q | 1x6 mm VILLABOARD | 70(40) | 1x6 mm VILLABOARD | 70(40) | KI 90G11 | 257 | 63(50) |
| | 1x6 mm VILLABOARD | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |

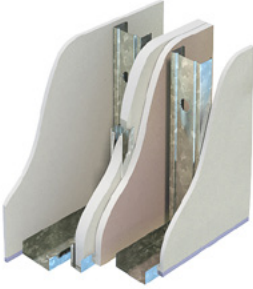
* KI 90G11- 90 mm glasswool insulation 11 kg/m³ density

* KI 90G14- 90 mm glasswool insulation 14 kg/m³ density

PWS90.1

FIRE RESISTANCE LEVEL
LB 90/90/90
 FROM BOTH SIDES

FRL Basis: FCO-16905-01-1



SYSTEM DESCRIPTION

Side 1:

- Lining (refer to table)
- Steel framing
- 20 mm min gap between steel frame and fire barrier
- Insulation (refer to table)

Fire Barrier:

- 1x25 mm SHAFTLINER MOULDSTOP between 25 mm H-studs @ 600 mm ctrs + 1x16 mm FIRESTOP laminated to SHAFTLINER MOULDSTOP @ 400 ctrs

Side 2:

- Lining (refer to table)
- Steel framing
- 20 mm min gap between steel frame and fire barrier
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TK778-26F01

DISCONTINUOUS CONSTRUCTION

| SYSTEM | SIDE 1 | | SIDE 2 | | Insulation (both cavities) | Nom. Wall Width (mm) | R _w (R _w +C _{tr}) |
|----------|------------------------|--------------------|------------------------|--------------------|----------------------------|----------------------|---|
| | LINING | STUD SIZE (GAP) mm | LINING | STUD SIZE (GAP) mm | | | |
| PWS90.1A | 1x10 mm SHEETROCK PLUS | 70(20) | 1x10 mm SHEETROCK PLUS | 70(20) | KI 90G11 | 241 | 63(50) |
| | 1x10 mm SHEETROCK PLUS | 70(40) | 1x10 mm SHEETROCK PLUS | 70(40) | KI 90G11 | 281 | 64(52) |
| | 1x10 mm SHEETROCK PLUS | 90(20) | 1x10 mm SHEETROCK PLUS | 90(20) | | | |
| PWS90.1E | 1x13 mm SHEETROCK ONE | 70(40) | 1x13 mm SHEETROCK ONE | 70(40) | KI 90G11 | 287 | 69(55) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x13 mm SHEETROCK ONE | 90(20) | | | |
| PWS90.1F | 1x13 mm SHEETROCK ONE | 70(40) | 1x13 mm WETSTOP | 70(40) | KI 90G11 | 284 | 70(57) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x13 mm WETSTOP | 90(20) | | | |
| PWS90.1G | 1x13 mm SHEETROCK ONE | 70(40) | 1x6 mm VILLABOARD | 70(40) | KI 90G11 | 277 | 70(57) |
| | 1x13 mm SHEETROCK ONE | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |
| PWS90.1I | 1x13 mm IMPACTSTOP | 70(20) | 1x13 mm IMPACTSTOP | 70(20) | KI 90G11 | 247 | 66(54) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x13 mm IMPACTSTOP | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x13 mm IMPACTSTOP | 90(20) | KI 90G11 (one cavity only) | 287 | 62(50) |
| PWS90.1K | 1x13 mm IMPACTSTOP | 70(20) | 1x13 mm WETSTOP | 70(20) | KI 90G11 | 247 | 65(55) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x13 mm WETSTOP | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x13 mm WETSTOP | 90(20) | KI 90G11 (one cavity only) | 280 | 61(52) |
| PWS90.1L | 1x13 mm IMPACTSTOP | 70(20) | 1x6 mm VILLABOARD | 70(20) | KI 90G11 | 240 | 65(55) |
| | 1x13 mm IMPACTSTOP | 70(40) | 1x6 mm VILLABOARD | 70(40) | | | |
| | 1x13 mm IMPACTSTOP | 90(20) | 1x6 mm VILLABOARD | 90(20) | KI 90G11 (one cavity only) | 287 | 61(52) |
| PWS90.1R | 1x6 mm VILLABOARD | 70(40) | 1x6 mm VILLABOARD | 70(40) | KI 90G11 | 273 | 66(53) |
| | 1x6 mm VILLABOARD | 90(20) | 1x6 mm VILLABOARD | 90(20) | | | |

* KI 90G11- 90 mm glasswool insulation 11 kg/m³ density

NOTE:

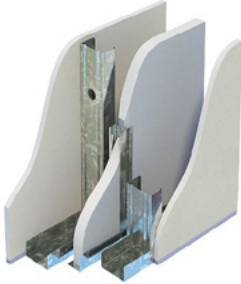
PWS90.1 requires additional 16 mm FIRESTOP to be laminated at the floor plenum and roof void on the opposite side of the SHAFTLINER MOULDSTOP Fire Barrier, as per the installation procedure

INTRWALL® SEPARATING WALLS

IW60.3

FIRE RESISTANCE LEVEL
NLB -/60/60
 FROM BOTH SIDES

FRL Basis: FCO-3367

**SYSTEM DESCRIPTION****Side 1:**

- Lining (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- Gap between C-studs and fire barrier (refer to table)
- Insulation (refer to table)

Fire Barrier:

- 1x25 mm SHAFTLINER MOULDSTOP between 25 mm H-studs @ 600 mm ctrs

Side 2:

- Lining (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- Gap between C-studs and fire barrier (refer to table)
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TK778-21F01

DISCONTINUOUS CONSTRUCTION

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH (Gaps Side 1 / Side 2) mm | INSULATION* | R _w (R _w +C _{tr}) |
|---------|-----------------------|-----------------------|--|--------------------------|---|
| IW60.3A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 271(46/46) | KI 90G14 (both cavities) | 65(50) |
| IW60.3D | 1x13 mm WETSTOP | 1x13 mm WETSTOP | 251(36/36) | KI 90G11 (both cavities) | 67(52) |
| IW60.3F | 1x13 mm SHEETROCK ONE | 1x13 mm WETSTOP | 251(36/36) | KI 90G11 (both cavities) | 66(51) |
| IW60.3N | 1x13 mm SHEETROCK ONE | 1x6 mm VILLABOARD | 244(36/36) | KI 90G11 (both cavities) | 65(50) |
| IW60.3V | 1x13 mm IMPACTSTOP | 1x13 mm IMPACTSTOP | 219(20/20) | KI 75G11 (both cavities) | 66(51) |
| IW60.3W | 1x13 mm IMPACTSTOP | 1x13 mm WETSTOP | 239(30/30) | KI 90G11 (both cavities) | 67(52) |
| IW60.3X | 1x13 mm IMPACTSTOP | 1x6 mm VILLABOARD | 232(30/30) | KI 90G11 (both cavities) | 67(51) |

* KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density
 KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density
 KI 90G14 - 90 mm glasswool insulation 14 kg/m³ density

NOTE:

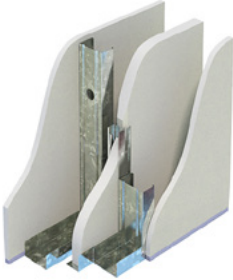
Non-fire rated linings permitted to terminate at or above ceiling level for IW60.3 provided that 16 mm FIRESTOP is laminated to one side of the SHAFTLINER MOULDSTOP barrier in accordance with the Knauf overpartition detail. Refer to Knauf for details.

INTRWALL® CORRIDOR WALLS

IW60.4

FIRE RESISTANCE LEVEL
NLB -/60/60
FROM BOTH SIDES

FRL Basis: FCO-3367



SYSTEM DESCRIPTION

Side 1:

- Lining (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- Gap between C-studs and fire barrier (refer to table)
- Insulation (refer to table)

Fire Barrier:

- 1x25 mm SHAFTLINER MOULDSTOP between 25 mm H-studs @ 600 mm ctrs

Side 2:

- Lining (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- Gap between C-studs and fire barrier (refer to table)
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TK778-21F01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH (Gaps Side 1 / Side 2) mm | INSULATION* | R _w (R _w +C _{tr}) |
|---------|-----------------------|-----------------------|--|--------------------------|---|
| IW60.4A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 199(20/0) | KI 50G11 (side 1 cavity) | 51(37) |
| IW60.4B | 1x13 mm SHEETROCK ONE | 1x13 mm WETSTOP | 199(20/0) | KI 50G11 (side 1 cavity) | 55(41) |
| IW60.4C | 1x13 mm SHEETROCK ONE | 1x6 mm VILLABOARD | 192(20/0) | KI 50G11 (side 1 cavity) | 55(41) |
| IW60.4J | 1x6 mm VILLABOARD | 1x6 mm VILLABOARD | 185(20/0) | KI 50G11 (side 1 cavity) | 56(43) |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

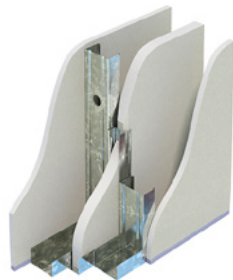
NOTE:

Non-fire rated linings permitted to terminate at or above ceiling level for IW60.4 provided that 16 mm FIRESTOP is laminated to Side 1 of the SHAFTLINER MOULDSTOP barrier in accordance with the Knauf overpartition detail. Refer to Knauf for details.

IW60.5

FIRE RESISTANCE LEVEL
NLB -/60/60
FROM BOTH SIDES

FRL Basis: FCO-3367



SYSTEM DESCRIPTION

Side 1:

- Lining (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- Gap between C-studs and fire barrier (refer to table)
- Insulation (refer to table)

Fire Barrier:

- 1x25 mm SHAFTLINER MOULDSTOP between 25 mm H-studs @ 600 mm ctrs

Side 2:

- Lining (refer to table)
- 64 mm C-studs @ 600 mm ctrs
- Gap between C-studs and fire barrier (refer to table)
- Insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TK778-21F01

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH (Gaps Side 1 / Side 2) mm | INSULATION* | R _w (R _w +C _{tr}) |
|---------|-----------------------|-----------------------|--|--------------------------|---|
| IW60.5A | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE | 179(0/0) | KI 50G11 (side 1 cavity) | 51(37) |
| IW60.5C | 1x13 mm SHEETROCK ONE | 1x6 mm VILLABOARD | 172(0/0) | KI 50G11 (side 1 cavity) | 52(38) |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

NOTE:

Non-fire rated linings must extend full height to the underside of the concrete slab above. Linings are not permitted to terminate at ceiling level for IW60.5.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

Section I

Specialty Systems

10/2025

SPECIALTY SYSTEMS

Click on the links below to navigate to page

- I 2 Introduction
- I 10 Services Shafts
 - I 10 Shaftwall
 - I 11 Ventshaft
- I 12 Cross Laminated Timber (CLT)
- I 25 Column Protection
- I 28 Beam Protection
- I 29 Fire Tunnel
- I 30 Soil & Waste Pipe



INTRODUCTION

The following Knauf Specialty Systems are outlined in this manual:

- Services Shafts
 - Shaftwall
 - Ventshaft
- Cross Laminated Timber (CLT)
- Column and Beam Protection
- Fire Tunnel
- Soil & Waste Pipe Systems

SERVICES SHAFTS

NCC Requirements

Fire Rating

- Refer to Multi-Residential section for fire rating requirements for services shafts in Class 2 and 3 buildings.
- Refer to NCC for fire ratings requirements for services shafts in other Classes of buildings.

Acoustics

- Refer Multi-residential section for NCC requirements for ducts, soil, waste and water supply pipes.

Structural

Refer to NCC for structural requirements for services shafts.



SHAFTWALL

Description

Shaftwall systems utilise 25 mm Shaftliner MouldStop friction fit between Rondo CH-Studs, and FireStop plasterboard screw fixed on one or both sides of the wall.

Most Shaftwall systems outlined in this manual can be fully constructed from one side and can be used for enclosure of services shafts.

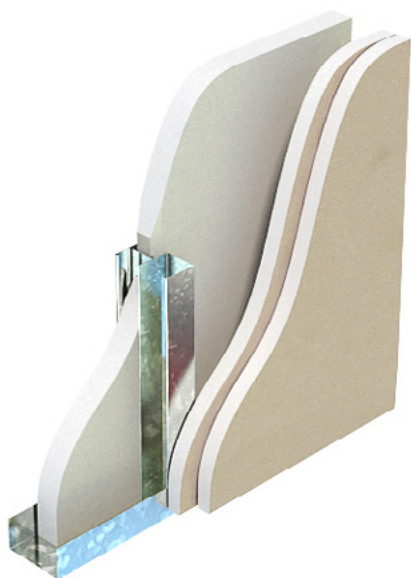


Figure 11: Shaftwall

Design Options

Shaftwall systems are available with various configurations of FireStop linings achieving Fire Resistance Levels up to -/120/120 from both sides and acoustic ratings up to R_w 52 ($R_w + C_{tr}$ 42).

A number of stud sizes and thicknesses are available allowing construction of some Shaftwall systems up to 5.5 m (refer to Shaftwall Maximum Wall Heights table).

Materials

Plasterboard Linings

- 25 mm Shaftliner MouldStop
- 13 mm FireStop
- 16 mm FireStop
- 16 mm MultiStop ONE

Steel Sections

The following Rondo steel sections are utilised in Shaftwall systems:

TABLE 11: RONDO SHAFTWALL COMPONENTS

| SECTION TYPE & SIZE | SECTION SIZE | BASE METAL THICKNESS |
|---------------------|------------------|----------------------|
| CH-stud | 64 mm and 102 mm | 0.55 mm and 0.90 mm |
| E-stud | 64 mm and 102 mm | 0.55 mm and 0.90 mm |
| J-track | 64 mm and 102 mm | 0.80 mm |
| Deflection track | 64 mm and 102 mm | 0.80 mm |



Figure 12: CH-Stud

Insulation

- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density.

Screws

Refer to General Information — Materials section for plasterboard screw types.

Sealants and Packers

- H.B. Fuller Firesound™ sealant
- IBS intumescent rod.

SHAFTWALL

Design Considerations

- Refer to NCC for performance requirements for services shafts.
- Refer to Knauf Shaftwall brochure for Shaftwall design considerations.

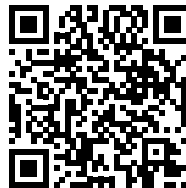
Notes to Shaftwall Height Tables:

- Symbols:
 - d = deflection limits
 - h = head track capacity limits
 - f = fire height limits.
- Minimum yield stress of steel sections to be 270 MPa.
- Deflection limit is height/240 to a maximum of 20 mm for CH-studs.
- Wall heights tabled are for single length studs at maximum centres shown.
- Wall heights tabled are not for axial loads but include self-weight and lateral pressures stated.
- Wall heights tabled are not applicable to steel lipped C-studs.

- Shelf loading is not permitted for tabulated maximum wall heights. Refer Knauf for maximum heights with shelf loadings.
- Tabulated heights are for internal walls only.
- All plasterboard is to be manufactured by Knauf.
- Walls are to be constructed with FireStop plasterboard to Knauf standard Shaftwall fire rated wall details as appropriate.
- For fire service 50 Pa pressure assumed. Where pressures are >50 Pa and fire loadings are likely to be coincident, Knauf should be consulted.
- Framing components and connections must be suitably designed by the project structural engineer in accordance with AS 1170.4 Earthquake Actions and other relevant Standards for use in seismic applications.

Installation

Refer to Knauf Shaftwall brochure or online CAD Finder for systems installation instructions and details.



VENTSHAFT

Description

Ventshaft is a family of laminated wall systems utilising 25 mm Shaftliner MouldStop and FireStop plasterboard.

Some Ventshaft systems outlined in this manual incorporate free-standing steel or timber stud wall with 10 mm SHEETROCK ONE plasterboard lining.

Ventshaft systems can be fully constructed from one side and are suitable for enclosure of services shafts.



Figure 13: Ventshaft

Design Options

Ventshaft systems are available in Fire Resistance Levels up to -/120/120 from both sides and acoustic ratings up to R_w 53 (R_w + C_{tr} 45).

Materials

Plasterboard Linings

- 25 mm Shaftliner MouldStop
- 13 mm FireStop
- 16 mm FireStop

Steel Sections

- 35 mm x 35 mm galv angle 0.70 mm BMT.

Screws

- Plasterboard laminating screws (Type L)
- Plasterboard to steel frame screws (Type S).

Refer to Knauf Ventshaft brochure for plasterboard screw type specification.

Sealants and Packers

- H.B. Fuller Firesound™ sealant
- IBS intumescent rod.

Insulation (Systems VST120.1A & VSS120.1A)

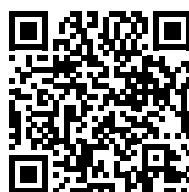
- KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density.

Design Considerations

- Refer to NCC for performance requirements for services shafts.
- Static pressure testing of Ventshaft VS120.1A and resistance to impact testing to NCC Specification 6 was carried out at Knauf NATA accredited laboratory. Consulting Engineers Taylor Thomson Whitting observed the static testing, and maximum Ventshaft VS120.1A panel sizes were subsequently computed as listed in the Max Ventshaft Panel Size table.
- Impact resistance testing on 3000x3000 mm Ventshaft VS120.1A panel show the panel to meet NCC criteria for bag drop heights of 100 mm and 150 mm.

Installation

Refer to Knauf Ventshaft brochure or online CAD Finder for systems installation instructions and details.



CROSS LAMINATED TIMBER (CLT)

Introduction

In recent years, the construction industry has been undergoing a remarkable transformation, with a shift towards sustainable and eco-friendly practices. One innovation that is gaining significant attention is Cross Laminated Timber (CLT) systems. This revolutionary building material is paving the way for a more sustainable and efficient construction future.

The next generation of massive timber building systems is transforming how buildings in Australia are designed and constructed. As the demand for sustainable and cost-effective building materials increases, developers, builders and architects have turned to CLT as a viable solution for low-medium rise buildings up to 25 meters.

What is Cross Laminated Timber?

CLT is a cutting-edge engineered wood product that is revolutionising the way we build. It consists of multiple layers of timber planks stacked in alternating directions and bonded together with structural adhesives. This unique composition ensures remarkable strength, stability, and durability. With its prefabricated nature, CLT enables faster construction, reducing project timelines significantly. CLT walls are structural elements and can be used in place of concrete walls, precast concrete walls, light framed timber stud walls and many other load bearing wall structures.

Sustainability at the Core

One of the key advantages of CLT is its exceptional sustainability. Timber is a natural and renewable resource and using timber as a primary building product ensures carbon sequestration. Carbon sequestration means that when a tree is harvested, the carbon it has sequestered during its natural lifecycle is retained within its cellular structure. Unlike traditional construction materials such as concrete and steel, CLT is harvested from sustainably managed forests. This process helps reduce the carbon footprint associated with construction projects.

Timber is the only major building material that is renewable, recyclable, and has a lower carbon footprint throughout its life cycle. By incorporating CLT into buildings, the carbon can be effectively locked away for the lifespan of the structure. This makes CLT an invaluable tool in the fight against climate change.

Knauf CLT Systems

Constantly innovating to deliver valued solutions to the Australian building industry, in conjunction with CLT manufacturer, XLAM, Knauf have developed building code-compliant Wall and Floor/Ceiling systems for multi-residential buildings but also suitable for other building segments.

Knauf CLT systems are lightweight solutions, incorporating familiar and already established plasterboard systems construction methodologies to suit a variety of applications and performance requirements such as but not limited to fire resistance, acoustics and wet areas.

Knauf CLT systems have been successfully used in a variety of projects throughout Australia, including the landmark Adelaide Oval Hotel, Monash University Frankston student accommodation, La Trobe University student accommodation and many others.

CROSS LAMINATED TIMBER (CLT)

Design Considerations

Fire Resistance

- Knauf CLT systems satisfy the requirements of the National Construction Code (NCC) for fire protected timber (Massive Timber) and suitable for buildings with an effective height of 25 meters.
- Knauf utilise 16 mm FireStop as a non-combustible fire-protective covering fixed to CLT walls on both sides to achieve FRL 120/120/120 from both directions.
- Knauf utilises 16 mm FireStop as a non-combustible fire-protective covering fixed to the underside of CLT floors to achieve FRL 120/120/120.
- Knauf CLT and XLAM systems are supported by fire tests at CSIRO laboratories at North Ryde in Sydney, and assessments by CSIRO, Warringtonfire and BRANZ.

Structural and Seismic

- CLT walls and floors are to be designed to relevant Australian Standards, NCC and project requirements. Refer to XLAM for design and details.
- Knauf CLT systems utilise Rondo steel components and are to be designed to relevant Australian Standards, NCC and project requirements. Refer to Rondo for design and details.

Acoustics

- Knauf CLT systems' acoustic ratings provided in this publication and other Knauf manuals are independently provided by PKA Acoustic Consulting.
- Knauf CLT systems utilise Knauf Insulation glasswool in the wall and ceiling cavities to achieve the stated acoustic ratings. It also satisfies NCC requirement for cavity filled non-combustible insulation.
- Knauf CLT inter-tenancy walls can satisfy NCC requirement of $R_w + C_{tr}$ not less than 50, discontinuous construction and acoustic impact insulation.
- Knauf CLT corridor walls can satisfy NCC requirement of R_w not less than 50.
- For other Knauf CLT systems acoustic performance, refer to Systems+ and/or Knauf online tools.

Thermal

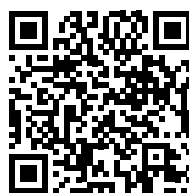
- Knauf CLT systems have been independently certified by James M Fricker P/L to achieve stated thermal performance in accordance with AS 4859:2018.
- Knauf CLT systems provides Total R-value performance for various wall and floor/ceiling configurations to meet requirements of the NCC
- Knauf CLT external walls achieve a Total R-value from $R_{t(sum)}$ R3.61 and $R_{t(win)}$ R3.71.
- Knauf CLT floor/ceiling systems achieve a Total R-value from $R_{t(sum)}$ R2.63 and $R_{t(win)}$ R2.50.
- Other Knauf CLT internal walls achieve a Total R-Value from R1.1 onwards.

Design and BIM Details

- Knauf CLT systems have been incorporated in BIM Wizard® Revit and ArchiCAD, which streamlines the process of selecting, designing and creating the correct specification for CLT wall and floor/ceiling systems
- Knauf CLT systems can also be easily selected and specified using Knauf eSelector
- Knauf CLT systems CAD details are available on our CAD Finder, scan QR code below.

Installation

For installation details refer to Knauf online CAD Finder or contact TecASSIST™ for information.



COLUMN & BEAM

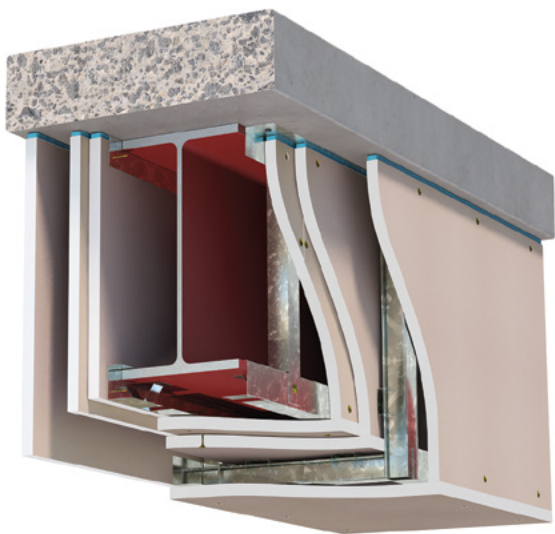
Description

Knauf Column & Beam Protection systems utilise fire resistant plasterboard for fire protection of various types of columns and beams.

Fire protection systems are available for the following types of columns and beams:

- Free standing concrete columns
- Free standing I-section, CHS and SHS steel columns
- Steel columns within a fire rated wall
- Free standing timber columns
- Steel beams under concrete floor
- Timber beams under fire rated floor.

Figure 14: Beam Protection System PSB120.1D



Design Options

Steel column protection systems are available with Fire Resistance Levels up to 120/-/-.

Concrete and timber column protection systems are available with Fire Resistance Levels up to 120/-/-.

Steel and timber beam protection systems are available with Fire Resistance Levels up to 120/-/-.

Materials

Plasterboard Linings

- 25 mm Shaftliner MouldStop
- 13 mm FireStop
- 16 mm FireStop

Steel Sections

Refer systems tables and Knauf Column & Beam Protection brochure.

Screws

Refer to General Information — Materials for plasterboard screw types.

Sealants

H.B. Fuller Firesound™ sealant

Design Considerations

- Refer to NCC for fire rating requirements for load bearing columns and beams.
- Load bearing columns and beams are to be designed in accordance with NCC and relevant Australian Standards.

Installation

Refer to Knauf Column & Beam Protection brochure or online CAD Finder for systems installation instructions and details.



FIRE TUNNEL™

Description

Knauf Fire Tunnel provides a lightweight solution for fire isolated passageways as outlined in the NCC.

Fire Tunnel is a self-supported steel framed system constructed using Rondo 150 mm stud and track and lined with Knauf FireStop plasterboard inside and outside.



Figure I5: Fire Tunnel

Design Options

Knauf Fire Tunnels are available with Fire Resistance Levels up to -/120/120 from both sides.

Fire Tunnels can be constructed without structural design calculations to an internal width of 2000 mm, and an internal height of 2200 mm. Refer to Rondo if larger size Fire Tunnel is required.

Materials

Plasterboard

- 25 mm Shaftliner MouldStop
- 13 mm FireStop
- 16 mm FireStop
- 10 mm SHEETROCK ONE

Rondo Steel Sections

- 150 mm C-stud 0.75 mm BMT
- 150 mm track 0.75 mm BMT
- 75 mm x 75 mm steel angle 0.70 mm BMT.

Fasteners

- 10x16 Drill Point Wafer Head screws
- 6x3 dia all steel pop rivets
- 6x32, 8x60 Needle Point screws.

Design Considerations

- Refer to NCC for fire rating requirements for Fire Isolated Passageways.
- Refer to Knauf Fire Tunnel brochure for Fire Tunnel design considerations.
- Fire Tunnel systems are designed to support their own weight only. Fire Tunnel roof is not trafficable and must not be used for storage of materials or equipment.

Installation

Refer to Knauf online CAD Finder for systems installation instructions and details.

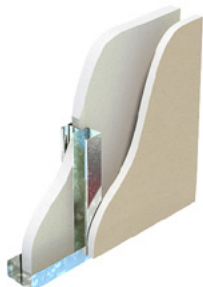


SERVICES SHAFTS – SHAFTWALL

SH

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16109, FC15815



SYSTEM DESCRIPTION

Side 1:

1x25 mm SHAFTLINER MOULDSTOP
(+ 1x16 mm FIRESTOP if specified).
IBS rod at the top of
SHAFTLINER MOULDSTOP

Framing:

Steel CH-studs (refer to table)

Insulation:

Refer to table

Side 2:

One or more layers of fire resistant pbd.

ACOUSTIC RATINGS BASIS: RT&A TE405-20S10

| SYSTEM | FRL | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | INSULATION* | NIL | KI 50G11 |
|----------|------------------------------|---|--|-------------------|--------------|-------------------|-------------------|
| | | | | | STUD SIZE mm | $R_w(R_w+C_{tr})$ | $R_w(R_w+C_{tr})$ |
| SH60.1B | -/60/60 from both sides | 1x25 mm SHAFTLINER MOULDSTOP | 1x16 mm MULTISTOP ONE | 80 | 64CH55 | 39(30) | 47(35) |
| | | | | | 64CH90 | 36(27) | 44(32) |
| | | | | 118 | 102CH55 | 41(32) | 48(39) |
| | | | | | 102CH90 | 38(29) | 45(36) |
| SH90.1A | -/90/90 from both sides | 1x25 mm SHAFTLINER MOULDSTOP | 2x13 mm FIRESTOP | 90 | 64CH55 | 42(32) | 50(40) |
| | | | | | 64CH90 | 39(29) | 47(37) |
| | | | | 128 | 102CH55 | 44(35) | 50(41) |
| | | | | | 102CH90 | 41(32) | 47(38) |
| SH120.2A | -/120/120 from both sides | 1x25 mm SHAFTLINER MOULDSTOP | 1x16 mm FIRESTOP + 1x13 mm FIRESTOP | 93 | 64CH55 | 42(33) | 50(40) |
| | | | | | 64CH90 | 39(30) | 47(37) |
| | | | | 131 | 102CH55 | 44(35) | 51(42) |
| | | | | | 102CH90 | 41(32) | 48(39) |
| SH120.3A | -/120/120 from both sides | 1x25 mm SHAFTLINER MOULDSTOP | 2x16 mm FIRESTOP | 96 | 64CH55 | 43(34) | 50(40) |
| | | | | | 64CH90 | 40(31) | 47(37) |
| | | | | 134 | 102CH55 | 45(36) | 51(42) |
| | | | | | 102CH90 | 42(33) | 48(39) |
| SH120.4A | -/120/120 from both sides | 1x25 mm SHAFTLINER MOULDSTOP + 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | 96 | 64CH55 | 42(33) | 51(40) |
| | | | | | 64CH90 | 39(30) | 48(37) |
| | | | | 134 | 102CH55 | 45(36) | 52(42) |
| | | | | | 102CH90 | 42(33) | 49(39) |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

MAX WALL HEIGHTS mm

| SYSTEM | STUD SIZE mm | BASE METAL THICKNESS mm | SERVICEABILITY PRESSURE kPa | |
|--|--------------|-------------------------|-----------------------------|--------|
| | | | 0.25 | 0.35 |
| SH60.1B SH90.1A SH120.2A SH120.4A | 64 | 0.55 | 2950 d | 2640 d |
| | | 0.90 | 3460 d | 3090 d |
| | 102 | 0.55 | 3730 h | 2660 h |
| | | 0.90 | 4980 d | 4190 h |
| SH120.3A | 64 | 0.55 | 3730 h | 2660 h |
| | | 0.90 | 4380 d | 3890 d |
| | 102 | 0.55 | 3730 h | 2660 h |
| | | 0.90 | 5510 d | 4190 h |

Height Limiting Factor: d - deflection (L/240 ≤ 20 mm), h – head track capacity

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/selector
Blue text indicates systems and products suitable for wet areas.

SERVICES SHAFTS – VENTSHAFT

VS

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16109

**SYSTEM DESCRIPTION****Side 1:**

Multiple layers of fire resistant plasterboard
screw laminated together

Side 2 (if specified):

- 10 mm SHEETROCK ONE
- timber or steel framing
- 20 mm gap between framing and laminated panel
- Cavity insulation (refer to table).

ACOUSTIC RATINGS BASIS: RT&A TE405-20S10, TK778-06S01

| SYSTEM | FRL | SIDE 1 | SIDE 2 | CAVITY mm | STUD SIZE (Gap) mm | NOM WALL WIDTH mm | INSULATION* | R _w (R _w +C _{tr}) |
|-----------|---------------------------------|---|---|--------------|--------------------------|-------------------------|-------------|---|
| VS90.1A | -/90/90 from both sides | 3x13 mm FIRESTOP screw laminated together | NA | NA | NA | 39 | NA | 38(37) |
| VS120.1A | -/120/120 from both sides | 3x16 mm FIRESTOP screw laminated together | NA | NA | NA | 48 | NA | 39(38) |
| VS120.2A | -/120/120 from both sides | 1x16 mm FIRESTOP screw laminated to each side of 1x25 mm SHAFTLINER MOULDSTOP | NA | NA | NA | 57 | NA | 39(38) |
| VST120.1A | -/120/120 from both sides | 3x16 mm FIRESTOP screw laminated together | 1x10 mm SHEETROCK ONE on free-standing 70 mm timber stud | 90 | 70(20) | 148 | Nil | 46(40) |
| | | | | | | | KI 50G11 | 52(44) |
| VSS120.1A | -/120/120 from both sides | 3x16 mm FIRESTOP screw laminated together | 1x10 mm SHEETROCK ONE on free-standing 64 mm steel stud | 85 | 64(20) | 142 | Nil | 46(40) |
| | | | | | | | KI 50G11 | 52(44) |

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density**MAX SIZES OF NON LOAD BEARING VENTSHAFT (VS120.1A, VS120.2A, VST120.1A & VSS120.1A)**

| SERVICEABILITY PRESSURE | | | |
|-------------------------|-----------|----------|-----------|
| 0.25 kPa | | 0.35 kPa | |
| WIDTH mm | HEIGHT mm | WIDTH mm | HEIGHT mm |
| 1200 | 6000 | 1200 | 6000 |
| 1800 | 4800 | 1800 | 2800 |
| 2400 | 3300 | 2400 | 2100 |
| 3000 | 2700 | 3000 | 1700 |

Height Limiting Factor: L/240 ≤ 20 mm

Notes:

- All four edges of the panel must be supported
- Plasterboard layers 1 and 3 to be aligned along long direction of panel, layer 2 across
- Wall heights tabled are not for axial loads but include self weight and lateral pressures stated
- The maximum panel sizes are based on testing performed using Knauf FireStop plasterboard
- Deflection heads to be designed and used as required
- Panel size of up to 3000 mm x 3000 mm have been fire tested at pressures of 50 Pa. However, the panel size will in most cases be limited by cold structural considerations

CROSS LAMINATED TIMBER (CLT)

CLTB120.1

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Side 1:

Refer to table

CLT:

Refer to table

Side 2:

Refer to table

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 122-142 | 142-162 | 162-182 | 187-207 |
|------------|--------------------------|--------------------------|----------------------|----------------------|---------|---------|---------|
| | | | CLT THICKNESS mm | 90 | 110 | 130 | 155 |
| | | | INSULATION | $R_w (R_w + C_{tr})$ | | | |
| CLTB120.1A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 37(34) | 38(35) | 38(36) | 40(37) |
| CLTB120.1B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | Nil | 37(34) | 38(35) | 38(36) | 40(37) |
| CLTB120.1D | 2x13 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 38(35) | 39(36) | 40(37) | 41(38) |
| CLTB120.1E | 2x13 mm MULTISTOP ONE | 2x13 mm MULTISTOP ONE | Nil | 39(36) | 40(37) | 40(37) | 41(38) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness
R-values of systems in the range of R1.1-R1.73. For specific R-values, refer to eSelector.

CROSS LAMINATED TIMBER (CLT)

CLTB120.2

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

CLT (Refer to table):

16 mm fire resistant plasterboard direct fix to both sides

Side 2:

- 1x13 mm or 2x13 mm or 1x16 mm pbd
- 45 mm cavity using 28 mm furring channel + Betafix clips
- Insulation (refer to table)

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | LINING DIRECT FIX TO BOTH SIDES OF CLT | LINING SIDE 2 | NOM WALL WIDTH mm | 180-193 | 200-213 | 220-233 | 245-258 |
|------------|--|-----------------------|-------------------|-----------------------|---------|---------|---------|
| | | | CLT THICKNESS mm | 90 | 110 | 130 | 155 |
| | | | INSULATION* | $R_w(R_{w_i}+C_{tr})$ | | | |
| CLTB120.2A | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | Nil | 39(34) | 40(34) | 40(35) | 41(35) |
| | | | KI 50G11 | 51(42) | 52(43) | 52(44) | 53(45) |
| CLTB120.2B | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | Nil | 39(34) | 40(34) | 40(35) | 41(35) |
| | | | KI 50G11 | 51(42) | 52(43) | 52(44) | 53(45) |
| CLTB120.2C | 1x16 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 40(35) | 41(36) | 41(36) | 42(37) |
| | | | KI 50G11 | 51(43) | 53(44) | 54(45) | 54(46) |
| CLTB120.2D | 1x16 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | 41(36) | 42(36) | 42(37) | 43(37) |
| | | | KI 50G11 | 53(44) | 54(45) | 54(46) | 55(47) |
| CLTB120.2E | 1x16 mm FIRESTOP | 1x13 mm MULTISTOP ONE | Nil | 41(36) | 42(36) | 42(37) | 43(37) |
| | | | KI 50G11 | 53(44) | 54(45) | 54(46) | 55(47) |
| CLTB120.2G | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 42(36) | 42(37) | 43(37) | 43(38) |
| | | | KI 50G11 | 54(45) | 54(46) | 55(47) | 56(47) |
| CLTB120.2H | 1x16 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 44(39) | 45(40) | 45(40) | 46(41) |
| | | | KI 50G11 | 57(48) | 57(49) | 58(50) | 59(51) |
| CLTB120.2J | 1x16 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 45(40) | 45(40) | 46(41) | 46(41) |
| | | | KI 50G11 | 57(49) | 58(50) | 59(50) | 59(51) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

R-values > R1.8 for all systems with insulation. For specific R-values, refer to eSelector.

CROSS LAMINATED TIMBER (CLT)

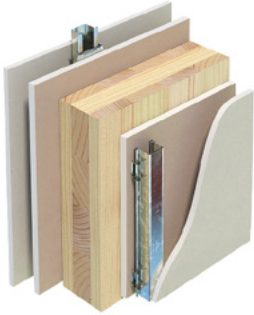
CLTB120.3

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Side 1:

- 1x13 mm or 1x16 mm pbd
- 45 mm cavity using 28 mm furring channel + Betafix clips
- Insulation (refer to table)

CLT (Refer to table):

- 16 mm fire resistant plasterboard direct fix to both sides

Side 2:

- 1x13 mm or 1x16 mm pbd
- 45 mm cavity using 28 mm furring channel + Betafix clips
- Insulation (refer to table)

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | LINING SIDE 1 | LINING DIRECT FIX TO BOTH SIDES OF CLT | LINING SIDE 2 | NOM WALL WIDTH mm | 238-244 | 258-264 | 278-284 | 303-309 |
|------------|-----------------------|--|-----------------------|---------------------|----------------|---------|---------|---------|
| | | | | CLT THICKNESS mm | 90 | 110 | 130 | 155 |
| | | | | INSULATION* | $R_w(R_w+C_e)$ | | | |
| CLTB120.3A | 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | KI 50G11 one side | 47(34) | 48(35) | 48(36) | 49(37) |
| | | | | KI 50G11 both sides | 54(38) | 55(39) | 55(40) | 56(41) |
| CLTB120.3B | 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | KI 50G11 one side | 47(34) | 48(35) | 48(36) | 49(37) |
| | | | | KI 50G11 both sides | 54(38) | 55(39) | 55(40) | 56(41) |
| CLTB120.3C | 1x13 mm WETSTOP | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | KI 50G11 one side | 47(34) | 48(35) | 48(36) | 49(37) |
| | | | | KI 50G11 both sides | 54(38) | 55(39) | 55(40) | 56(41) |
| CLTB120.3D | 1x13 mm FIRESTOP | 1x16 mm FIRESTOP | 1x13 mm FIRESTOP | KI 50G11 one side | 49(37) | 50(38) | 51(39) | 52(40) |
| | | | | KI 50G11 both sides | 57(41) | 57(42) | 58(43) | 59(44) |
| CLTB120.3H | 1x13 mm MULTISTOP ONE | 1x16 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 50G11 one side | 51(39) | 52(40) | 53(41) | 53(42) |
| | | | | KI 50G11 both sides | 58(43) | 59(44) | 60(45) | 60(46) |
| CLTB120.3K | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | KI 50G11 both sides | - | - | - | 63(50) |
| CLTB120.3L | 1x13 mm IMPACTSTOP | 1x16 mm FIRESTOP | 1x13 mm IMPACTSTOP | KI 50G11 one side | 51(39) | 52(40) | 53(41) | 53(42) |
| | | | | KI 50G11 both sides | 58(43) | 59(44) | 60(45) | 60(46) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R2.44-R4.07 For specific R-values, refer to eSelector.

CROSS LAMINATED TIMBER (CLT)

CLTB120.4

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

CLT (Refer to table):

1x16 mm fire resistant pbd direct fix to both sides

Side 2:

- 1x13 mm or 2x13 mm or 1x16 mm pbd
- 64 mm Rondo steel studs
- 20 mm gap to steel frame
- Insulation (refer to table)

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | LINING DIRECT FIX TO BOTH SIDES OF CLT | LINING SIDE 2 | NOM WALL WIDTH mm | 219-232 | 239-252 | 259-272 | 284-297 |
|------------|--|--------------------------|----------------------|----------------|---------|---------|---------|
| | | | CLT THICKNESS mm | 90 | 110 | 130 | 155 |
| | | | INSULATION* | $R_w(R_w+C_v)$ | | | |
| CLTB120.4A | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | Nil | 50(41) | 51(42) | 52(43) | 52(44) |
| | | | KI 75G11 | 57(47) | 58(48) | 59(49) | 60(50) |
| CLTB120.4B | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | Nil | 50(41) | 51(42) | 52(43) | 52(44) |
| | | | KI 75G11 | 57(47) | 58(48) | 59(49) | 60(50) |
| CLTB120.4C | 1x16 mm FIRESTOP | 1x13 mm FIRESTOP | Nil | 51(43) | 52(44) | 52(44) | 53(45) |
| | | | KI 75G11 | 58(48) | 59(49) | 59(50) | 61(51) |
| CLTB120.4D | 1x16 mm FIRESTOP | 1x13 mm IMPACTSTOP | Nil | 52(43) | 52(44) | 53(45) | 54(46) |
| | | | KI 75G11 | 59(49) | 59(50) | 60(51) | 61(52) |
| | | | KI 90G11 | 59(50) | - | - | - |
| CLTB120.4E | 1x16 mm FIRESTOP | 1x13 mm MULTISTOP ONE | Nil | 52(43) | 52(44) | 53(45) | 54(46) |
| | | | KI 75G11 | 59(49) | 59(50) | 60(51) | 61(52) |
| | | | KI 90G11 | 59(50) | - | - | - |
| CLTB120.4G | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | KI 75G11 | 59(50) | 60(51) | 60(51) | 61(52) |
| CLTB120.4H | 1x16 mm FIRESTOP | 2x13 mm SHEETROCK ONE | Nil | 53(45) | 54(46) | 54(47) | 55(48) |
| | | | KI 75G11 | 60(51) | 60(52) | 61(53) | 62(54) |
| CLTB120.4I | 1x16 mm FIRESTOP | 2x13 mm WETSTOP | Nil | 53(45) | 54(46) | 54(47) | 55(48) |
| | | | KI 75G11 | 60(51) | 60(52) | 61(53) | 62(54) |
| CLTB120.4J | 1x16 mm FIRESTOP | 2x13 mm FIRESTOP | Nil | 54(47) | 54(48) | 55(48) | 56(49) |
| | | | KI 75G11 | 60(52) | 61(53) | 62(54) | 63(55) |
| CLTB120.4L | 1x16 mm FIRESTOP | 2x13 mm MULTISTOP ONE | Nil | 54(47) | 55(48) | 55(49) | 56(50) |
| | | | KI 75G11 | 60(53) | 61(54) | 62(55) | 63(56) |
| CLTB120.4N | 1x16 mm FIRESTOP | 2x13 mm IMPACTSTOP | Nil | 54(47) | 55(48) | 55(49) | 56(50) |
| | | | KI 75G11 | 60(53) | 61(54) | 62(55) | 63(56) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density

R-values > R3.03 for all systems with insulation. For specific R-values, refer to eSelector.

CROSS LAMINATED TIMBER (CLT)

CLTB120.5

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Side 1:

- 1x13 mm or 1x16 mm pbd
- 45 mm cavity using 28 mm furring channel + Betafix clips
- Insulation (refer to table)

CLT (Refer to table):

1x16 mm fire resistant plasterboard direct fix to both sides

Side 2:

- 1x13 mm or 1x16 mm pbd
- 64 mm Rondo steel studs
- 20 mm gap to steel framing
- Insulation (refer to table)

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | LINING SIDE 1 | LINING DIRECT FIX TO BOTH SIDES OF CLT | LINING SIDE 2 | NOM WALL WIDTH mm | 277-283 | 297-303 | 317-323 | 342-348 |
|------------|-----------------------|--|-----------------------|--|----------------|---------|---------|---------|
| | | | | CLT THICKNESS mm | 90 | 110 | 130 | 155 |
| | | | | INSULATION* | $R_w(R_w+C_w)$ | | | |
| CLTB120.5A | 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | KI 75G11 (stud only) | 55(42) | 56(43) | 57(44) | 58(45) |
| | | | | KI 75G11 (stud) + KI 50G11 (furring channel) | 62(45) | 63(46) | 64(47) | 64(48) |
| CLTB120.5B | 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | KI 75G11 (stud only) | 55(42) | 56(43) | 57(44) | 58(45) |
| | | | | KI 75G11 (stud) + KI 50G11 (furring channel) | 62(45) | 63(46) | 64(47) | 64(48) |
| CLTB120.5C | 1x13 mm WETSTOP | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | KI 75G11 (stud only) | 55(42) | 56(43) | 57(44) | 58(45) |
| | | | | KI 75G11 (stud) + KI 50G11 (furring channel) | 62(45) | 63(46) | 64(47) | 64(48) |
| CLTB120.5D | 1x13 mm WETSTOP | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | KI 75G11 (stud only) | 55(42) | 56(43) | 57(44) | 58(45) |
| | | | | KI 75G11 (stud) + KI 50G11 (furring channel) | 62(45) | 63(46) | 64(47) | 64(48) |
| CLTB120.5G | 1x13 mm FIRESTOP | 1x16 mm FIRESTOP | 1x13 mm FIRESTOP | KI 75G11 (stud only) | 57(45) | 58(46) | 59(47) | 60(48) |
| | | | | KI 75G11 (stud) + KI 50G11 (furring channel) | 64(48) | 65(49) | 66(50) | 67(51) |
| CLTB120.5L | 1x13 mm MULTISTOP ONE | 1x16 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 75G11 (stud only) | 60(47) | 60(48) | 61(49) | 62(50) |
| | | | | KI 75G11 (stud) + KI 50G11 (furring channel) | 65(50) | 66(51) | 67(52) | 68(53) |
| CLTB120.5O | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | KI 75G11 (stud only) | 60(48) | 61(49) | 61(50) | 62(51) |
| | | | | KI 75G11 (stud) + KI 50G11 (furring channel) | 66(52) | 67(53) | 68(54) | 69(55) |
| CLTB120.5P | 1x13 mm IMPACTSTOP | 1x16 mm FIRESTOP | 1x13 mm IMPACTSTOP | KI 75G11 (stud only) | 60(47) | 60(48) | 61(49) | 62(50) |
| | | | | KI 75G11 (stud) + KI 50G11 (furring channel) | 65(50) | 66(51) | 67(52) | 68(53) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ densityKI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R4.11-R5.41. For specific R-values, refer to eSelector.

CROSS LAMINATED TIMBER (CLT)

CLTB120.6

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Side 1:

- 1x13 mm or 1x16 mm pbd
- 64 mm Rondo steel studs
- 20 mm gap to steel framing
- Insulation (refer to table)

CLT (Refer to table):

1x16 mm fire resistant plasterboard direct fix to both sides

Side 2:

- 1x13 mm or 1x16 mm pbd
- 64 mm Rondo steel studs
- 20 mm gap to steel framing
- Insulation (refer to table)

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | LINING SIDE 1 | LINING DIRECT FIX TO BOTH SIDES OF CLT | LINING SIDE 2 | NOM WALL WIDTH mm | 316-322 | 336-342 | 356-362 | 381-387 |
|------------|-----------------------|--|-----------------------|---------------------|----------------------------|---------|---------|---------|
| | | | | CLT THICKNESS mm | 90 | 110 | 130 | 155 |
| | | | | INSULATION* | $R_{w_i}(R_{w_i}+C_{w_i})$ | | | |
| CLTB120.6A | 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | KI 50G11 one side | 57(46) | 58(47) | 58(48) | 59(49) |
| | | | | KI 75G11 one side | 58(47) | 58(48) | 59(49) | 60(49) |
| | | | | KI 50G11 both sides | 63(48) | 64(50) | 65(51) | 66(52) |
| | | | | KI 75G11 both sides | 64(50) | 65(51) | 66(52) | 67(53) |
| CLTB120.6C | 1x13 mm WETSTOP | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | KI 50G11 one side | 57(46) | 58(47) | 58(48) | 59(49) |
| | | | | KI 75G11 one side | 58(47) | 58(48) | 59(49) | 60(49) |
| | | | | KI 50G11 both sides | 63(48) | 64(50) | 65(51) | 66(52) |
| | | | | KI 75G11 both sides | 64(50) | 65(51) | 66(52) | 67(53) |
| CLTB120.6D | 1x13 mm FIRESTOP | 1x16 mm FIRESTOP | 1x13 mm FIRESTOP | KI 50G11 one side | 60(49) | 60(50) | 61(51) | 62(52) |
| | | | | KI 75G11 one side | 60(50) | 61(51) | 62(52) | 62(52) |
| | | | | KI 50G11 both sides | 66(52) | 67(53) | 67(54) | 68(55) |
| | | | | KI 75G11 both sides | 67(53) | 68(54) | 69(55) | 69(56) |
| CLTB120.6H | 1x13 mm MULTISTOP ONE | 1x16 mm FIRESTOP | 1x13 mm MULTISTOP ONE | KI 50G11 one side | 61(51) | 62(52) | 63(53) | 63(54) |
| | | | | KI 75G11 one side | 62(51) | 62(52) | 63(53) | 64(54) |
| | | | | KI 50G11 both sides | 67(54) | 68(55) | 69(56) | 70(57) |
| | | | | KI 75G11 both sides | 68(55) | 69(56) | 70(57) | 71(58) |
| CLTB120.6K | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | KI 50G11 one side | 62(52) | 63(53) | 64(54) | 64(55) |
| | | | | KI 75G11 one side | 63(53) | 64(54) | 64(55) | 65(56) |
| | | | | KI 50G11 both sides | 68(55) | 69(56) | 70(57) | 71(58) |
| | | | | KI 75G11 both sides | 69(57) | 70(58) | 71(59) | 72(60) |
| CLTB120.6L | 1x13 mm IMPACTSTOP | 1x16 mm FIRESTOP | 1x13 mm IMPACTSTOP | KI 50G11 one side | 61(51) | 62(52) | 63(53) | 63(54) |
| | | | | KI 75G11 one side | 62(51) | 62(52) | 63(53) | 64(54) |
| | | | | KI 50G11 both sides | 67(54) | 68(55) | 69(56) | 70(57) |
| | | | | KI 75G11 both sides | 68(55) | 69(56) | 70(57) | 71(58) |
| | | | | KI 90G11 both sides | 69(56) | 69(57) | 70(58) | 71(59) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R4.11-R5.41. For specific R-values, refer to eSelector.

CROSS LAMINATED TIMBER (CLT)

CLTT120.1

FIRE RESISTANCE LEVEL

FRL 120/120/120
FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

- Side 1:**
1x16 mm fire resistant pbd
- CLT (Refer to table):**
Refer to table
- Insulation:**
Refer to table
- Gap:**
20 mm air gap
- CLT:**
Refer to table
- Side 2:**
1x16 mm fire resistant pbd

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WALL WIDTH mm | 232 | 272 | 312 | 362 |
|------------|-----------------------|-----------------------|-------------------|-------------------|--------|--------|--------|
| | | | CLT THICKNESS mm | 90 | 110 | 130 | 155 |
| | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | |
| CLTT120.1A | 1x16 mm FIRESTOP | 1x16 mm FIRESTOP | Nil | 55(42) | 56(43) | 57(44) | 58(45) |
| | | | KI 50G11 | 62(45) | 63(46) | 64(47) | 64(48) |
| CLTT120.1B | 1x16 mm MULTISTOP ONE | 1x16 mm MULTISTOP ONE | Nil | 55(42) | 56(43) | 57(44) | 58(45) |
| | | | KI 50G11 | 62(45) | 63(46) | 64(47) | 64(48) |

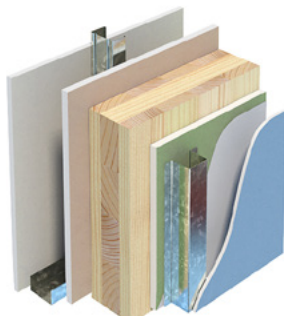
* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density
R-values of systems in the range of R4.11-R5.41. For specific R-values, refer to eSelector.

CLTE120.1

FIRE RESISTANCE LEVEL

FRL 120/120/120
FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

- Side 1:**
- 1x13 mm plasterboard
 - 64 mm Rondo steel studs
 - 25 mm gap to steel framing
 - Insulation (refer to table)
- CLT (Refer to table):**
1x16 mm FIRESTOP direct fix to internal face, 1x16 mm MULTISTOP ONE direct fix to external face
- External:**
- Nil insulation - Vapour Barrier Only
 - 45 mm gap using Steel Top Hat
- External Cladding:**
9 mm fibre cement

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | LINING SIDE 1 | LINING DIRECT FIX TO SIDE 1 OF CLT | LINING DIRECT FIX TO EXTERNAL SIDE OF CLT | NOM WALL WIDTH mm | 278 | 298 | 318 | 343 |
|------------|-----------------------|------------------------------------|---|--------------------|-------------------|--------|--------|--------|
| | | | | CLT THICKNESS mm | 90 | 110 | 130 | 155 |
| | | | | INSULATION* | $R_w(R_w+C_{tr})$ | | | |
| CLTE120.1A | 1x13 mm SHEETROCK ONE | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 90G R2.5 (stud) | 60(47) | 61(48) | 61(49) | 62(50) |
| CLTE120.1B | 1x13 mm WETSTOP | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 90G R2.5 (stud) | 60(47) | 61(48) | 61(49) | 62(50) |
| CLTE120.1C | 1x13 mm FIRESTOP | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 90G R2.5 (stud) | 61(49) | 62(50) | 63(51) | 63(52) |
| CLTE120.1E | 1x13 mm MULTISTOP ONE | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 90G R2.5 (stud) | 62(50) | 63(51) | 63(52) | 64(53) |
| CLTE120.1F | 1x13 mm IMPACTSTOP | 1x16 mm FIRESTOP | 1x16 mm MULTISTOP ONE | KI 90G R2.5 (stud) | 62(50) | 63(51) | 63(52) | 64(53) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness
* KI 90G R2.5 - 50 mm glasswool insulation 11 kg/m³ density
R-values of systems in the range of R4.11-R5.41. For specific R-values, refer to eSelector.

CROSS LAMINATED TIMBER (CLT)

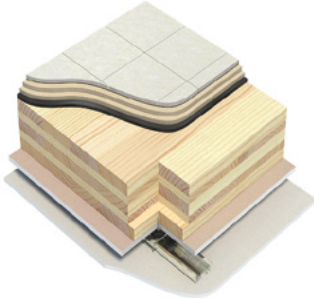
CLTC120.11

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Floor Finish:

Min 10 mm Ceramic floor Tiles on 8 mm adhesive bed

Floor Covering:

2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat

CLT:

1x16 mm fire resistant pbd direct fix to underside of CLT

Insulation: Refer to table

Ceiling Fixing:

28 mm furring channel + Betafix Clip

Lining Side 2:

1x13 mm or 2x13 mm pbd

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | FLOORING COVERING | LINING SIDE 2 | CEILING CAVITY mm | CLT SIZE mm | 140 | 170 | 200 |
|-------------|--|-----------------------|-------------------|-------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | INSULATION* | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ |
| CLTC120.11A | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm SHEETROCK ONE | 50 | Nil | 51(43) 68 | 52(44) 67 | 53(45) 65 |
| | | | | KI 50G11 | 56(47) 61 | 57(48) 60 | 58(50) 58 |
| CLTC120.11B | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm WETSTOP | 50 | Nil | 51(43) 68 | 52(44) 67 | 53(45) 65 |
| | | | | KI 50G11 | 56(47) 61 | 57(48) 60 | 58(50) 58 |
| CLTC120.11C | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm FIRESTOP | 50 | Nil | 51(44) 67 | 52(45) 65 | 53(46) 64 |
| | | | | KI 50G11 | 56(48) 60 | 57(49) 58 | 58(50) 57 |
| CLTC120.11D | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm IMPACTSTOP | 50 | Nil | 51(44) 66 | 52(45) 65 | 53(46) 63 |
| | | | | KI 50G11 | 56(48) 59 | 57(49) 58 | 58(51) 56 |
| CLTC120.11E | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm MULTISTOP ONE | 50 | Nil | 51(44) 66 | 52(45) 65 | 53(46) 63 |
| | | | | KI 50G11 | 56(48) 59 | 57(49) 58 | 58(51) 56 |
| CLTC120.11F | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm SHEETROCK ONE | 50 | Nil | 52(45) 64 | 53(46) 63 | 54(47) 61 |
| | | | | KI 50G11 | 57(49) 57 | 58(50) 56 | 59(52) 54 |
| CLTC120.11G | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm FIRESTOP | 50 | Nil | 52(45) 63 | 53(46) 62 | 54(47) 60 |
| | | | | KI 50G11 | 57(50) 56 | 58(51) 54 | 59(52) 53 |
| CLTC120.11H | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm MULTISTOP ONE | 50 | Nil | 52(45) 63 | 53(46) 61 | 54(47) 60 |
| | | | | KI 50G11 | 57(50) 55 | 59(51) 54 | 60(52) 52 |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R1.93-R3.52. For specific R-values, refer to eSelector.

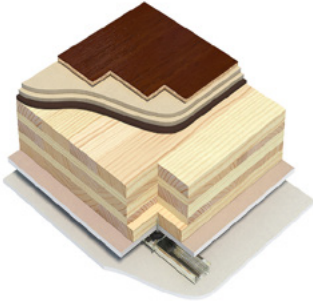
CROSS LAMINATED TIMBER (CLT)

CLTC120.12

FIRE RESISTANCE LEVEL

FRL 120/120/120
FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Floor Finish:

Min 14 mm Engineered Timber or min
7 mm Laminate Flooring on min 3 mm
Underlay

Floor Covering:

2x13 mm FIBEROCK AQUA-TOUGH on
10 mm Embelton Impactamat

CLT:

1x16 mm fire resistant pbd
direct fixed to underside of CLT

Insulation: Refer to table

Ceiling Fixing:

28 mm furring channel
+ Betafix Clip

Lining Side 2:

1x13 mm or 2x13 mm pbd

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | FLOORING COVERING | LINING SIDE 2 | CEILING CAVITY mm | CLT SIZE mm | 140 | 170 | 200 |
|-------------|---|--------------------------|-------------------|-------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | INSULATION* | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ |
| CLTC120.12A | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm SHEETROCK ONE | 50 | Nil | 50(43) 68 | 52(44) 66 | 53(45) 65 |
| | | | | KI 50G11 | 56(46) 61 | 57(47) 59 | 58(48) 58 |
| CLTC120.12B | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm WETSTOP | 50 | Nil | 50(43) 68 | 52(44) 66 | 53(45) 65 |
| | | | | KI 50G11 | 56(46) 61 | 57(47) 59 | 58(48) 58 |
| CLTC120.12C | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm FIRESTOP | 50 | Nil | 51(43) 66 | 52(45) 65 | 53(46) 63 |
| | | | | KI 50G11 | 56(47) 60 | 57(48) 58 | 58(49) 56 |
| CLTC120.12D | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm IMPACTSTOP | 50 | Nil | 51(44) 66 | 52(45) 64 | 53(46) 63 |
| | | | | KI 50G11 | 56(47) 59 | 57(48) 57 | 58(49) 56 |
| CLTC120.12E | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm MULTISTOP ONE | 50 | Nil | 51(44) 66 | 52(45) 64 | 53(46) 63 |
| | | | | KI 50G11 | 56(47) 59 | 57(48) 57 | 58(49) 56 |
| CLTC120.12F | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm SHEETROCK ONE | 50 | Nil | 52(45) 64 | 53(46) 62 | 54(47) 61 |
| | | | | KI 50G11 | 57(48) 57 | 58(49) 55 | 59(51) 54 |
| CLTC120.12G | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm FIRESTOP | 50 | Nil | 52(45) 62 | 53(46) 61 | 54(47) 59 |
| | | | | KI 50G11 | 57(49) 56 | 58(50) 54 | 59(51) 52 |
| CLTC120.12H | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm MULTISTOP ONE | 50 | Nil | 52(45) 62 | 53(46) 60 | 54(47) 59 |
| | | | | KI 50G11 | 57(49) 55 | 58(50) 53 | 59(52) 52 |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R2.13-R3.59. For specific R-values, refer to eSelector.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

CROSS LAMINATED TIMBER (CLT)

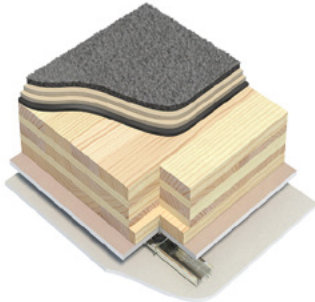
CLTC120.13

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Floor Finish:

Min 12 mm Carpet on 8 mm Chipfoam Underlay

Floor Covering:

2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat

CLT:

1x16 mm fire resistant pbd direct fixed to underside of CLT

Insulation: Refer to table

Ceiling Fixing:

28 mm furring channel + Betafix Clip

Lining Side 2:

1x13 mm or 2x13 mm pbd

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | FLOORING COVERING | LINING SIDE 2 | CEILING CAVITY mm | CLT SIZE mm | 140 | 170 | 200 |
|-------------|--|-----------------------|-------------------|-------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | INSULATION* | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ |
| CLTC120.13A | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm SHEETROCK ONE | 50 | Nil | 50(43) 38 | 51(44) 37 | 52(45) 35 |
| | | | | KI 50G11 | 55(46) 32 | 57(47) 30 | 57(48) 29 |
| CLTC120.13B | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm WETSTOP | 50 | Nil | 50(43) 38 | 51(44) 37 | 52(45) 35 |
| | | | | KI 50G11 | 55(46) 32 | 57(47) 30 | 57(48) 29 |
| CLTC120.13C | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm FIRESTOP | 50 | Nil | 51(43) 37 | 52(44) 36 | 53(45) 34 |
| | | | | KI 50G11 | 56(46) 31 | 57(48) 29 | 58(49) 27 |
| CLTC120.13D | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm IMPACTSTOP | 50 | Nil | 51(43) 37 | 52(44) 35 | 53(45) 33 |
| | | | | KI 50G11 | 56(47) 30 | 57(48) 28 | 58(49) 27 |
| CLTC120.13E | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x13 mm MULTISTOP ONE | 50 | Nil | 51(43) 37 | 52(44) 35 | 53(45) 33 |
| | | | | KI 50G11 | 56(47) 30 | 57(48) 28 | 58(49) 27 |
| CLTC120.13F | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm SHEETROCK ONE | 50 | Nil | 51(44) 35 | 52(45) 33 | 53(46) 32 |
| | | | | KI 50G11 | 56(48) 28 | 58(49) 26 | 59(50) 24 |
| CLTC120.13G | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm FIRESTOP | 50 | Nil | 52(45) 34 | 53(46) 32 | 54(47) 31 |
| | | | | KI 50G11 | 57(48) 27 | 58(50) 25 | 59(51) 23 |
| CLTC120.13H | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 2x13 mm MULTISTOP ONE | 50 | Nil | 52(45) 33 | 53(46) 32 | 54(47) 30 |
| | | | | KI 50G11 | 57(49) 26 | 59(50) 24 | 59(51) 23 |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 50G11 - 50 mm glasswool insulation 11 kg/m³ density

KI 75G11 - 75 mm glasswool insulation 11 kg/m³ density

KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R1.95-R3.54. For specific R-values, refer to eSelector.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector

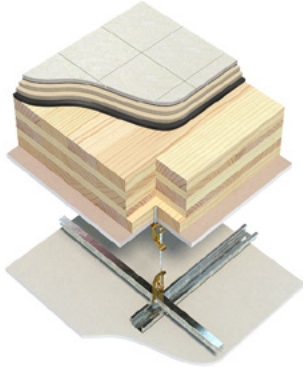
Blue text indicates systems and products suitable for wet areas.

CROSS LAMINATED TIMBER (CLT)

CLTC120.21

FIRE RESISTANCE LEVEL
FRL 120/120/120
 FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Floor Finish:

Min 10 mm Ceramic floor Tiles on 8 mm adhesive bed

Floor Covering:

2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat

CLT:

1x16 mm fire resistant pbd direct fixed to underside of CLT

Insulation: Refer to table

Ceiling Fixing:

Rondo suspension system/Betafix clip with 28m furring channel

Lining Side 2:

1x13 mm or 2x13 mm pbd

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | FLOORING COVERING | LINING DIRECT FIX TO UNDERSIDE OF CLT | LINING SIDE 2 | CEILING CAVITY mm | CLT SIZE mm | 140 | 170 | 200 |
|-------------|--|---------------------------------------|-----------------------|-------------------|-------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | | INSULATION* | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ |
| CLTC120.21A | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | 100 | Nil | 51(44) 62 | 53(45) 61 | 54(46) 59 |
| | | | | | KI 90G11 | 57(50) 55 | 59(51) 53 | 60(52) 52 |
| | | | | 150 | Nil | 52(45) 61 | 53(46) 60 | 54(47) 58 |
| | | | | | KI 90G11 | 58(51) 54 | 59(52) 52 | 60(53) 51 |
| | | | | 200 | Nil | 52(45) 61 | 53(46) 59 | 54(47) 58 |
| | | | | | KI 90G11 | 58(51) 53 | 59(53) 52 | 60(54) 50 |
| CLTC120.21B | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | 100 | Nil | 51(44) 62 | 53(45) 61 | 54(46) 59 |
| | | | | | KI 90G11 | 57(50) 55 | 59(51) 53 | 60(52) 52 |
| | | | | 150 | Nil | 52(45) 61 | 53(46) 60 | 54(47) 58 |
| | | | | | KI 90G11 | 58(51) 54 | 59(52) 52 | 60(53) 51 |
| | | | | 200 | Nil | 52(45) 61 | 53(46) 59 | 54(47) 58 |
| | | | | | KI 90G11 | 58(51) 53 | 59(53) 52 | 60(54) 50 |
| CLTC120.21C | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm FIRESTOP | 100 | Nil | 52(45) 61 | 53(46) 59 | 54(47) 58 |
| | | | | | KI 90G11 | 58(51) 54 | 59(52) 52 | 60(53) 51 |
| | | | | 150 | Nil | 52(45) 60 | 53(46) 59 | 54(47) 57 |
| | | | | | KI 90G11 | 58(52) 53 | 60(53) 51 | 61(54) 50 |
| | | | | 200 | Nil | 52(46) 60 | 53(47) 58 | 54(48) 57 |
| | | | | | KI 90G11 | 59(52) 52 | 60(53) 51 | 61(54) 49 |
| CLTC120.21D | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm IMPACTSTOP | 100 | Nil | 52(45) 60 | 54(46) 59 | 55(47) 57 |
| | | | | | KI 90G11 | 58(51) 53 | 60(52) 51 | 61(53) 50 |
| | | | | 150 | Nil | 53(46) 60 | 54(47) 58 | 55(48) 57 |
| | | | | | KI 90G11 | 59(52) 52 | 60(53) 51 | 61(54) 49 |
| | | | | 200 | Nil | 53(46) 59 | 54(47) 57 | 55(48) 56 |
| | | | | | KI 90G11 | 59(53) 52 | 60(54) 50 | 61(55) 49 |
| CLTC120.21E | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm MULTISTOP ONE | 100 | Nil | 52(45) 60 | 54(46) 59 | 55(47) 57 |
| | | | | | KI 90G11 | 58(51) 53 | 60(52) 51 | 61(53) 50 |
| | | | | 150 | Nil | 53(46) 60 | 54(47) 58 | 55(48) 57 |
| | | | | | KI 90G11 | 59(52) 52 | 60(53) 51 | 61(54) 49 |
| | | | | 200 | Nil | 53(46) 59 | 54(47) 57 | 55(48) 56 |
| | | | | | KI 90G11 | 59(53) 52 | 60(54) 50 | 61(55) 49 |
| CLTC120.21F | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 2x13 mm SHEETROCK ONE | 100 | Nil | 54(46) 59 | 55(47) 57 | 56(48) 56 |
| | | | | | KI 90G11 | 59(52) 51 | 61(54) 49 | 62(55) 48 |
| | | | | 150 | Nil | 54(47) 58 | 55(48) 56 | 56(49) 55 |
| | | | | | KI 90G11 | 60(53) 50 | 61(54) 49 | 62(55) 47 |
| | | | | 200 | Nil | 54(47) 57 | 55(48) 56 | 56(49) 54 |
| | | | | | KI 90G11 | 60(54) 50 | 61(55) 48 | 62(56) 47 |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R1.85-R4.83. For specific R-values, refer to eSelector.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
 Blue text indicates systems and products suitable for wet areas.

CROSS LAMINATED TIMBER (CLT)

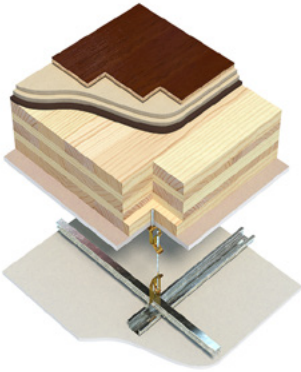
CLTC120.22

FIRE RESISTANCE LEVEL

FRL 120/120/120

FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Floor Finish:

Min 14 mm Engineered Timber or min
7 mm Laminate Flooring on min 3 mm
Underlay

Floor Covering:

2x13 mm FIBEROCK AQUA-TOUGH on
10 mm Embelton Impactamat

CLT:

1x16 mm fire resistant pbd
direct fixed to underside of CLT

Insulation: Refer to table

Ceiling Fixing:

Rondo suspension system/Betafix clip
with 28m furring channel

Lining Side 2:

1x13 mm or 2x13 mm pbd

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | FLOORING COVERING | LINING DIRECT FIX TO UNDERSIDE OF CLT | LINING SIDE 2 | CEILING CAVITY mm | CLT SIZE mm | 140 | 170 | 200 |
|-------------|--|---------------------------------------|-----------------------|-------------------|-------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | | INSULATION* | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ |
| CLTC120.22A | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | 100 | Nil | 51(44) 61 | 53(45) 60 | 54(46) 58 |
| | | | | | KI 90G11 | 57(49) 54 | 59(50) 52 | 60(51) 51 |
| | | | | 150 | Nil | 52(45) 60 | 53(46) 59 | 54(47) 57 |
| | | | | | KI 90G11 | 58(50) 53 | 59(51) 51 | 60(52) 50 |
| | | | | 200 | Nil | 52(45) 60 | 53(46) 58 | 54(47) 57 |
| | | | | | KI 90G11 | 58(51) 52 | 59(52) 51 | 60(53) 49 |
| CLTC120.22B | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | 100 | Nil | 51(44) 61 | 53(45) 60 | 54(46) 58 |
| | | | | | KI 90G11 | 57(49) 54 | 59(50) 52 | 60(51) 51 |
| | | | | 150 | Nil | 52(45) 60 | 53(46) 59 | 54(47) 57 |
| | | | | | KI 90G11 | 58(50) 53 | 59(51) 51 | 60(52) 50 |
| | | | | 200 | Nil | 52(45) 60 | 53(46) 58 | 54(47) 57 |
| | | | | | KI 90G11 | 58(51) 52 | 59(52) 51 | 60(53) 49 |
| CLTC120.22C | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm FIRESTOP | 100 | Nil | 52(45) 60 | 53(46) 58 | 54(47) 57 |
| | | | | | KI 90G11 | 58(50) 53 | 59(51) 51 | 60(52) 50 |
| | | | | 150 | Nil | 52(45) 59 | 54(47) 58 | 55(48) 56 |
| | | | | | KI 90G11 | 58(51) 52 | 60(52) 50 | 61(53) 49 |
| | | | | 200 | Nil | 53(46) 58 | 54(47) 57 | 55(48) 55 |
| | | | | | KI 90G11 | 59(52) 51 | 60(53) 49 | 61(54) 48 |
| CLTC120.22D | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm IMPACTSTOP | 100 | Nil | 52(45) 59 | 54(46) 58 | 55(47) 56 |
| | | | | | KI 90G11 | 58(50) 52 | 60(51) 50 | 61(53) 49 |
| | | | | 150 | Nil | 53(46) 58 | 54(47) 57 | 55(48) 55 |
| | | | | | KI 90G11 | 59(51) 51 | 60(53) 49 | 61(54) 48 |
| | | | | 200 | Nil | 53(46) 58 | 54(47) 56 | 55(48) 55 |
| | | | | | KI 90G11 | 59(52) 50 | 60(53) 49 | 61(54) 47 |
| CLTC120.22E | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm MULTISTOP ONE | 100 | Nil | 52(45) 59 | 54(46) 58 | 55(47) 56 |
| | | | | | KI 90G11 | 58(50) 52 | 60(51) 50 | 61(53) 49 |
| | | | | 150 | Nil | 53(46) 58 | 54(47) 57 | 55(48) 55 |
| | | | | | KI 90G11 | 59(51) 51 | 60(53) 49 | 61(54) 48 |
| | | | | 200 | Nil | 53(46) 58 | 54(47) 56 | 55(48) 55 |
| | | | | | KI 90G11 | 59(52) 50 | 60(53) 49 | 61(54) 47 |
| CLTC120.22F | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 2x13 mm SHEETROCK ONE | 100 | Nil | 54(46) 57 | 55(47) 56 | 56(48) 54 |
| | | | | | KI 90G11 | 59(51) 50 | 61(53) 48 | 62(54) 47 |
| | | | | 150 | Nil | 54(47) 56 | 55(48) 55 | 56(49) 53 |
| | | | | | KI 90G11 | 60(53) 49 | 61(54) 47 | 62(55) 46 |
| | | | | 200 | Nil | 54(47) 56 | 55(48) 54 | 56(49) 53 |
| | | | | | KI 90G11 | 60(53) 48 | 61(54) 47 | 62(56) 45 |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R1.92-R4.90. For specific R-values, refer to eSelector.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector

Blue text indicates systems and products suitable for wet areas.

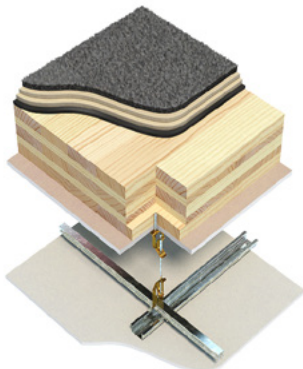
CROSS LAMINATED TIMBER (CLT)

CLTC120.23

FIRE RESISTANCE LEVEL

FRL 120/120/120
FROM BOTH SIDES

FRL Basis: FC17317-01



SYSTEM DESCRIPTION

Floor Finish:

Min 12 mm Carpet on 8 mm Chipfoam Underlay

Floor Covering:

2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat

CLT:

1x16 mm fire resistant pbd direct fixed to underside of CLT

Insulation: Refer to table

Ceiling Fixing:

Rondo suspension system/Betafix clip with 28m furring channel

Lining Side 2:

1x13 mm or 2x13 mm pbd

ACOUSTIC OPINION: PKA103KNF

THERMAL BASIS: JMF REPORT 274F

| SYSTEM | FLOORING COVERING | LINING DIRECT FIX TO UNDERSIDE OF CLT | LINING SIDE 2 | CEILING CAVITY mm | CLT SIZE mm | 140 | 170 | 200 |
|-------------|--|---------------------------------------|-----------------------|-------------------|-------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | | INSULATION* | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ | $R_w(R_w+C_{tr})_{L_{n,w}}$ |
| CLTC120.23A | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm SHEETROCK ONE | 100 | Nil | 51(44) 34 | 52(45) 33 | 53(46) 31 |
| | | | | | KI 90G11 | 57(49) 26 | 58(50) 25 | 59(51) 23 |
| | | | | 150 | Nil | 52(44) 33 | 53(46) 31 | 54(47) 30 |
| | | | | | KI 90G11 | 57(50) 25 | 59(51) 24 | 60(52) 22 |
| | | | | 200 | Nil | 52(45) 32 | 53(46) 31 | 54(47) 29 |
| | | | | | KI 90G11 | 58(51) 24 | 59(52) 23 | 60(53) 21 |
| CLTC120.23B | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm WETSTOP | 100 | Nil | 51(44) 34 | 52(45) 33 | 53(46) 31 |
| | | | | | KI 90G11 | 57(49) 26 | 58(50) 25 | 59(51) 23 |
| | | | | 150 | Nil | 52(44) 33 | 53(46) 31 | 54(47) 30 |
| | | | | | KI 90G11 | 57(50) 25 | 59(51) 24 | 60(52) 22 |
| | | | | 200 | Nil | 52(45) 32 | 53(46) 31 | 54(47) 29 |
| | | | | | KI 90G11 | 58(51) 24 | 59(52) 23 | 60(53) 21 |
| CLTC120.23C | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm FIRESTOP | 100 | Nil | 52(45) 33 | 53(46) 31 | 54(47) 30 |
| | | | | | KI 90G11 | 58(50) 25 | 59(51) 23 | 60(52) 22 |
| | | | | 150 | Nil | 52(45) 32 | 53(46) 30 | 54(47) 29 |
| | | | | | KI 90G11 | 58(51) 24 | 59(52) 22 | 60(53) 21 |
| | | | | 200 | Nil | 52(46) 31 | 53(47) 29 | 54(48) 28 |
| | | | | | KI 90G11 | 58(52) 23 | 60(53) 21 | 61(54) 20 |
| CLTC120.23D | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm IMPACTSTOP | 100 | Nil | 52(45) 32 | 53(46) 31 | 54(47) 29 |
| | | | | | KI 90G11 | 58(50) 24 | 59(51) 23 | 60(53) 21 |
| | | | | 150 | Nil | 53(46) 31 | 54(47) 29 | 55(48) 28 |
| | | | | | KI 90G11 | 58(51) 23 | 60(53) 22 | 61(54) 20 |
| | | | | 200 | Nil | 53(46) 30 | 54(47) 29 | 55(48) 27 |
| | | | | | KI 90G11 | 59(52) 22 | 60(53) 21 | 61(54) 19 |
| CLTC120.23E | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 1x13 mm MULTISTOP ONE | 100 | Nil | 52(45) 32 | 53(46) 31 | 54(47) 29 |
| | | | | | KI 90G11 | 58(50) 24 | 59(51) 23 | 60(53) 21 |
| | | | | 150 | Nil | 53(46) 31 | 54(47) 29 | 55(48) 28 |
| | | | | | KI 90G11 | 58(51) 23 | 60(53) 22 | 61(54) 20 |
| | | | | 200 | Nil | 53(46) 30 | 54(47) 29 | 55(48) 27 |
| | | | | | KI 90G11 | 59(52) 22 | 60(53) 21 | 61(54) 19 |
| CLTC120.23F | 2x13 mm FIBEROCK AQUA-TOUGH on 10 mm Embelton Impactamat | 1x16 mm FIRESTOP | 2x13 mm SHEETROCK ONE | 100 | Nil | 53(46) 30 | 54(47) 29 | 55(48) 27 |
| | | | | | KI 90G11 | 59(52) 22 | 60(53) 20 | 62(54) 19 |
| | | | | 150 | Nil | 54(47) 29 | 55(48) 27 | 56(49) 26 |
| | | | | | KI 90G11 | 59(53) 21 | 61(54) 19 | 62(55) 18 |
| | | | | 200 | Nil | 54(47) 28 | 55(48) 26 | 56(49) 25 |
| | | | | | KI 90G11 | 60(53) 20 | 61(54) 18 | 62(55) 17 |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

* KI 90G11 - 90 mm glasswool insulation 11 kg/m³ density

R-values of systems in the range of R1.87-R4.85. For specific R-values, refer to eSelector.

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

COLUMN PROTECTION

PCC.1

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195



SYSTEM DESCRIPTION

One or more layers of fire resistant pbd
direct fixed or furred with Rondo 308 or 333
furring channels (refer to table)

COLUMN PROTECTION - CONCRETE COLUMNS

| SYSTEM | FRL | LINING (All Sides) | FIXING |
|-----------|----------|------------------------------|------------------|
| PCC30.1A | +30/-/- | 1x13 mm FIRESTOP | Direct or Furred |
| PCC60.1A | +60/-/- | 2x13 mm FIRESTOP | Furred |
| PCC90.1A | +90/-/- | 2x16 mm FIRESTOP | Furred |
| PCC120.1A | +120/-/- | 1x25 mm SHAFTLINER MOULDSTOP | Direct or Furred |

PTC.1

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195



SYSTEM DESCRIPTION

One or more layers of fire resistant pbd
direct fixed (refer to table)

COLUMN PROTECTION - TIMBER COLUMNS

| SYSTEM | FRL | LINING (All Sides) | FIXING |
|-----------|---------|-----------------------|--------------|
| PTC30.1A | 30/-/- | 1x13 mm FIRESTOP | Direct Fixed |
| PTC60.1A | 60/-/- | 2x13 mm FIRESTOP | Direct Fixed |
| PTC90.1A | 90/-/- | 3x13 mm FIRESTOP | Direct Fixed |
| PTC120.1A | 120/-/- | 3x16 mm FIRESTOP | Direct Fixed |

COLUMN PROTECTION

PSC.1

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195



SYSTEM DESCRIPTION

One or more layers of fire resistant pbd around periphery on encasement channel forming gap around column

COLUMN PROTECTION – STEEL I-SECTIONS

| SYSTEM | FRL | LINING (All Sides) | FIXING |
|-----------|---------|-----------------------|--------------------------------------|
| PSC30.1A | 30/–/– | 1x13 mm FIRESTOP | Around periphery, spaced from column |
| PSC60.1A | 60/–/– | 2x13 mm FIRESTOP | Around periphery, spaced from column |
| PSC90.1A | 90/–/– | 2x16 mm FIRESTOP | Around periphery, spaced from column |
| PSC120.1A | 120/–/– | 3x13 mm FIRESTOP | Around periphery, spaced from column |

PSC.2

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195



SYSTEM DESCRIPTION

One or more layers of fire resistant pbd around periphery on Rondo 142 track forming nom 18 mm gap around column

COLUMN PROTECTION – STEEL SHS/RHS SECTIONS

| SYSTEM | FRL | LINING (All Sides) | FIXING |
|-----------|---------|-----------------------|--------------------------------------|
| PSC30.2A | 30/–/– | 1x13 mm FIRESTOP | Around periphery, spaced from column |
| PSC60.2A | 60/–/– | 2x13 mm FIRESTOP | Around periphery, spaced from column |
| PSC90.2A | 90/–/– | 2x16 mm FIRESTOP | Around periphery, spaced from column |
| PSC120.2A | 120/–/– | 3x13 mm FIRESTOP | Around periphery, spaced from column |

PSC.3

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC12535



SYSTEM DESCRIPTION

One or more layers of fire resistant pbd around periphery on Rondo 142 track forming gap around column

COLUMN PROTECTION – STEEL CHS SECTIONS

| SYSTEM | FRL | LINING (All Sides) | FIXING |
|-----------|---------|-----------------------|--------------------------------------|
| PSC30.3A | 30/–/– | 1x13 mm FIRESTOP | Around periphery, spaced from column |
| PSC60.3A | 60/–/– | 2x13 mm FIRESTOP | Around periphery, spaced from column |
| PSC90.3A | 90/–/– | 2x16 mm FIRESTOP | Around periphery, spaced from column |
| PSC120.3A | 120/–/– | 3x13 mm FIRESTOP | Around periphery, spaced from column |

COLUMN PROTECTION

PSC.4

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195



SYSTEM DESCRIPTION

One or more layers of fire resistant pbd
direct fixed to steel studs encasing column
entirely within fire-rated wall

COLUMN PROTECTION – STEEL COLUMNS WITHIN WALL

| SYSTEM | FRL | LINING (Both Sides) | FIXING |
|------------------|---------|------------------------|--|
| PSC30.4A | 30/-/- | 1x13 mm FIRESTOP | Direct to stud in accordance with standard fire-rated installation details |
| PSC60.4A | 60/-/- | 1x16 mm FIRESTOP | Direct to stud in accordance with standard fire-rated installation details |
| PSC90.4A | 90/-/- | 2x13 mm FIRESTOP | Direct to stud in accordance with standard fire-rated installation details |
| PSC120.4A | 120/-/- | 2x16 mm FIRESTOP | Direct to stud in accordance with standard fire-rated installation details |

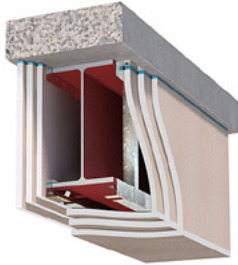
* The structural steel section shall not be in contact with the wall lining.

BEAM PROTECTION

PSB.1

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195

**SYSTEM DESCRIPTION**

One or more layers of fire resistant pbd around periphery on framing forming gap around beam

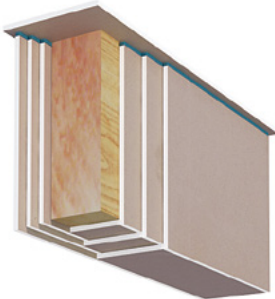
BEAM PROTECTION - STEEL BEAMS

| SYSTEM | FRL | LINING (All Sides) | FIXING |
|-----------|---------|-----------------------|--|
| PSB30.1A | 30/-/- | 1x13 mm FIRESTOP | Spaced from sides and bottom of steel beam |
| PSB60.1A | 60/-/- | 2x13 mm FIRESTOP | Spaced from sides and bottom of steel beam |
| PSB90.1A | 90/-/- | 2x16 mm FIRESTOP | Spaced from sides and bottom of steel beam |
| PSB120.1A | 120/-/- | 3x13 mm FIRESTOP | Spaced from sides and bottom of steel beam |

PTB.1

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16195

**SYSTEM DESCRIPTION**

One or more layers of fire resistant pbd direct fixed (refer to table)

BEAM PROTECTION - TIMBER BEAMS

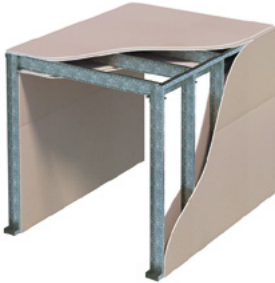
| SYSTEM | FRL | LINING (All Sides) | FIXING |
|-----------|---------|-----------------------|--------------|
| PTB30.1A | 30/-/- | 1x13 mm FIRESTOP | Direct Fixed |
| PTB60.1A | 60/-/- | 2x13 mm FIRESTOP | Direct Fixed |
| PTB90.1A | 90/-/- | 3x13 mm FIRESTOP | Direct Fixed |
| PTB120.1A | 120/-/- | 3x16 mm FIRESTOP | Direct Fixed |

FIRE TUNNEL

FT

FIRE RESISTANCE LEVEL
(refer to table)

FRL Basis: FC16109



SYSTEM DESCRIPTION

One or more layers of fire resistant pbd direct fixed to both sides of steel framed walls and ceiling.

FIRE TUNNELS

| SYSTEM | FRL | FRAME | LINING |
|----------|------------------------------|---|--|
| FT60.1A | -/60/60 from outside | Welded steel frame ex 150 mm Rondo studs, track and corner angles | 1x16 mm FIRESTOP over and under ceiling 1x16 mm FIRESTOP to both sides of wall frame |
| FT60.2A | -/60/60 from both sides | Welded steel frame ex 150 mm Rondo studs, track and corner angles | 2x16 mm FIRESTOP over and under ceiling 1x16 mm FIRESTOP to both sides of wall frame |
| FT90.1A | -/90/90 from outside | Welded steel frame ex 150 mm Rondo studs, track and corner angles | 2x13 mm FIRESTOP over ceiling and outside walls 1x13 mm FIRESTOP under ceiling and inner walls |
| FT120.1A | -/120/120 from outside | Welded steel frame ex 150 mm Rondo studs, track and corner angles | 2x16 mm FIRESTOP over ceiling and outside walls 1x16 mm FIRESTOP + 1x10 mm SHEETROCK ONE under ceiling and inner walls |
| FT120.2A | -/120/120 from both sides | Welded steel frame ex 150 mm Rondo studs, track and corner angles | 2x16 mm FIRESTOP over ceiling 3x16 mm FIRESTOP under ceiling 2x16 mm FIRESTOP to both sides of wall frame |

SOIL & WASTE PIPE

NCC/BCA Requirements

The National Construction Code (NCC) specifies the minimum standards for all buildings in Australia, including minimum standards for acoustic performance between residential dwellings.

This includes minimum acoustic performance of services that pass through more than Sole Occupancy Unit (SOU). The minimum acoustic requirement between an internal service (duct, soil, waste, water supply pipe) that passes through more than one SOU is:

- **$R_w + C_{tr}$ 25 to a Non-Habitable Room**
(Kitchens, Bathrooms, Laundry, Toilet, Pantry, Walk-in Wardrobe, Corridors, Hallways, Lobby, Photographic Darkrooms, Clothes-drying Room, and other spaces not occupied frequently or for extended periods of time.)
- **$R_w + C_{tr}$ 40 to a Habitable Room**
(A room used for normal domestic activities including Bedrooms, Living Rooms, Lounge Rooms, Music, Television, Dining, Sewing, Study, Playrooms, Home Theatre Rooms, Sunrooms and Family Rooms.)

These systems have been assessed by Renzo Tonin & Associates as compliant with NCC/BCA requirements for internal services.

They are based on laboratory acoustic tests and opinions from Renzo Tonin & Associates. As suitably qualified acoustic consultants, Members of the Australian Acoustical Society and Association of Australasian Acoustical Consultants, they are able to certify systems under the NCC Part A2.2 (2)(c), Expert Judgement.

The opinions assume that the walls and/or ceilings are of good construction, with the perimeter sealed with acoustic mastic and no penetrations.

Description

The Knauf Soil and Waste Pipe Systems have been developed to provide practical information and options for compliance with the NCC.

A variety of systems including ceiling systems, risers, walls and bulkheads are presented to cover all practical situations. Systems with lagged services are presented as well as systems with no lagging where lagging is not practical to install.

Pyrotek® Soundlag™ 4525c with a minimum 25 mm insulation and an overall weight of not less than 5.0 kg/m² (or acoustically equivalent), has been used as the basis for the Knauf lagged Soil & Waste Pipe systems.

These tables and diagrams show NCC acoustic compliant systems. For installation and framing requirements, please refer to the relevant section for walls and/or ceilings.

Design Considerations

The systems presented here comply with the NCC acoustic requirements but site specific conditions must also be taken into consideration. Penetrations in the ceiling linings including for lights, mechanical services and access panels may reduce the acoustic performance of the systems.

Lighting

Most LED downlights are fully sealed and are expected to maintain the acoustic performance of the ceiling lining. For other lighting types, where they may be openings or gaps, acoustic advice should be sought from the supplier, manufacturer or acoustic consultant on the potential reduction in the acoustic performance and any additional acoustic treatment that may be required.

Access Panels

The NCC provides deemed to comply requirements for access panels (Specification F5.2 Section 2(e)(ii)). Alternatively, third party products are available that may be appropriate, but these should be assessed by an acoustic consultant to ensure that both the minimum NCC and project specific performance requirements are achieved.

Mechanical Services

Supply and return air ducts and grilles are likely to be the main source of noise flanking and most likely to reduce the acoustic performance of the ceiling and Soil & Waste Pipe system due to the relatively large open areas and generally lightweight products used. Specialist acoustic treatment of these elements (such as lagging, acoustic linings and attenuators etc) may be required to maintain the acoustic performance of these systems.

Knauf recommends that a suitably qualified acoustic consultant is engaged to review and provide advice on achieving the NCC requirements for a particular development.

SOIL & WASTE PIPE

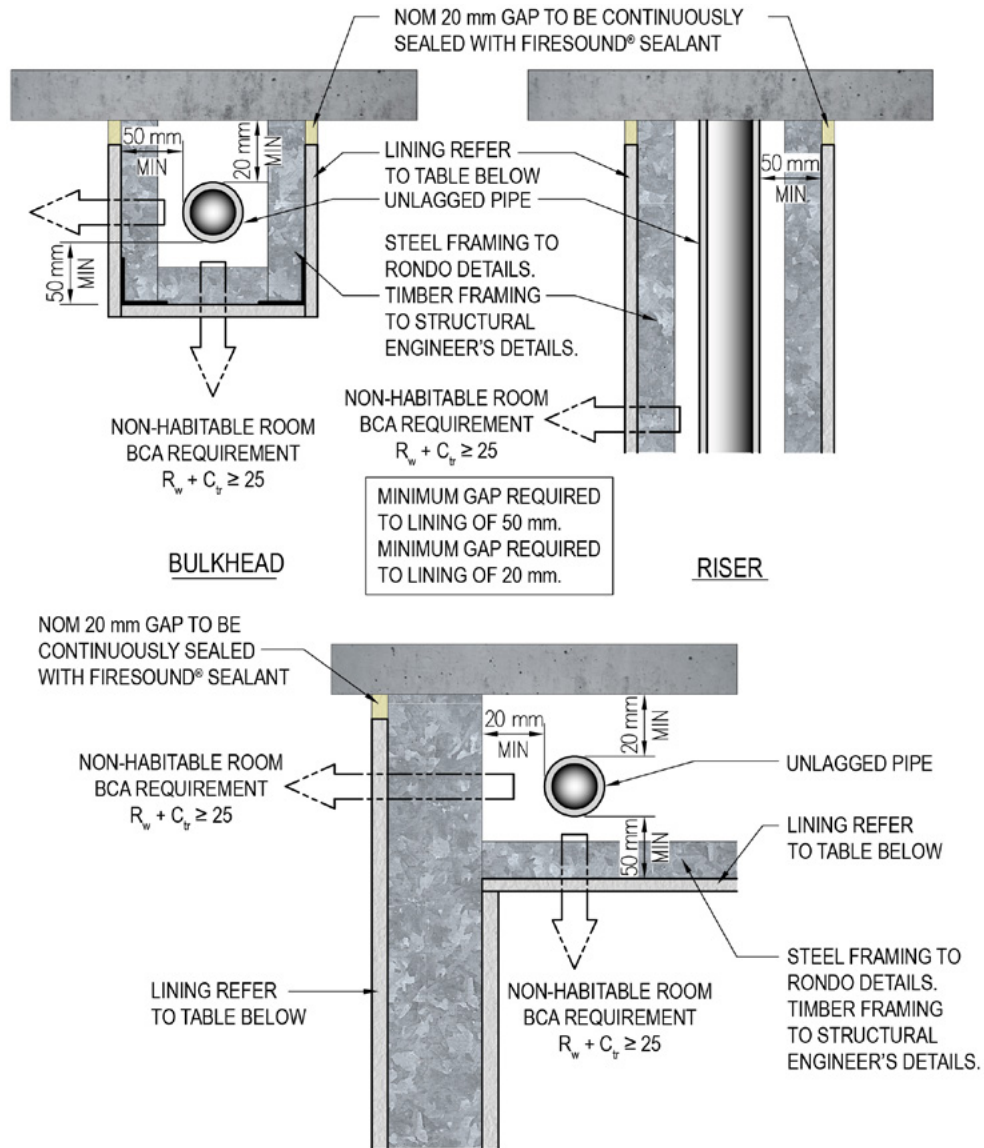


Figure I6: Soil & Waste Pipe Systems - $R_w + C_{tr}$ 25 (No Lagging)

BCA COMPLYING CONSTRUCTION (SOIL & WASTE PIPE TO NON-HABITABLE ROOM) MINIMUM $R_w + C_{tr}$ 25

| SYSTEM NO. | INSULATION | WALL / CEILING / RISER LINING | $R_w (R_w + C_{tr})$ | OPINION REFERENCE |
|------------|------------|-------------------------------|----------------------|-------------------|
| SWU.1A | Nil | 1x10 mm SHEETROCK PLUS | 28(25) | RT&A TK778-13F01 |
| SWU.1B | | 2x10 mm SHEETROCK ONE | 32(27) | |
| SWU.1C | | 1x13 mm SHEETROCK ONE | 27(25) | |
| SWU.1D | | 1x13 mm WETSTOP | 28(26) | |
| SWU.1E | | 1x13 mm FIRESTOP | 29(26) | |
| SWU.1F | | 1x13 mm IMPACTSTOP | 29(27) | |

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/selector
 Blue text indicates systems and products suitable for wet areas.

SOIL & WASTE PIPE

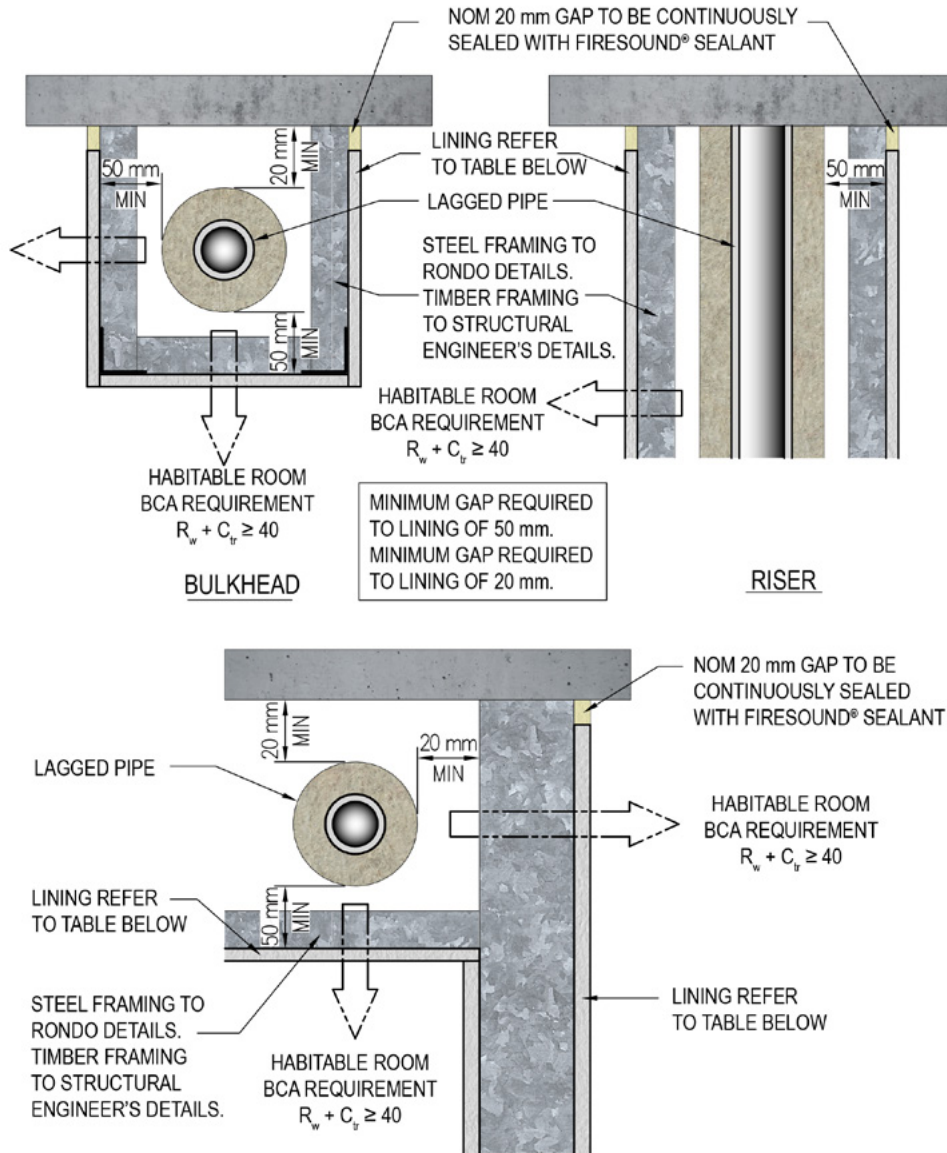


Figure I7: Soil & Waste Pipe Systems - $R_w + C_r$ 40 (Lagged Services)

BCA COMPLYING CONSTRUCTION (SOIL & WASTE PIPE TO HABITABLE ROOM) MINIMUM $R_w + C_r$ 40

| SYSTEM NO. | PIPE LAGGING | WALL / CEILING / RISER LINING | $R_w (R_w + C_r)$ | OPINION REFERENCE |
|------------|--|-------------------------------|-------------------|-------------------|
| SWL.1A | Pyrotek Soundlag 4525C (or acoustically equivalent product) | 1x10 mm SHEETROCK ONE | 50(40) | RT&A TK778-13F01 |
| SWL.1C | | 1x10 mm SHEETROCK PLUS | 52(42) | |
| SWL.1D | | 1x13 mm SHEETROCK ONE | 51(41) | |
| SWL.1E | | 1x13 mm WETSTOP | 52(42) | |

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/selector
Blue text indicates systems and products suitable for wet areas.

SOIL & WASTE PIPE

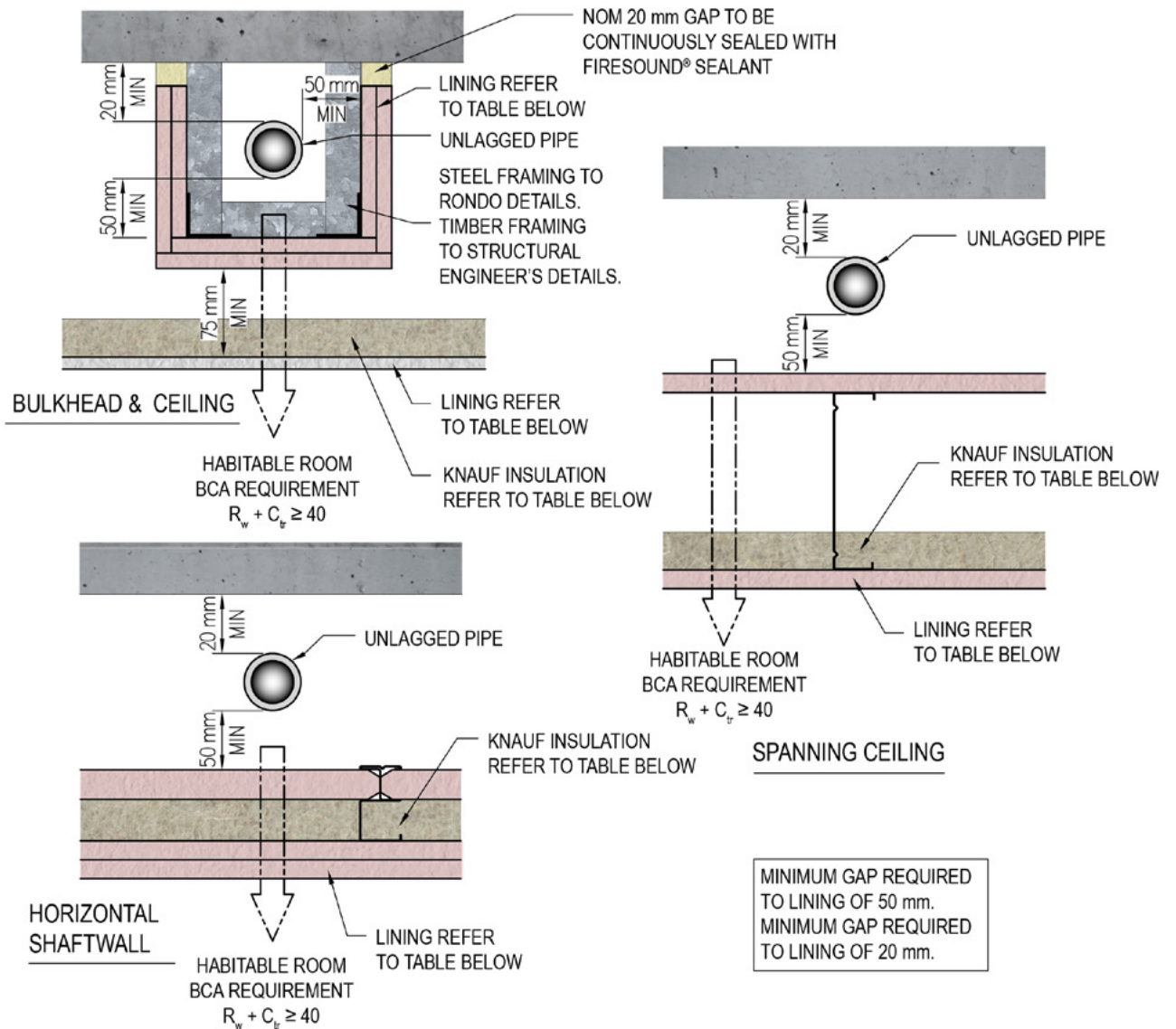


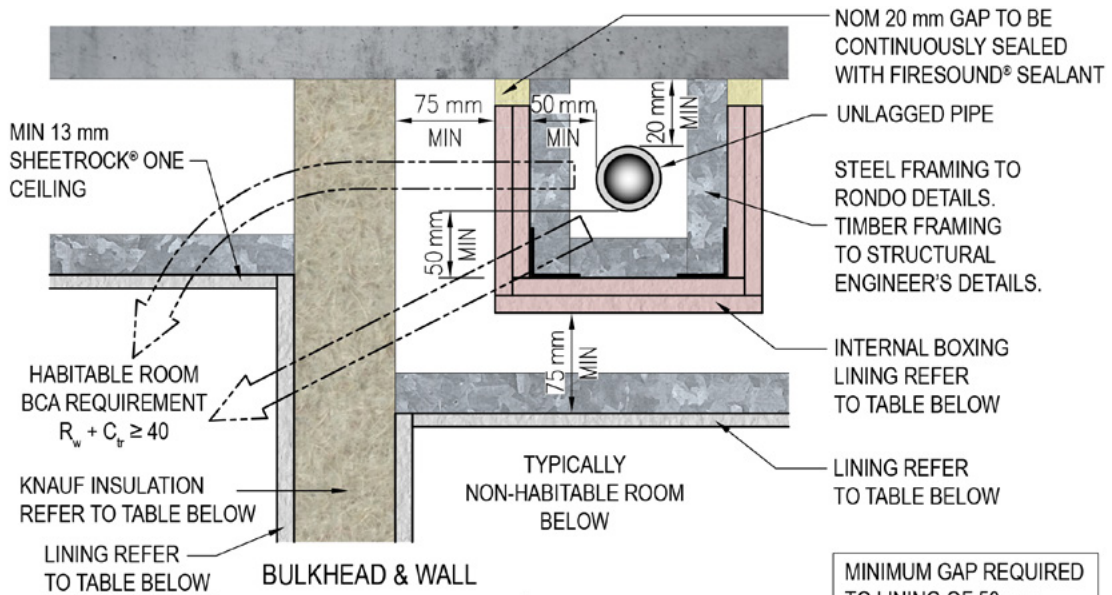
Figure I8: Soil & Waste Pipe Systems - $R_w + C_{tr} \geq 40$ (No Lagging) Ceiling Systems

BCA COMPLYING CONSTRUCTION (SOIL & WASTE PIPE TO HABITABLE ROOM) MINIMUM $R_w + C_{tr} \geq 40$

| SYSTEM NO. | BULKHEAD / INTERNAL BOXING | INSULATION | CEILING SYSTEM | $R_w (R_w + C_{tr})$ | OPINION REFERENCE |
|------------|---|--|--|----------------------|-------------------|
| SWC.1A | Nil | KI 50G11 (to ceiling stud cavity) | Upper: 1x25 mm SHAFTLINER MOULDSTOP in 64CH55 steel stud (600 mm centres) Lower: 2x16 mm FIRESTOP | 50(40) | RT&A TK778-13F01 |
| SWC.2A | | KI 90G11 (to ceiling stud cavity) | Upper: 1x16 mm FIRESTOP in 150CS75 steel stud (600 mm centres) Lower: 1x16 mm FIRESTOP | 46(42) | |
| SWC.3A | | KI 90G11 (to ceiling stud cavity) | Upper: 2x13 mm FIRESTOP in 150CS75 steel stud (600 mm centres) Lower: 1x13 mm FIRESTOP | 49(43) | |
| SWC.4A | 2x13 mm FIRESTOP on timber or steel framing | KI 75G11 1200 mm to either side of pipe | 1x13 mm SHEETROCK ONE | 50(40) | |
| SWC.5A | 2x13 mm FIRESTOP on timber or steel framing | | 1x13 mm WETSTOP | | |

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

SOIL & WASTE PIPE



MINIMUM GAP REQUIRED TO LINING OF 50 mm.
MINIMUM GAP REQUIRED TO LINING OF 20 mm.

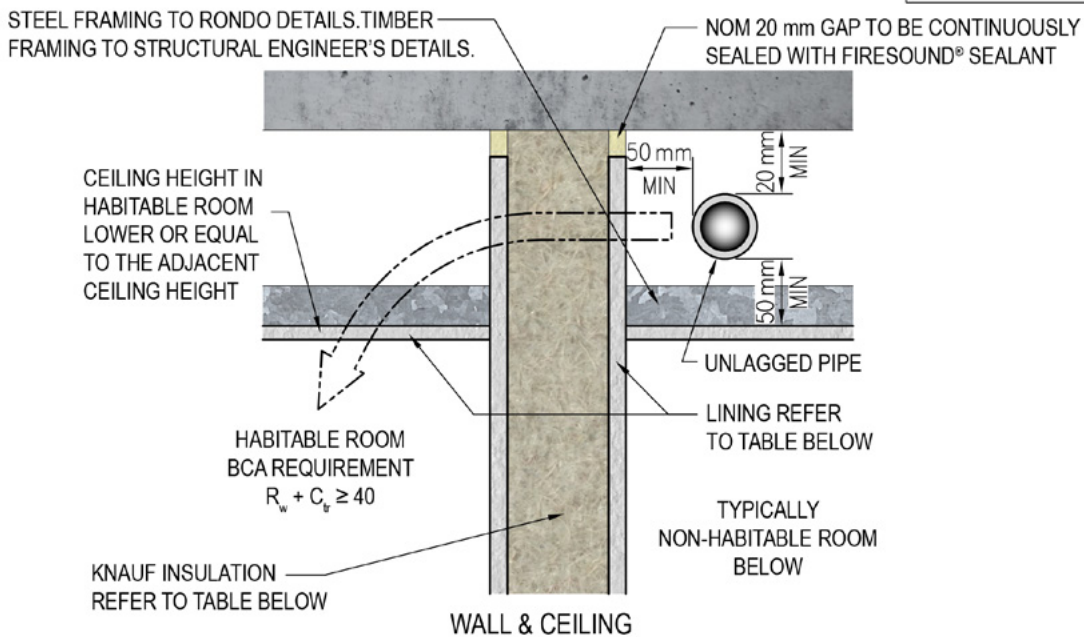


Figure I9: Soil & Waste Pipe Systems - $R_w + C_{tr}$ 40 (No Lagging) Ceiling and Wall Systems

| BCA COMPLYING CONSTRUCTION (SOIL & WASTE PIPE TO HABITABLE ROOM) MINIMUM $R_w + C_{tr}$ 40 | | | | | | |
|--|---|--------------------------------|-----------------------|--|------------------------|-------------------|
| SYSTEM NO. | BULKHEAD / INTERNAL BOXING | INSULATION | CEILING | WALL SYSTEM | $R_w (R_w + C_{tr})$ | OPINION REFERENCE |
| SWW.1A | 2x13 mm FIRESTOP on timber or steel framing | KI 50G11 (to stud wall cavity) | 1x13 mm SHEETROCK ONE | 1x13 mm SHEETROCK ONE to both sides of 64 mm steel stud (600 mm centres) | 50(40) | RT&A TK778-13F01 |
| SWW.1B | 2x13 mm FIRESTOP on timber or steel framing | | | | | |
| SWW.2A | Nil | | | | $R_w + C_{tr} \geq 40$ | |
| SWW.2B | | | | | | |

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

SOIL & WASTE PIPE

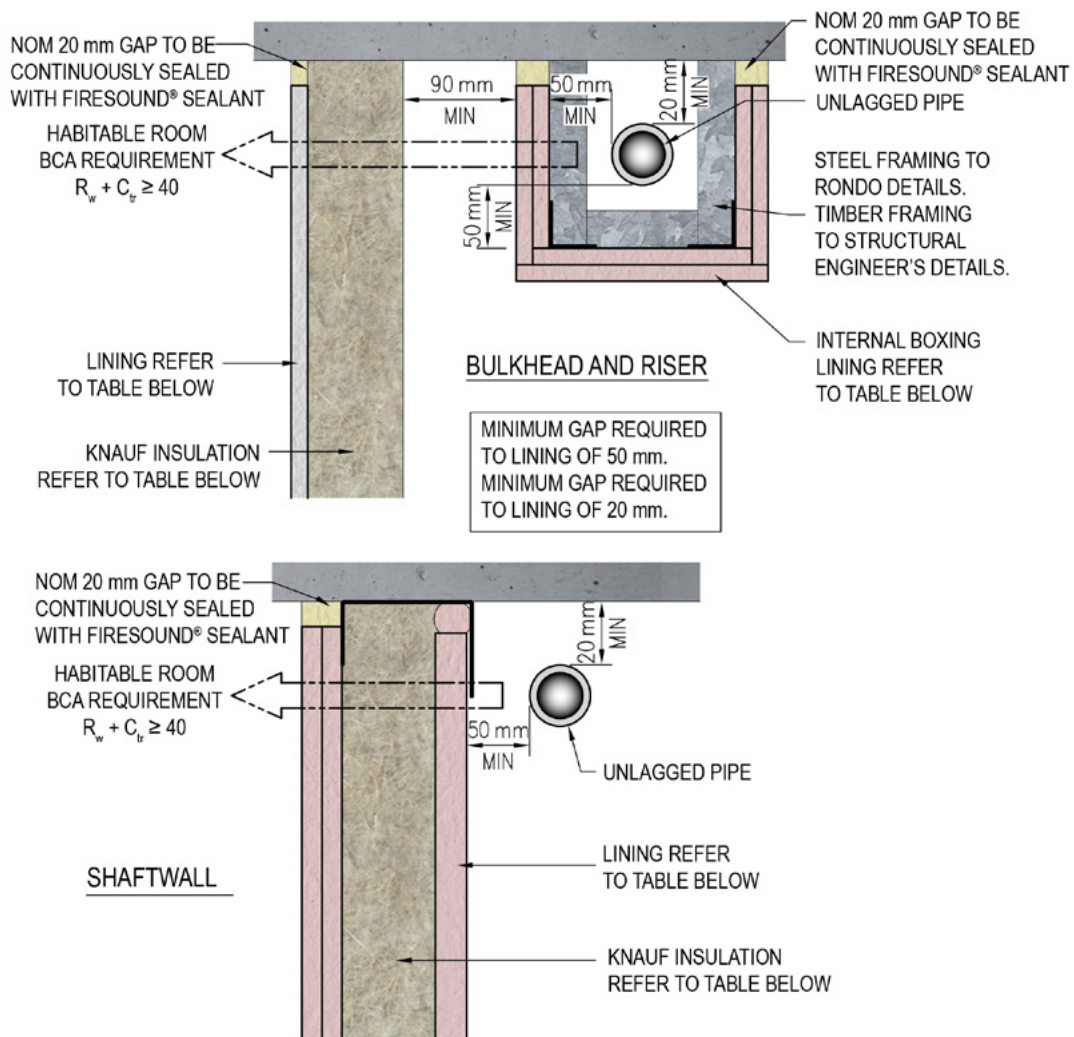


Figure I10: Soil & Waste Pipe Systems - $R_w + C_{tr}$ 40 (No Lagging) Wall Systems

BCA COMPLYING CONSTRUCTION (SOIL & WASTE PIPE TO HABITABLE ROOM) MINIMUM $R_w + C_{tr}$ 40

| SYSTEM NO. | BULKHEAD / INTERNAL BOXING | INSULATION | WALL SYSTEM | $R_w (R_w + C_{tr})$ | OPINION REFERENCE |
|------------|--|-------------------------|--|------------------------|------------------------------|
| SWR.1A | Nil | KI 50G11 (to wall stud) | 64CH55 (CH stud) 1x25 mm SHAFTLINER MOULDSTOP in 64CH55 steel stud (600 mm centres) + 2x16 mm FIRESTOP to other side | 50(40) | RT&A TK778-13F01 |
| | | | 102CH55 (CH stud) 1x25 mm SHAFTLINER MOULDSTOP in 102CH55 steel stud (600 mm centres) + 2x16 mm FIRESTOP to other side | 51(42) | |
| SWR.2A | Nil | KI 50G11 (to wall stud) | 1x25 mm SHAFTLINER MOULDSTOP in 102CH55 steel stud (600 mm centres) + 3x16 mm FIRESTOP to other side | 49(40) | |
| SWR.3A | 2x13 mm SHEETROCK ONE on timber or steel framing | KI 75G11 (to wall stud) | 1x13 mm SHEETROCK ONE on separate stud (90 mm gap between bulkhead and lining) | 50(40) | |
| SWR.3B | 2x13 mm WETSTOP on timber or steel framing | | 1x13 mm WETSTOP on separate stud (90 mm gap between bulkhead and lining) | 50(40) | |
| SWR.4A | 2x13 mm FIRESTOP on timber or steel framing | KI 75G11 (to wall stud) | 1x13 mm SHEETROCK ONE on separate stud (90 mm gap between bulkhead and lining) | 52(42) | |
| SWR.4B | 2x13 mm MULTISTOP ONE on timber or steel framing | | 1x13 mm WETSTOP on separate stud (90 mm gap between bulkhead and lining) | 52(42) | |
| SWR.5A | Nil | Nil | Any valid Knauf wall system where $R_w + C_{tr} \geq 40$ | $R_w + C_{tr} \geq 40$ | Various (refer to Systems +) |

MULTISTOP ONE HI may be a direct substitute for MULTISTOP ONE for FRL and acoustic performance of the same board thickness

For the full range of Knauf systems refer to knauf.com/en-AU/knauf-gypsum/services/tools/eselector
Blue text indicates systems and products suitable for wet areas.

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Section J

Systems Index

10/2025

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