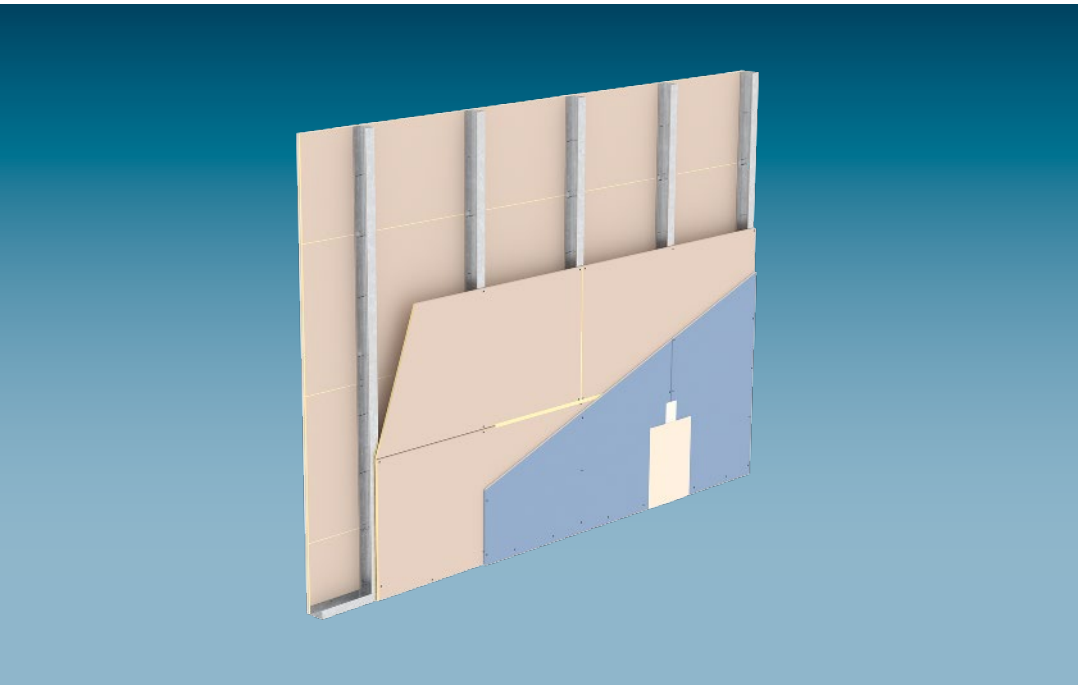


Drywall Systems

K13.de

System Data Sheet 2022-09

Knauf X-Ray Shielding Partitions

K131.de – Knauf X-Ray Shielding Partition Safeboard – single-layer cladding
K132.de – Knauf X-Ray Shielding Partition Safeboard – double-layer cladding
K133.de – Knauf X-Ray Shielding Partition Safeboard – triple-layer cladding
K135.de – Knauf X-Ray Shielding Partition Lead Sheet – single side X-Ray shielding layer
K136.de – Knauf X-Ray Shielding Partition Lead Sheet – double side X-Ray shielding - single lead sheet
K137.de – Knauf X-Ray Shielding Partition Lead Sheet – double side X-Ray shielding - multiple lead sheets

Note on English translation / Hinweise zur englischen Fassung

This is a translation of the system data sheet valid in Germany.
All stated details and properties are in compliance with the regulations of the German standards and building regulations. They are only applicable for the specified products, system components, application rules, and construction details in connection with the specifications of the respective certificates and approvals.
Knauf Gips KG denies any liability for applications outside of Germany as this requires changes acc. to the respective national standards and building regulations.

Dies ist eine Übersetzung des in Deutschland gültigen Detailblattes. Alle angegebenen Werte und Eigenschaften entsprechen den in Deutschland gültigen Normen und bauaufsichtlichen Regelungen. Sie gelten nur bei Verwendung der angegebenen Produkte, Systemkomponenten, Anwendungsregeln und Konstruktionsdetails in Verbindung mit den Vorgaben der bauaufsichtlichen Nachweise.
Die Knauf Gips KG lehnt jegliche Haftung für Einsatz und Anwendung außerhalb Deutschlands ab, da in diesem Fall eine Anpassung an nationale Normen und bauaufsichtliche Regelungen notwendig ist.

Contents

Notes on the document

Knauf system data sheets are the basis for planning and application for planners and professional installers when applying Knauf systems. The contained information and specifications, constructions, details and stated products are based, unless otherwise stated, on the certificates of usability (e.g. National Technical Test Certificate - abP) valid at the date they are published as well as on the applicable standards. Additionally, design and structural requirements and those relating to building physics (fire resistance and sound insulation) are considered.
The contained construction details are examples and can be used in a similar way for various cladding variants of the respective system. At the same time, the demands made on fire resistance and/or sound insulation as well as any necessary additional measures and/or limitations must be observed.

References to other documents

System data sheets

- Knauf Metal Stud Partitions W11.de
- Knauf X-Ray Shielding ceiling systems K11.de
- Knauf X-Ray Shielding Furring and Lining K15.de

Folders

- Fire resistance with Knauf BS1.de (German only)
- Sound insulation and room acoustics with Knauf (only sections in English)

Technical Information

- Fastening of loads to Knauf Wall and Ceiling Systems VT03.de

Product data sheets

- SYSTEM Safeboard X-Ray Shielding access panel E139.de
- Observe the product data sheets of the Knauf system components.

Pictograms in the system data sheet

The following pictograms are used in this document:

X-Ray shielding

With Knauf Safeboard X-Ray Shielding Boards (lead-free)

With lead sheet laminated gypsum boards

Symbols in the system data sheet

The following symbols are used in this document:

Insulation layers

G Mineral wool insulation layer acc. to EN 13162
Non-combustible (insulating material,
e.g. from Knauf Insulation)

Intended use of Knauf systems

Please observe the following:

Caution	Knauf systems may only be used for the application cases specified in the Knauf documentation. In case third-party products or components are used, they must be recommended or approved by Knauf. Flawless application of products / systems assumes proper transport, storage, assembly, installation and maintenance.

General notes on Knauf systems

Term definition

Lead equivalence (mm Pb)

An material of lead equivalence 1 mm Pb (Pb = chemical symbol for lead) provides the equivalent shielding effect of a 1 mm thick lead sheet.

Field of application

The specifications in this system data sheet apply for metal stud X-Ray shielding partitions in interiors. X-ray examination rooms require structural radiation shielding to adjacent rooms. Knauf X-ray Shielding Systems are applied in the fields of X-ray diagnostics and low-power X-ray therapy. Radiation protection is provided in the form of shielding, room-enclosing components with specific lead equivalences of the used materials.

Notes on X-ray shielding

The rules for the application of structural X-ray shielding are defined in DIN 6812. The basis of all structural measures for X-ray protection is the radiation protection plan, which has to be created by the manufacturer of the X-ray unit.

The thickness of the required radiation shielding depends on the tube voltage of the device type used (depending on the medical application) and is stated for lead as the shielding material. The higher the tube voltage, the thicker the necessary layer of lead or the necessary Safeboard cladding thickness.

Note	Knauf Safeboard is designed for shielding against X-rays up to 150 kV.

Notes on fire resistance

Reinforcing and supporting connection components must at least feature the same fire resistance class.

Installation zones acc. to DIN 4103-1

Installation zone 1

Partitions in rooms where low numbers of persons gather, e.g. dwellings, hotels, office and hospital rooms including corridors and halls or similar.

Installation zone 2

Partitions in rooms where large numbers of persons gather, e.g. meeting halls, school classrooms, auditoria, exhibition halls and sales rooms as well as rooms with a similar use.

Unless otherwise stated, the value in the table is the maximum permissible partition height for installation zone 2.

Construction notes

Movement joints

Movement joints of the main structure of the X-Ray Shield Partition have to be included in the construction of the partitions. Movement joints are to be installed about every 15 m on continuous X-Ray shielding partitions.

Notes on sound insulation

Requirements for the insulation layer: Mineral wool insulation layer acc. to EN 13162 (insulating material, e.g. from Knauf Insulation);
mineral wool length-related flow resistance of 5 kPa·s/m^2 ≤ r ≤ 50 kPa·s/m^2 acc. to DIN 4109-33:2016-07

R_w = Weighted sound reduction index in dB without sound transmission via flanking building components

Note	Avoid air leaks. For deflection heads, sealing with permanently elastic material (recommendation: Knauf Insulation LDS Solimur) required.

Proof of Usability

Knauf System	X-Ray shielding	Fire resistance	Sound Insulation	Structural engineering
K131.de	TÜV NORD Röntgentechnik, Technical report of 22.09.2008	–	L 018-01.09	Knauf dimensioning based on abP P-1402/354/12-MPA BS
K132.de		abP P-3310/563/07-MPA BS	L 018-01.09 L 019-01.09	
K133.de				
K135.de	DIN 6812	–	L 037-01.15	Knauf dimensioning based on abP P-1402/354/12-MPA BS
K136.de		abP P-3310/563/07-MPA BS		
K137.de				

The stated constructional and structural properties, and characteristic building physics of Knauf systems can solely be ensured with the exclusive use of Knauf system components, or other products expressly recommended by Knauf. The validity and up-to-datedness of the stated proofs have to be considered.

Notes on fire resistance

The specifications marked with plus offer additional application options, which are not directly included in the Proof of Usability. On the basis of our technical assessments, we assume that these marked design solutions can be assessed as a non-significant divergence. On request, we can make the documentation on which this assessment is based, such as experts opinions or technical assessments, available to you together with the Certificate of Usability. We recommend that a non-significant divergence be coordinated and authorised in advance in consultation between the persons responsible for fire resistance and/or the relevant authorities.

plus Extension of the fire resistance Proof of Usability

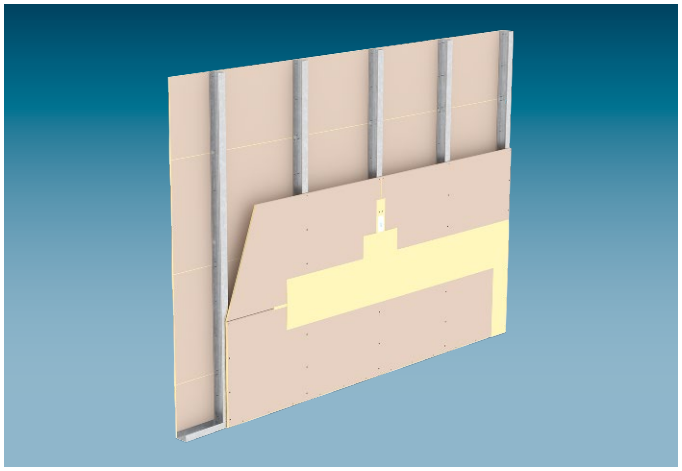
Prior consultation with respect to fire resistance notes recommended.

Knauf System	Divergences
K132.de	■ In case of horizontal application of Safeboard ■ Power socket installation
K133.de	
K136.de	■ In case of application with lead sheet laminated X-Ray Shielding Board
K137.de	

Safeboard X-Ray Shielding Partitions

Knauf X-Ray Shielding Partitions consist of a metal substructure as a single stud partition and single or multi-layer cladding made of Safeboard boards and, if necessary, a cover layer on both sides made of Diamant boards. The stud construction is connected all around to the flanking constructional components. In the wall cavity, insulation materials for sound and thermal insulation as well as sanitary or electric built-ins can be installed. Knauf X-Ray Shielding Partitions Safeboard ensure the required structural radiation shielding to adjacent rooms.
Here you will find your application in the fields of X-ray diagnostics and low-power X-ray therapy.

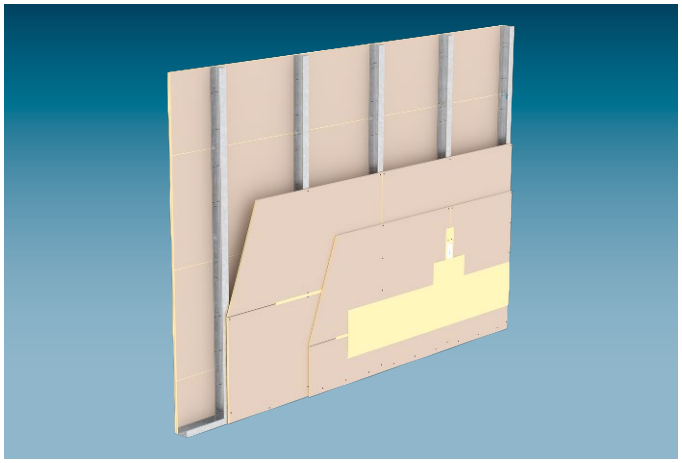
K131.de X-Ray Shielding Partition Safeboard – single-layer cladding



The X-Ray shielding partition system **W111.de** consists of a single metal stud frame and is clad with a single layer of gypsum board on each side.
The low self-weight of Safeboard in comparison to the lead-laminated boards simplifies application.

- Without lead sheet
- Joint backing with lead sheet strip not required
- Partition heights up to: 9.70 m
- Weighted airborne sound insulation index R_w up to: 60.9 dB

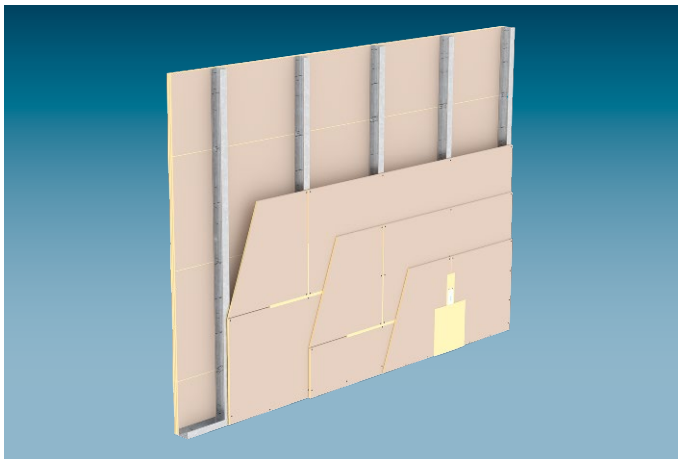
K132.de X-Ray Shielding Partition Safeboard – double-layer cladding



The X-Ray shielding partition system **K132.de** consists of a single metal stud frame and is clad with two layers of Safeboard or one layer of Safeboard as well as a cover layer of Knauf Diamant boards on each side.
The low self-weight of Safeboard in comparison to the lead-laminated boards simplifies application.

- Without lead sheet
- Joint backing with lead sheet strip not required
- Partition heights up to: 11.40 m
- Weighted airborne sound insulation index R_w up to: 70.4 dB
- Fire resistance class up to: F90

K133.de X-Ray Shielding Partition Safeboard – triple-layer cladding



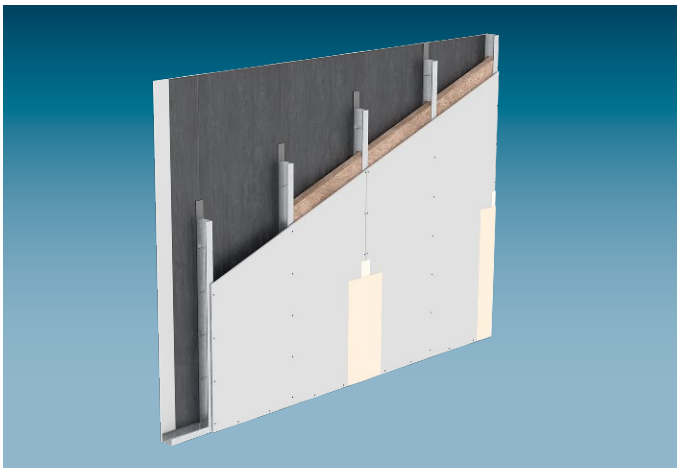
The X-Ray shielding partition system **K133.de** consists of a single metal stud frame and is clad with three layers of Safeboard or two layers Safeboard as well as a cover layer of Knauf Diamant boards on each side.
The low self-weight of Safeboard in comparison to the lead-laminated boards simplifies application.

- Without lead sheet
- Joint backing with lead sheet strip not required
- Partition heights up to: 12.00 m
- Weighted airborne sound insulation index R_w up to: 71.6 dB
- Fire resistance class up to: F90

X-Ray Shielding Partition Lead Sheet

Knauf X-Ray Shielding Partitions lead sheet consist of a metal substructure as a single stud partition and single or double-sided cladding with Knauf X-Ray Shielding Partitions lead sheet and, if necessary, Knauf gypsum boards. The stud construction is connected all around to the flanking constructional components. In the wall cavity, insulation materials for sound and thermal insulation as well as sanitary or electric built-ins can be installed. Knauf X-Ray Shielding Partitions lead sheet ensure the required structural radiation shielding to adjacent rooms. Here you will find your application in the fields of X-ray diagnostics and low-power X-ray therapy.

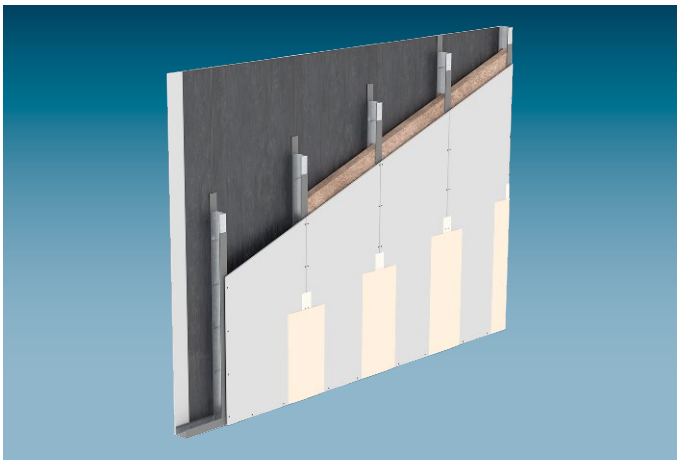
K135.de X-Ray Shielding Partition Lead Sheet – single side X-Ray shielding layer



The X-Ray shielding partition system **K135.de** consists of a single metal stud frame and is clad on one side with a layer of X-Ray Shielding Board with lead sheet and on the other side with a layer of Knauf wallboard. In case of demands on the fire resistance of sound insulation, the partition receives a double cladding on each side with the corresponding summplmentary cladding made of Fire-Resistant Board Knauf Piano or Diamant.

- Partition heights up to: 8.55 m
- Weighted airborne sound insulation index R_w up to: 63 dB
- Fire resistance class up to: F90

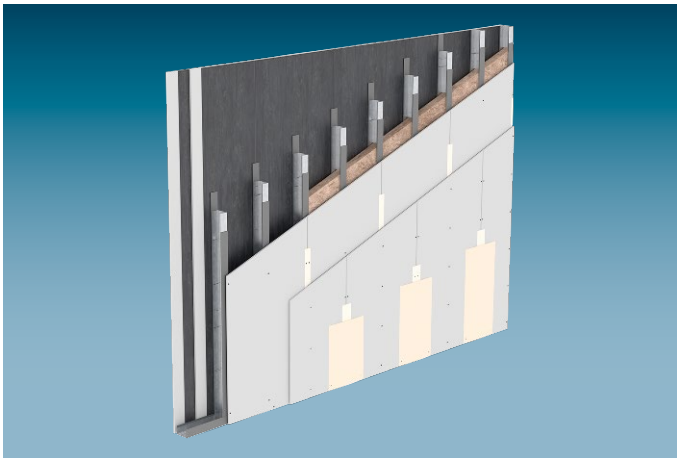
K136.de X-Ray Shielding Partition Lead Sheet – double side X-Ray shielding - single lead sheet



The X-Ray shielding partition system **K136.de** consists of a single metal stud frame and is clad with one layer of X-Ray Shielding Board with lead sheet or one layer of X-Ray Shielding Board with lead sheet as well as a cover layer of Fire-Resistant Board Knauf Piano or Diamant on each side.

- Partition heights up to: 8.55 m
- Weighted airborne sound insulation index R_w up to: 63 dB
- Fire resistance class up to: F90

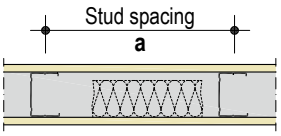
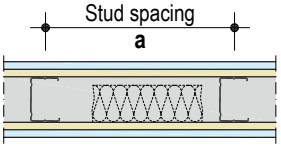
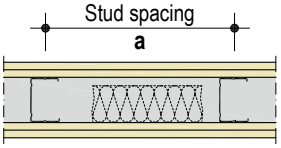
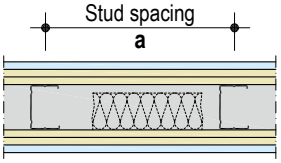
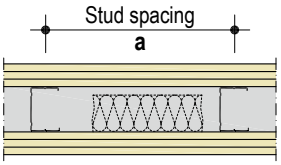
K137.de X-Ray Shielding Partition Lead Sheet – double side X-Ray shielding - multiple lead sheets



The X-Ray Shielding Board partition system **K137.de** consists of a single metal stud frame and is clad with two layers of gypsum board with lead sheet on each side. For the highest X-Ray shielding requirements with high lead equivalences.

- Partition heights up to: 7.05 m
- Weighted airborne sound insulation index R_w up to: 59 dB
- Fire resistance class up to: F90

System variants

Knauf System Scheme drawings	Fire resistance class	Cladding per wall side: Diamant	Cladding per wall side: Safeboard	Cladding per wall side: Minimum thickness t mm	Weight: Without Insulation layer approx. kg/m²	Wall thickness D mm	Profiles Knauf CW: Cavity h mm	Insulation layer: Technical fire protection requirement: Minimum thickness mm	Insulation layer: Technical fire protection requirement: Minimum density kg/m³	Sound Insulation: Insulation layer: Minimum thickness mm	Sound Insulation: Sound reduction dimensions: R_w dB
K131.de X-Ray Shielding Partition Safeboard											Single metal stud frame, single-layer cladding
	–		•	**12.5**	41	75	50	–		40	56.8
						100	75			60	59.7
						125	100			80	60.9
K132.de X-Ray Shielding Partition Safeboard											Single metal stud frame, double-layer cladding
	F90 plus	•	•	**12.5 + 12.5**	67	100	50	Without		40	66.0
						125	75			60	67.4
						150	100			80	67.6
			•	**2x 12.5**	78	100	50	Without		40	67.5
						125	75			60	69.6
						150	100			80	70.4
K133.de X-Ray Shielding Partition Safeboard											Single metal stud frame, triple-layer cladding
	F90 plus	•	•	**2x 12.5 + 12.5**	104	125	50	Without		40	71.3
						150	75			60	71.6
						175	100			80	71.3
			•	**3x 12.5**	115	125	50	Without		40	*71*
						150	75			60	*71*
						175	100			80	*71*

■ With combined cladding always use Diamant as a cover layer.

Sound reduction index values represented in italics are derived values from measurements on divergent constructions.

Demands on the insulation layer (Insulation materials, e.g. from Knauf Insulation):

■ Required for fire resistance: See table

■ Fire resistance permissible: Mineral wool G plus

■ Required for sound insulation: Mineral wool G length-related flow resistance of 5 kPa·s/m² ≤ r ≤ 50 kPa·s/m²

Notes

plus Extension of the fire resistance Proof of Usability see page 5.

Observe the notes on page 4.

Partition heights

Maximum permissible wall heights

Installation zones 1 and 2

Knauf profile Metal gauge 0.6 mm	Stud spacing a mm	K131.de single-layer Without Fire resistance m	K132.de double-layer Without Fire resistance m	K132.de double-layer With plus Fire resistance m	K133.de triple-layer Without Fire resistance m	K133.de triple-layer With plus Fire resistance m
CW 50	625	3.20[1)]	4.00	4.00	5.20	5.00
	417	3.85	4.00	4.00	6.05	5.00
	312.5	4.00	4.35	4.35	6.50	5.00
CW 75	625	4.00	5.05	5.05	7.65	5.60
	417	4.35	5.95	5.60	8.35	5.60
	312.5	4.85	6.50	5.60	8.75	5.60
CW 100	625	5.10	7.15	7.00	9.60	9.00
	417	5.95	8.05	7.00	10.05	9.00
	312.5	6.60	8.55	7.00	10.40	9.00
CW 125	625	6.65	9.05	7.00	11.00	9.00
	417	7.60	9.65	7.00	11.50	9.00
	312.5	8.30	10.10	7.00	11.85	9.00
CW 150	625	8.20	10.35	7.00	12.00	9.00
	417	9.15	10.95	7.00	12.00	9.00
	312.5	9.70	11.40	7.00	12.00	9.00

1) only for installation zone 1

Lead equivalence values for Safeboard

Number of boards Safeboard	Total thickness mm	Lead equivalence (mm Pb) depending on the tube voltage (kV) 60 kV	70 kV	80 kV	90 kV	100 kV	125 kV	150 kV
1	12.5	0.45	0.60	0.75	0.70	0.70	0.50	0.40
2	25	0.90	1.20	1.50	1.40	1.40	1.00	0.80
3	37.5	1.35	1.80	2.20	2.10	2.10	1.50	1.10
4	50	1.80	2.30	2.90	2.80	2.80	2.00	1.40
5	62.5	–	–	–	–	3.40	2.40	1.70
6	75	–	–	–	–	4.00	2.80	2.00

- Intermediate values can be interpolated in linear fashion. Calculation of lead equivalence acc. to DIN 6812.
- One layer of Safeboard is sufficient for X-ray shielding in mammography screening (35 kV)

Notes

In order to protect the X-ray shielding layers made of Safeboard from damage caused by mechanical influences, it is recommended that you apply a top layer made of 12.5 mm Knauf Diamant boards.

Lead equivalence is increased by 0.1 mm Pb by 2 layers of Diamant boards (1 layer per partition side).

Notes

plus Extension of the fire resistance Proof of Usability see page 5.

Observe the notes on page 4.

System variants

Knauf System Scheme drawings	Fire resistance class	Cladding Partition side 1: Knauf Wallboard	Partition side 1: Knauf Piano fire-resistant board	Partition side 1: Diamant	Partition side 1: X-Ray Shielding Board GKF	Partition side 1: Min. thickness t mm	Partition side 2: Knauf Wallboard	Partition side 2: Knauf Piano fire-resistant board	Partition side 2: Diamant	Partition side 2: X-Ray Shielding Board GKF	Partition side 2: Min. thickness t mm	Weight: Without insulation layer approx. kg/m²	Wall thickness D mm	Profiles Knauf CW: Cavity h mm	Sound insulation: Insulation layer Minimum thickness mm	Sound insulation: Sound reduction index R_w dB
K131.de X-Ray Shielding Partition lead sheet																Single metal stud frame, one side X-Ray shielding layer
Stud spacing a	–	•				**12.5**				•	**12.5**	32 – 65	76 – 81	50	40	≥ *44*
													101 – 107	75	60	≥ *47*
													126 – 131	100	80	≥ *50*
Stud spacing a	F90 plus		•			**2x 12.5**		•		•	**12.5 + 12.5**	57 – 89	101 – 107	50	40	≥ *56*
													126 – 131	75	60	≥ *57*
													151 – 161	100	80	≥ *59*
				•		**2x 12.5**			•	•	**12.5 + 12.5**	63 – 95	101 – 107	50	40	≥ *59*
													126 – 131	75	60	≥ *61*
													151 – 161	100	80	≥ *63*
K136.de X-Ray Shielding Partition lead sheet																Single metal stud frame, double side X-Ray shielding, single lead sheet
Stud spacing a	–				•	**12.5**				•	**12.5**	43 – 108	77 – 87	50	40	≥ *44*
													102 – 112	75	60	≥ *47*
													127 – 137	100	80	≥ *50*
Stud spacing a	F90 plus		•		•	**12.5 + 12.5**		•		•	**12.5 + 12.5**	66 – 131	102 – 112	50	40	≥ *56*
													127 – 137	75	60	≥ *57*
													152 – 162	100	80	≥ *59*
				•	•	**12.5 + 12.5**			•	•	**12.5 + 12.5**	70 – 135	102 – 112	50	40	≥ *59*
													127 – 137	75	60	≥ *61*
													152 – 162	100	80	≥ *63*
K137.de X-Ray Shielding Partition lead sheet																Single metal stud frame, double side X-Ray shielding, multiple lead sheets
Stud spacing a a	F90 plus				•	**2x 12.5**				•	**2x 12.5**	83 – 208	103 – 118	50	40	≥ *56*
													128 – 143	75	60	≥ *57*
													153 – 168	100	80	≥ *59*

1st layer of the X-Ray Shielding Board lead sheet, back front joints with profiles + lead sheet strip

Sound reduction index values represented in italics are derived values from measurements on divergent constructions. Sound insulation values measured without lead

Demands on the insulation layer (Insulation materials, e.g. from Knauf Insulation):

- Required for fire resistance: Without
- Fire resistance permissible: Mineral wool G plus
- Required for sound insulation: Mineral wool G length-related flow resistance of 5 kPa·s/m² ≤ r ≤ 50 kPa·s/m²

Notes

plus Extension of the fire resistance Proof of Usability see page 5.

Observe the notes on page 4.

Partition heights

Maximum permissible wall heights

Installation zones 1 and 2

Knauf profile Metal gauge 0.6 mm	Stud spacing a mm	K135.de / K136.de Single-layer Without Fire resistance m	Double-layer Without Fire resistance m	With Fire resistance m plus	K137.de Double-layer Without Fire resistance m	With Fire resistance m plus
CW 50	625	3.20[1)]	4.00	4.00	–	–
	312.5	4.00	4.35	4.35	4.00	4.00
CW 75	625	4.00	5.05	5.05	–	–
	312.5	4.85	6.50	5.60	5.25	5.25
CW 100	625	5.10	7.15	7.00	–	–
	312.5	6.60	8.55	7.00	7.05	7.00

1) only for installation zone 1

Calculation example – partition thickness

K131.de X-Ray Shielding Partition Lead Sheet - one side X-Ray shielding layer

Steps		Dimensions in mm
1	**Cladding on partition side 1** Knauf Board	12.5
2	**Cladding on partition side 2** X-Ray Shielding Board GKF with lead sheet lamination	+ 12.5 + 2.5
3	**Lead sheet strip**	+ 3.0
4	**Stud profile** Stud CW 75	+ 75
5	**Sum** Wall thickness	= 105.5

Lead equivalence values

Lead equivalence mm Pb	**K135.de** X-ray shielding level on one side Lead sheet lining Pb mm	 Lead sheet strip mm	**K136.de** X-ray shielding level on both sides Lead sheet lining Pb mm	 Lead sheet strip mm	**K137.de** X-ray shielding level on both sides Lead sheet lining Pb mm	 Lead sheet strip mm
0.5	0.5	0.5	2x 0.5	2x 0.5	4x 0.5	2x 0.5
1.0	1.0	1.0	2x 0.5	2x 0.5	4x 0.5	2x 0.5
1.5	1.5	2.0	2x 1.0	2x 1.0	4x 0.5	2x 0.5
2.0	2.0	2.0	2x 1.0	2x 1.0	4x 0.5	2x 0.5
2.5	2.5	3.0	2x 1.5	2x 2.0	4x 1.0	2x 1.0
3.0	3.0	3.0	2x 1.5	2x 2.0	4x 1.0	2x 1.0
4.0	–	–	2x 2.0	2x 2.0	4x 1.0	2x 1.0
5.0	–	–	2x 2.5	2x 3.0	4x 1.5	2x 2.0
5.5	–	–	2x 3.0	2x 3.0	4x 1.5	2x 2.0
6.0	–	–	2x 3.0	2x 3.0	4x 2.0	2x 2.0
8.0	–	–	–	–	4x 2.0	2x 2.0
10.0	–	–	–	–	4x 2.5	2x 3.0
12.0	–	–	–	–	4x 3.0	2x 3.0

Notes

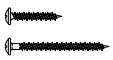
plus Extension of the fire resistance Proof of Usability see page 5.

Observe the notes on page 4.

Fixing loads

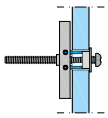
Up to 40 kg – Knauf multi-purpose screws FN

With direct screw fastening in the cladding

Cladding thick-ness	Knauf Multi-purpose screws	Maximum screw load capacity		
		Knauf GKB	Knauf GKF	Diamant
mm		kg	kg	kg
12.5	FN 4.3 x 35	**8**	**10**	**12**
2x 12.5	FN 4.3 x 35 / FN 4.3 x 65	**16**	**20**	**40**
3x 12.5	FN 4.3 x 35 / FN 4.3 x 65	**16**	**20**	**40**

Up to 75 kg cavity dowels

For fixing of cantilever loads up to 0.4 kN/m or 0.7 kN/m

Cladding thickness	Maximum dowel load capacity Knauf Cavity Dowel Hartmut M5 screw 		
	Knauf GKB	Knauf GKF	Diamant / Safeboard
mm	kg	kg	kg
12.5	**20**	**30**	**40**
2x 12.5	**45**	**60**	**75**
3x 12.5	**45**	**60**	**75**

Caution	On the X-Ray Shielding Board GKF, the drill holes must be covered by lead circular blanks or suitable measures.

- Dowel load capacity of other fasteners acc. to manufacturer`s specifications.

Cantilever loads

- According to DIN 18183-1, partitions can be loaded at any position by cantilever loads (e.g. TVs, wall cabinets) in accordance with the specifications on page 13.
- Consideration of the cantilever arm (cabinet height ≥ 300 mm) and eccentricity (≤ 300 mm at cabinet depth ≤ 600 mm) is required.
- Attach the cantilever loads with at least 2 cavity dowels made of plastic or metal, e.g. Knauf Hartmut Hohlraumdübel cavity dowels.
- Determine the minimum number of dowels using the cabinet weight and loading of the selected dowel type in dependence on the cladding thickness (see calculation examples on page 13).
- Fixing spacing of the dowels according to DIN 18183-1: ≥ 75 mm; (Knauf recommendation for approach to the full loadbearing capacity at ≥ 250 mm).
- Observe the permissible cantilever load of the wall system.

Up to 1.5 kN/m – Sanistands / traverses

Cantilever loads < 0.4 or 0.7 kN/m up to 1.5 kN/m wall length must be transferred to the substructure using sanistands or traverses.

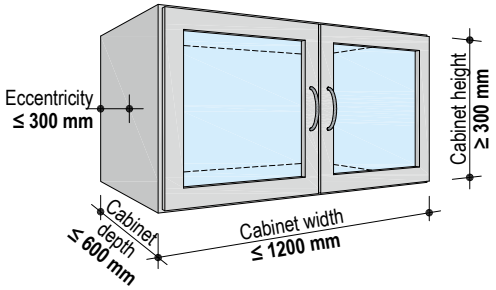
Steel anchoring traverse – Loads up to 1.0 kN/m wall length

Wall gypsum fibre 18 insert – Loads up to 1.5 kN/m wall length

Steel anchoring traverse with gypsum fibre insert – Loads up to 1.5 kN/m wall length

Multi-purpose traverse – Loads up to 1.5 kN/m wall length

Wall mounted cabinet:



Type and usage of the fastners

Lightweight objects:

- e.g. picture frames and mirrors up to 12 kg (12.5 mm Diamant) or up to 20 kg (2x 12.5 mm Knauf GKF) per screw using Knauf multi-purpose screws FN.

Higher loads:

- e.g. cabinets up to 60 kg per dowel (2x 12.5 mm Knauf GKF) using Knauf cavity dowels Hartmut.

Note	Further details for planning and application see Technical information VT03.de Fastening of loads to Knauf Wall and Ceiling Systems

Up to 0.4 kN/m (40 kg/m) wall length: Cladding thickness ≥ 12.5 mm Knauf boards

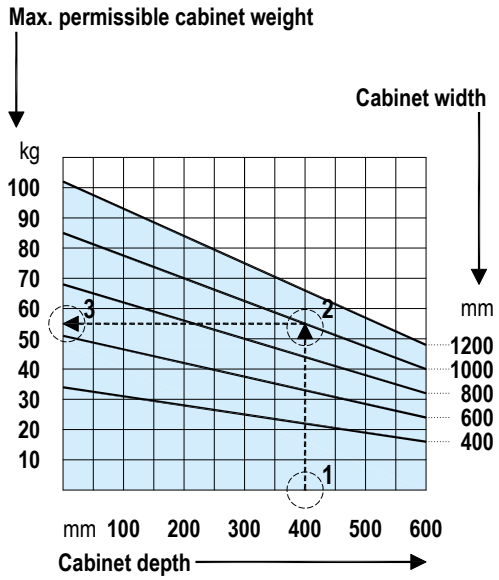
Maximum permissible cabinet weight (kg) acc. to table

Cabinet width mm	Cabinet depth mm					
	100	200	300	400	500	600
400	31	28	25	22	19	16
600	46.5	42	37.5	33	28.5	24
800	62	56	50	44	38	32
1000	77.5	70	62.5	55	47.5	40
1200	93	84	75	66	57	48

Assume the worst-case value with intermediate values or use the diagram procedure

or

Max. permissible cabinet weight (kg) according to diagram



Up to 0.7 kN/m (70 kg/m) wall length: Cladding thickness ≥ 2x 12.5 mm Knauf boards

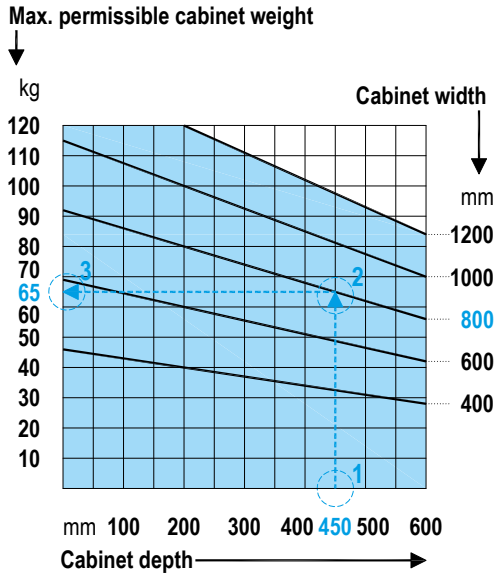
Maximum permissible cabinet weight (kg) acc. to table

Cabinet width mm	Cabinet depth mm					
	100	200	300	400	500	600
400	43	40	37	34	31	28
600	64.5	60	55.5	51	46.5	42
800	86	80	74	68	62	56
1000	107.5	100	92.5	85	77.5	70
1200	129	120	111	102	93	84

Assume the worst-case value with intermediate values or use the diagram procedure

or

Max. permissible cabinet weight (kg) according to diagram



Calculation examples – Determination of the permissible cabinet weight as well as the necessary minimum number of dowels (always ≥ 2)

According to table

- 0.4 kN/m permissible cantilever load
- Cabinet depth 400 mm, cabinet width 1000 mm → Maximum cabinet weight: **55 kg** (See table above)
- Cladding thickness 12.5 mm, Knauf Cavity Dowel Hartmut → Maximum dowel load: **30 kg** (See table page 12)

Required number of dowels (rounded up) **55 kg : 30 kg = 1.83** → **2 dowels** are the minimum requirement

According to the diagram

- 0.7 kN/m permissible cantilever load
- Cabinet depth 450 mm, cabinet width 800 mm
- With cabinet depth 450 mm (1) vertically upwards, up to the cabinet width line 800 mm (2) at the intersection point horizontal to the left – read off value (3): → Maximum cabinet weight: **65 kg** (See diagram above)
- Cladding thickness 2x 12.5 mm, Knauf Cavity Dowel Hartmut → Maximum dowel load: **60 kg** (See table page 12)

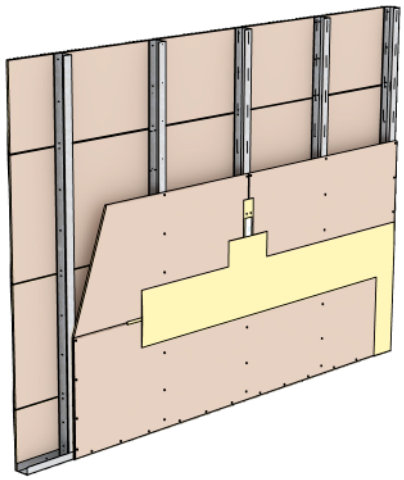
Required number of dowels (rounded up) **65 kg : 60 kg = 1.08** → **2 dowels** are the minimum requirement

Details

Scale 1:5

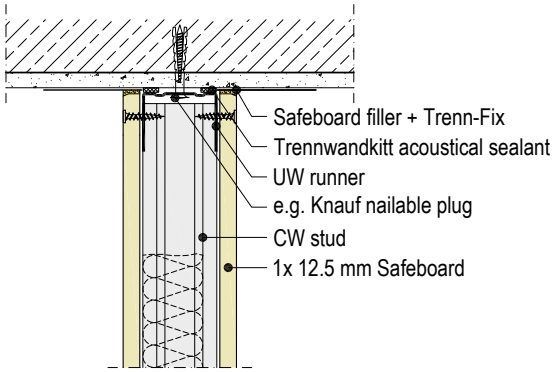
K131.de-P1 Horizontal board layer

1x 12.5 mm Safeboard



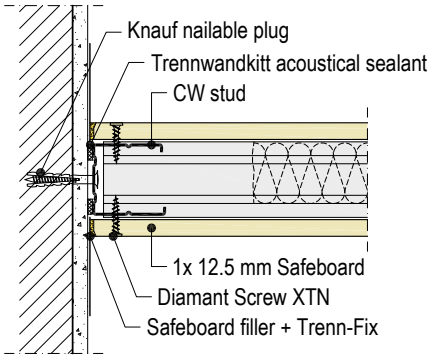
K131.de-VO1 Ceiling connection to solid ceiling

Vertical section I Without fire resistance



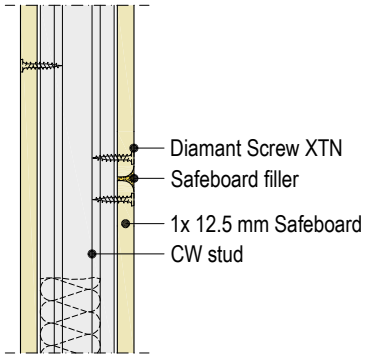
K131.de-A1 Connection to solid wall

Horizontal section I Without fire resistance



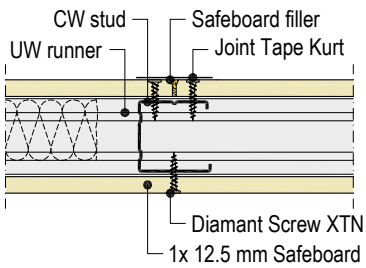
K131.de-VM1 Board joint

Vertical section I Without fire resistance



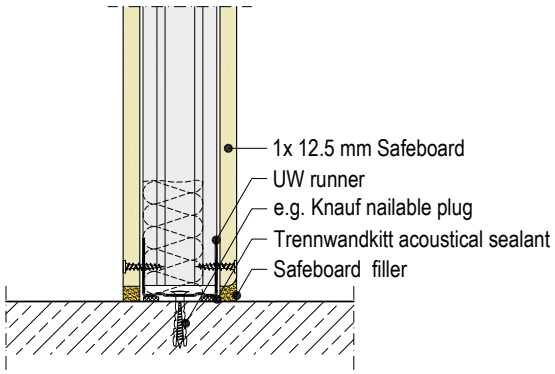
K131.de-B1 Board joint

Horizontal section I Without fire resistance



K131.de-VU1 Connection to floor on basic floor

Vertical section I Without fire resistance



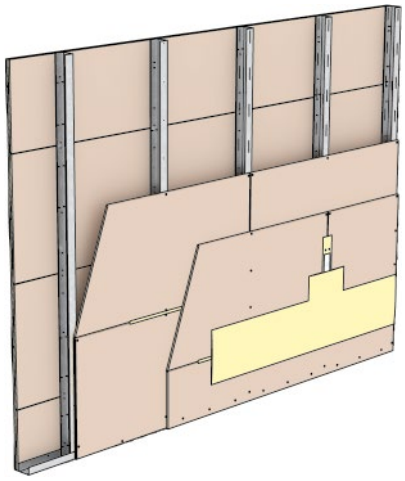
K132.de X-Ray Shielding Partition Safeboard – double-layer cladding

Details

Scale 1:5

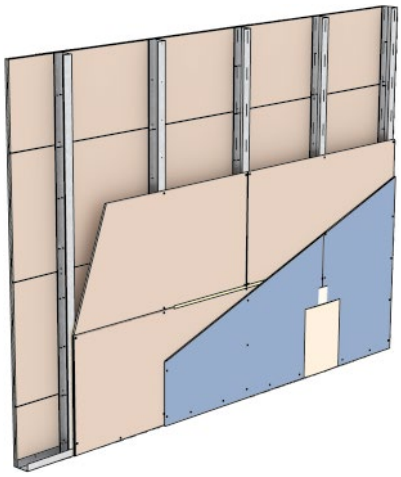
K132.de-P1 Horizontal board layer

2x 12.5 mm Safeboard



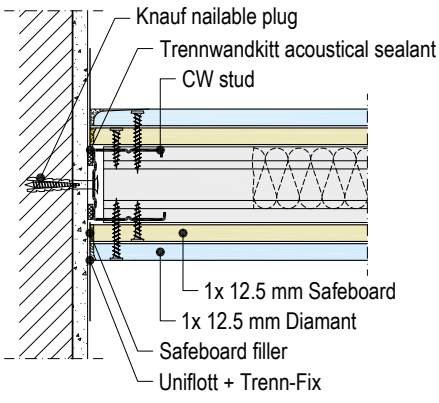
K132.de-P2 Board layer 1 horizontal, board layer 2 vertical

1x 12.5 mm Safeboard + 1x 12.5 mm Diamant



K132.de-A1 Connection to solid wall

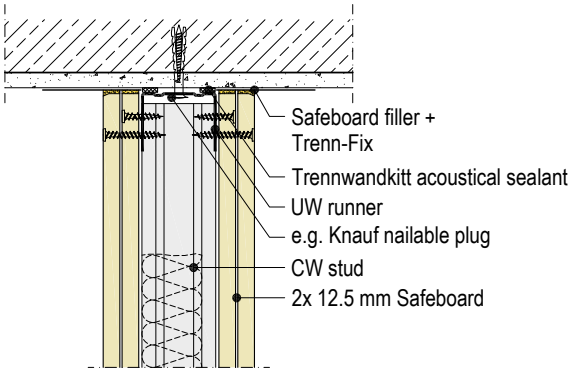
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K132.de-VO1 Ceiling connection to solid ceiling

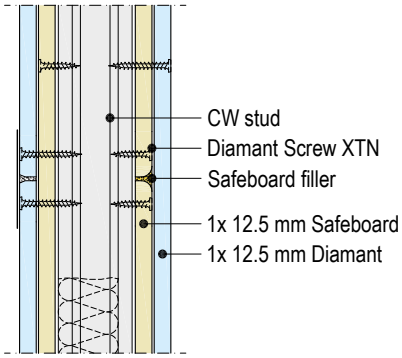
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K132.de-VM1 Board joint

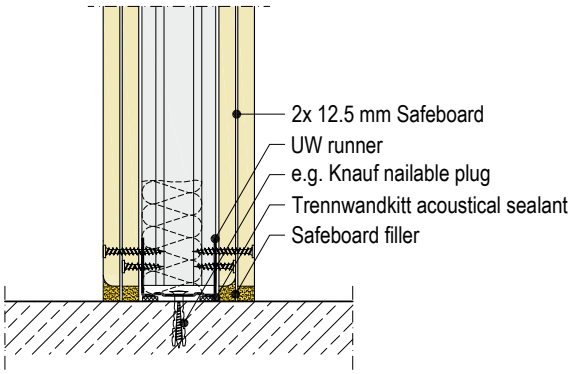
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K132.de-VU1 Connection to floor on basic floor

Vertical section



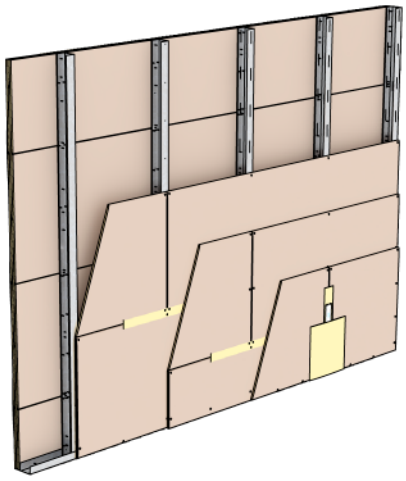
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

Details

Scale 1:5

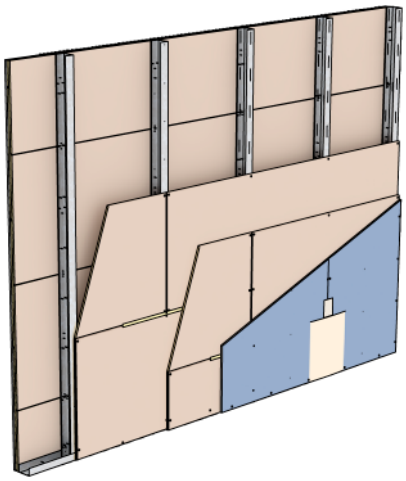
K133.de-P1 Horizontal board layer

3x 12.5 mm Safeboard



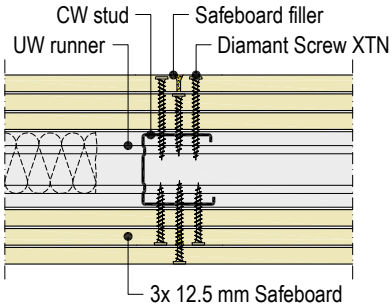
K133.de-P2 Board layer 1 and 2 horizontal, board layer 3 vertical

2x 12.5 mm Safeboard + 1x 12.5 mm Diamant



K133.de-B1 Board joint

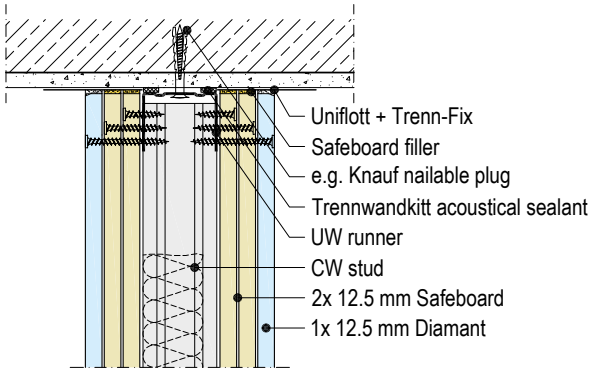
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K133.de-VO1 Ceiling connection to solid ceiling

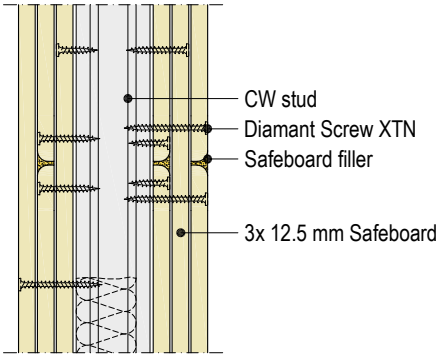
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K133.de-VM2 Board joint

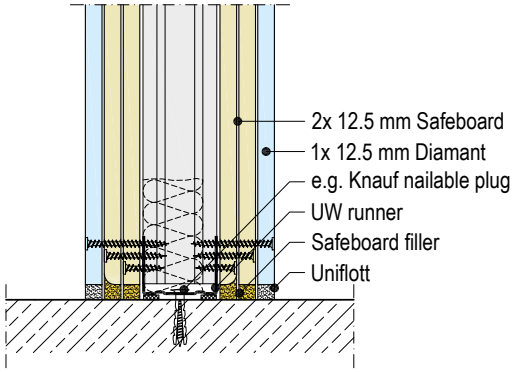
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K133.de-VU1 Connection to floor on basic floor

Vertical section

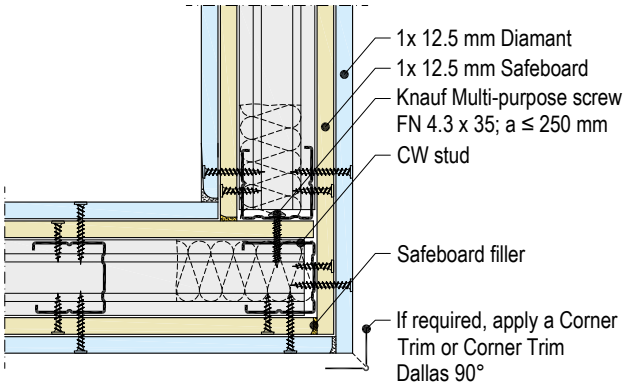


plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

Corners, T-junctions, movement joints

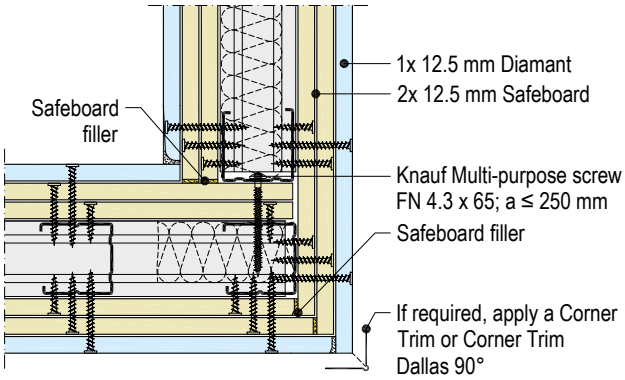
Horizontal section I Scale 1:5 I Dimensions in mm

K132.de-D1 Corner



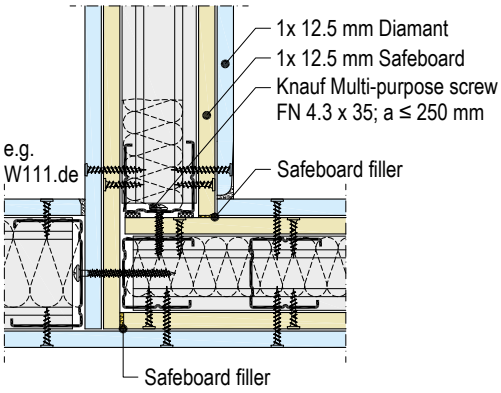
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K133.de-D1 Corner



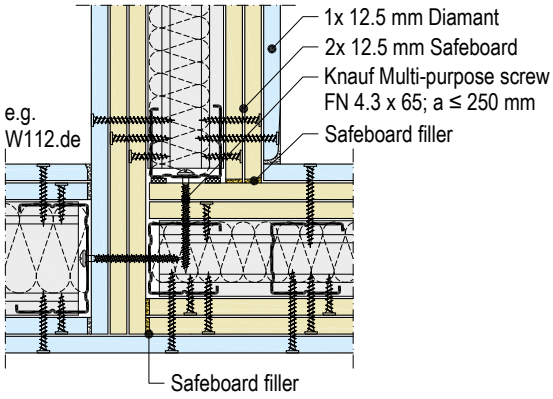
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K132.de-C1 T connection



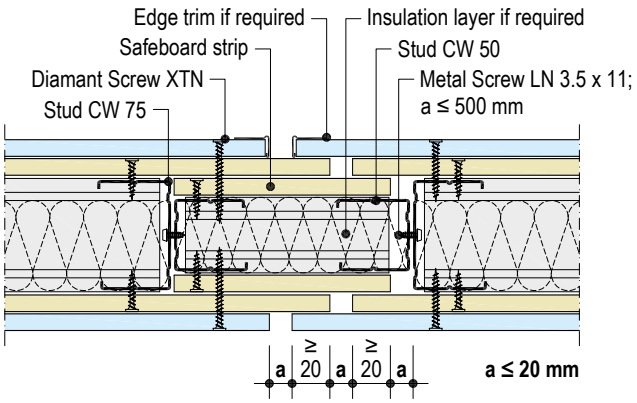
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K133.de-C1 T connection



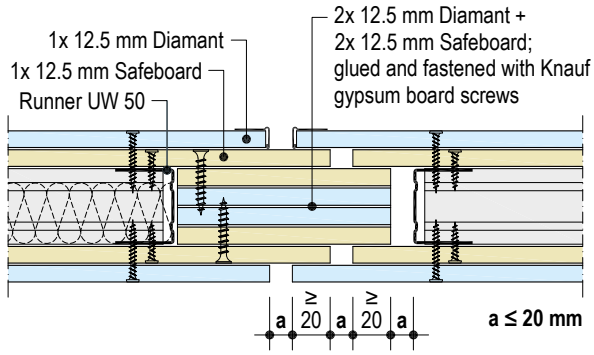
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K132.de-BFU1 Movement joint



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K132.de-BFU2 Movement joint



- The rigid connection of the wall shells causes a local reduction of the sound insulation.
- Knauf recommendation for partition cavity 50 mm.

plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

Notes

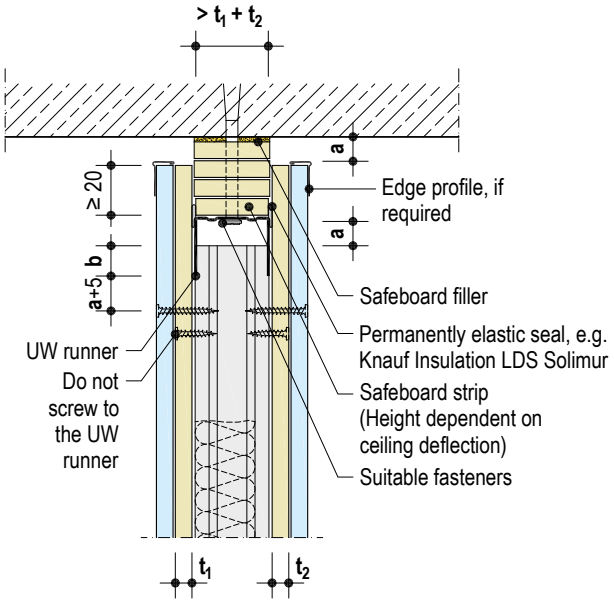
Installation sequence in the connection areas
The X-ray shielding layer must also be applied continuously in the connection areas.
- Complete a continuous X-ray shielding layer made of Safeboard.
- Subsequently install a Diamant cover layer.

Connections to ceiling

Scale 1:5 I Dimensions in mm

K132.de VO2 Connection to deflection head [1)]

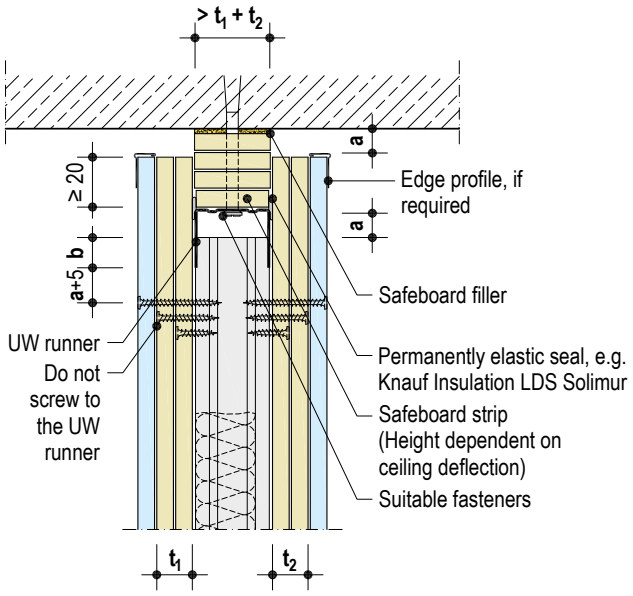
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K133.de-VO2 Connection to deflection head [1)]

Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

1) Details for deflection heads

System	Without Fire resistance		With Fire resistance		Max. permissible partition height
	a mm	b mm	a mm	b mm	m
K131.de	≤ 20	≥ 20	–	–	6.50
K132.de	≤ 30	≥ 10	≤ 20	≥ 20	
K133.de	≤ 30	≥ 10	≤ 20	≥ 20	

Observe the permissible partition heights of the respective system (see page 9)

Influence of a deflection head on the sound reduction index

System	Assigned
K131.de	-2 dB
K132.de	-3 dB
K133.de	

In suspended ceilings under the deflection head, the deflection head does not have any negative effect on the airborne sound reduction index of the wall construction.

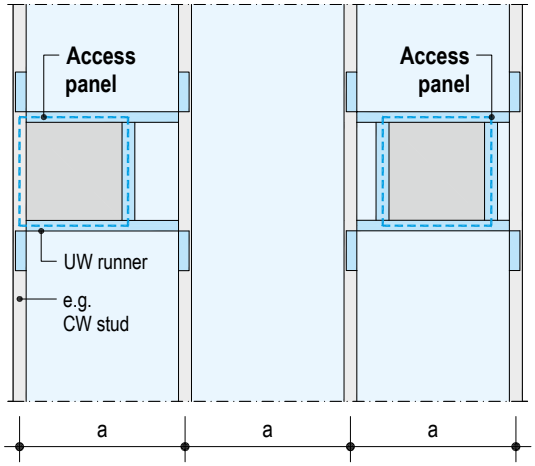
Notes	■ Apply a deflection head in case of ceiling deflection ≥ 10 mm. ■ Larger ceiling deflections / larger partition heights on request. ■ See also Knauf YouTube Channel

Access panel - SYSTEM Safeboard X-Ray Shielding - without fire resistance

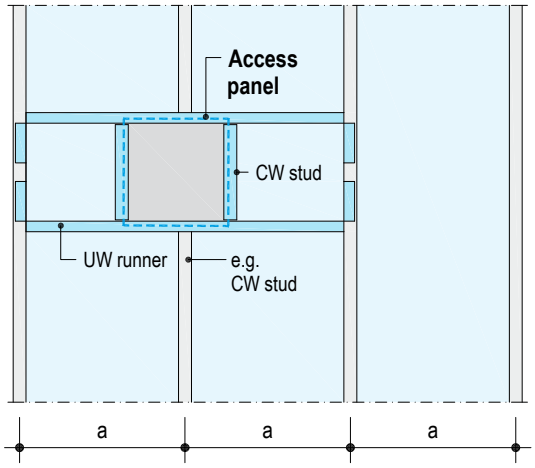
Scheme drawings

Views

Stud spacing a continuous



Stud spacing a with cut stud and trimmer profiles

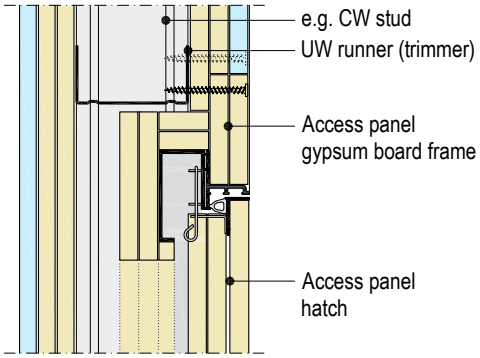


Additional grid

Vertical section

Preferred variant with 2x 12.5 mm Safeboard + 1x 12.5 mm Diamant

Without fire resistance



Notes	Further details for planning, application, cladding thickness, dimensions and available options see SYSTEM Safeboard X-Ray Shielding E139.de Observe the enclosed installation instructions of the access panels.

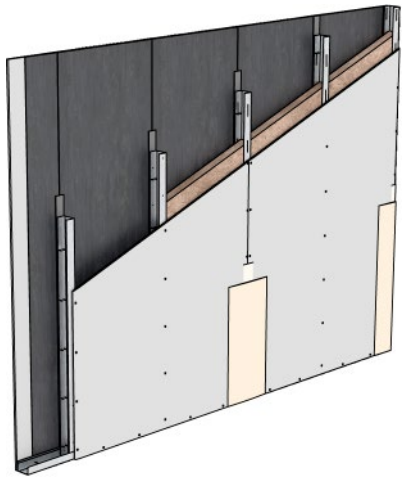
K131.de
K132.de
K133.de
K135.de
K136.de
K137.de

Details

Scale 1:5

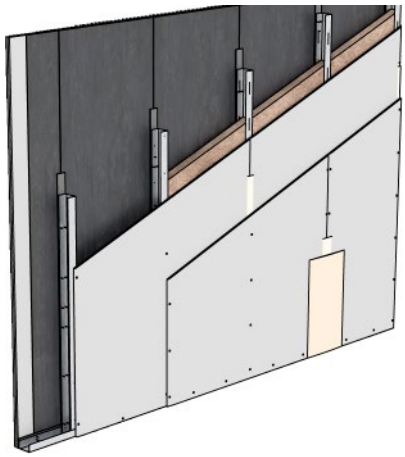
K135.de-P1 Vertical board layer

1x 12.5 mm X-Ray Shielding Board lead sheet or 1x 12.5 mm GKB



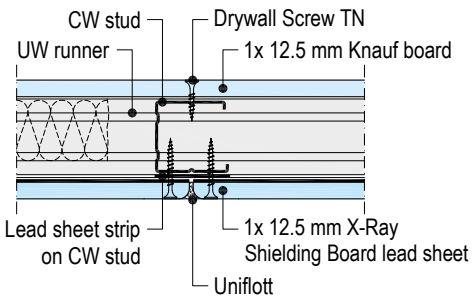
K135.de-P2 Vertical board layer

1x 12.5 mm X-Ray Shielding Board lead sheet + 1x 12.5 mm Feuerschutzplatte Knauf Piano fire-resistant board or 2x 12.5 mm Knauf Piano fire-resistant board



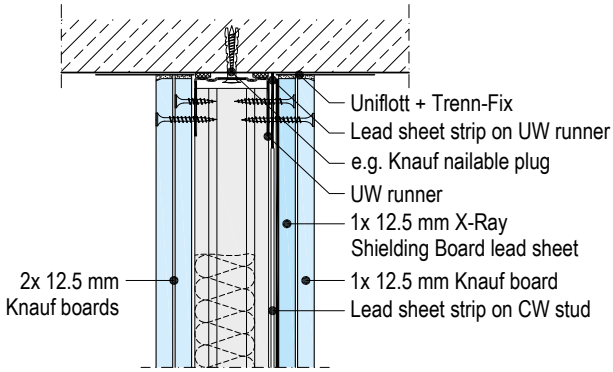
K135.de-B1 Board joint

Horizontal section I Without fire resistance



K135.de-VO1 Ceiling connection to basic ceiling

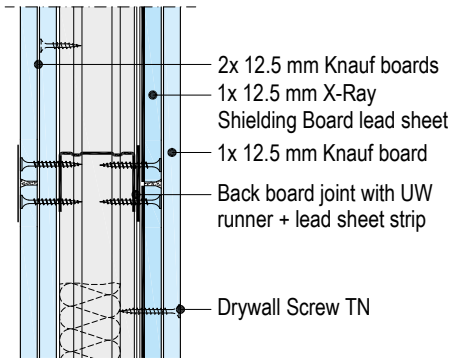
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K135.de-VM1 Board joint

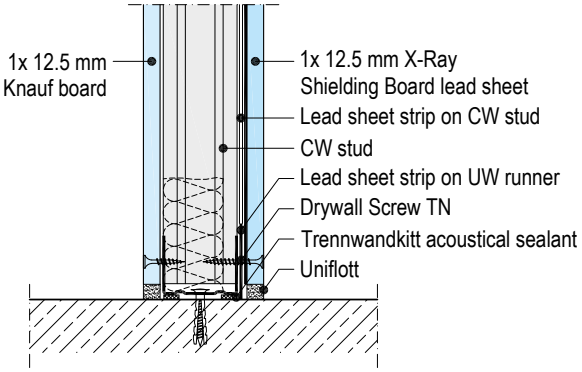
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K135.de-VU1 Connection to floor on basic floor

Vertical section I Without fire resistance



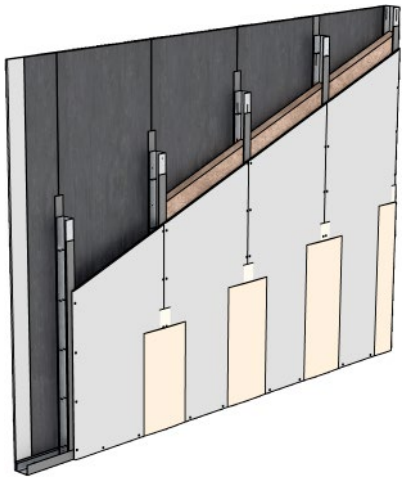
K136.de X-Ray Shielding Partition lead sheet - Double sided X-Ray shielding

Details

Scale 1:5

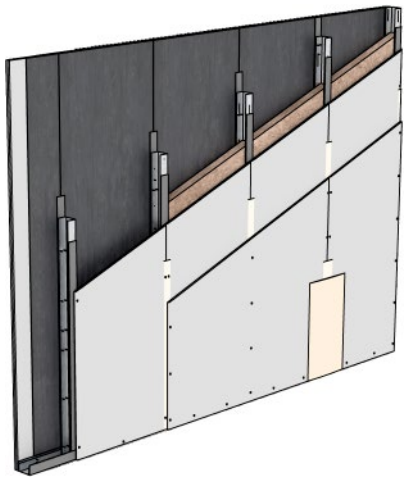
K136.de-P1 Vertical board layer

1x12.5 mm X-Ray Shielding Board lead sheet



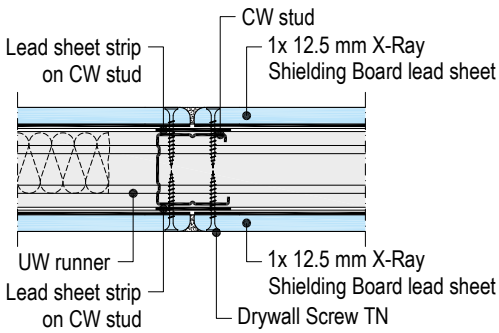
K136.de-P2 Vertical board layer

1x 12,5 mm X-Ray Shielding Board lead sheet + 1x 12.5 mm Feuerschutzplatte Knauf Piano fire-resistant board



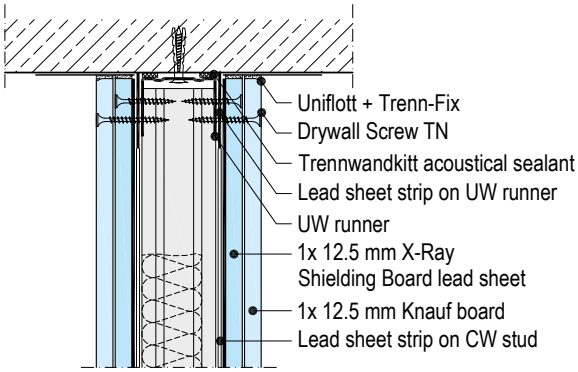
K136.de-B1 Board joint

Horizontal section I Without fire resistance



K136.de-VO1 Ceiling connection to basic ceiling

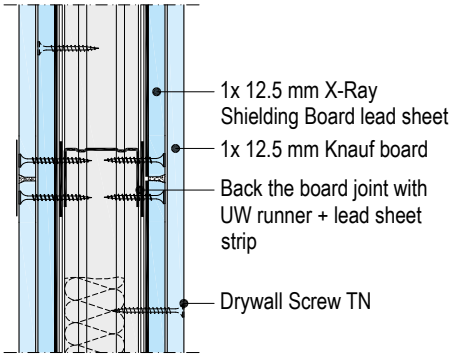
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K136.de-VM1 Board joint

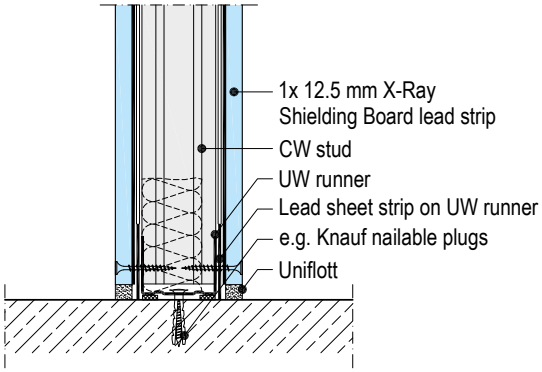
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K136.de-VU1 Connection to floor on basic floor

Vertical section I Without fire resistance

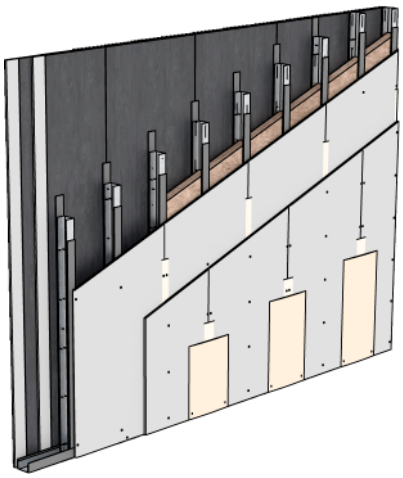


Details

Scale 1:5

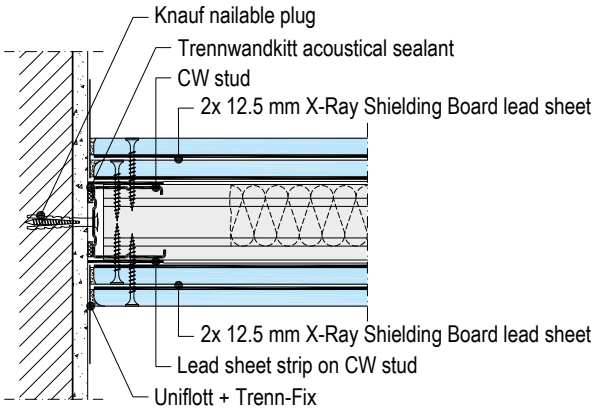
K137.de-P1 Vertical board layer

2x12.5 mm X-Ray Shielding Board lead sheet



K137.de-A1 Connection to solid wall

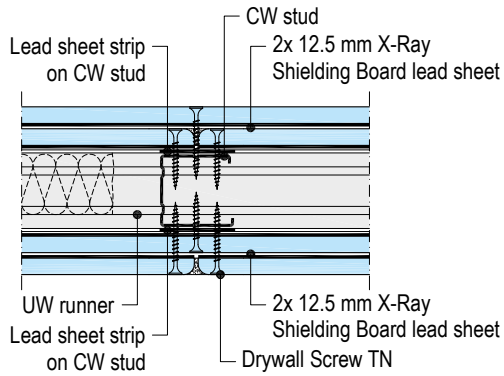
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K137.de-B1 Board joint

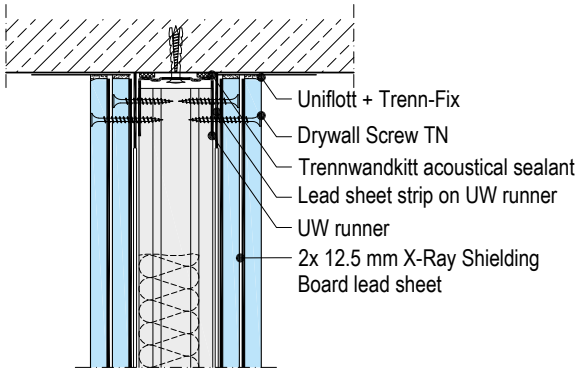
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K137.de VO1 Ceiling connection to basic ceiling

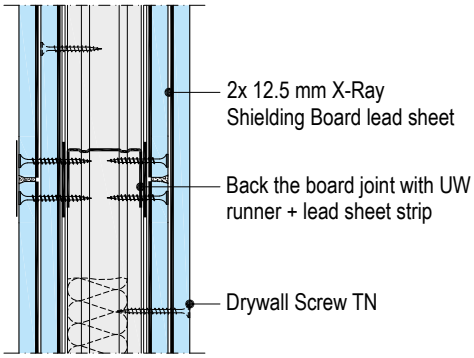
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K137.de-VM1 Board joint

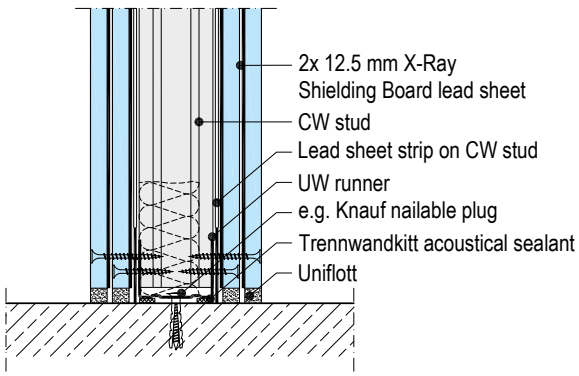
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K137.de-VU1 Connection to floor on basic floor

Vertical section



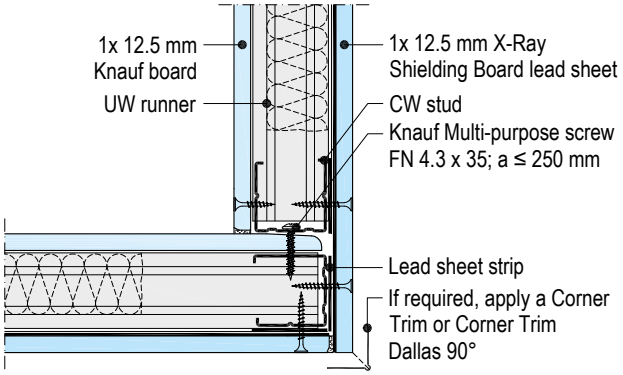
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

Corners, T junction, upgrade with furrings, movement joints

Scale 1:5

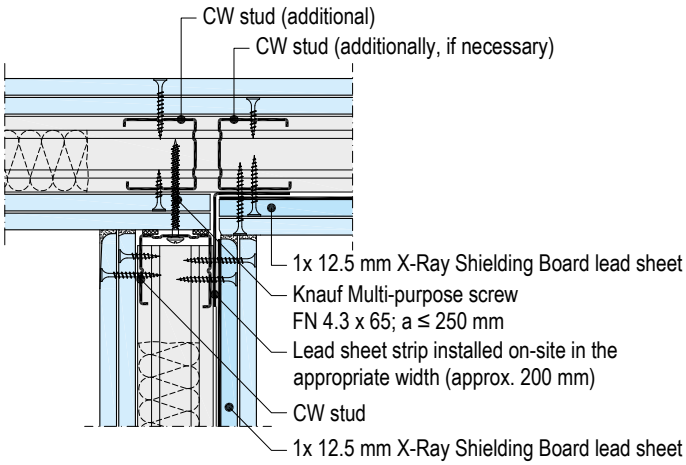
K135.de-D1 Corner

Horizontal section I Without fire resistance



K135.de-C2 T connection

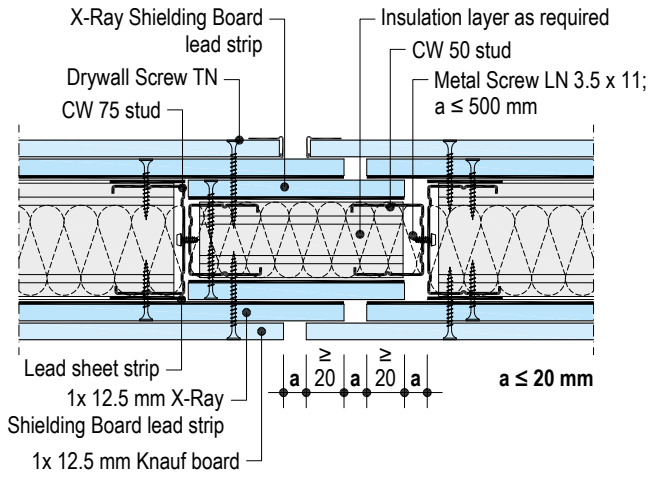
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K136.de-BFU1 Movement joint

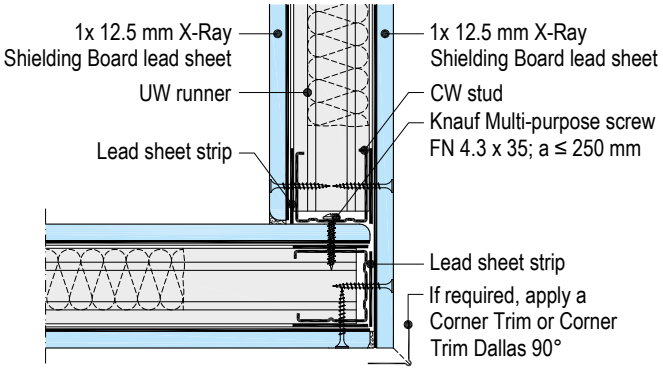
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

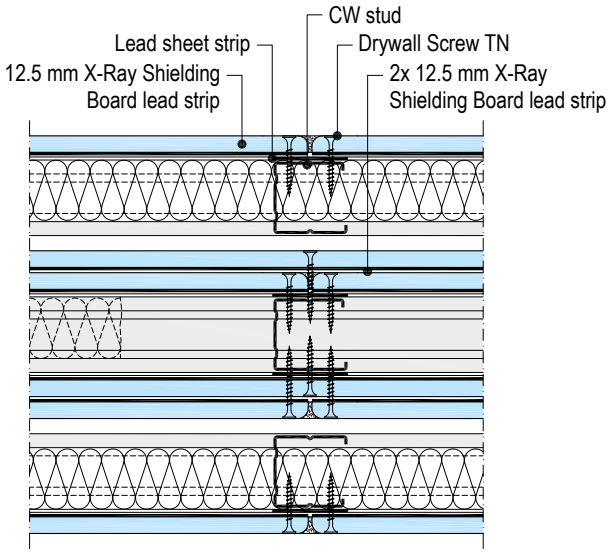
K136.de-D1 Corner

Horizontal section I Without fire resistance



K137.de-SO1 Upgrade with furring

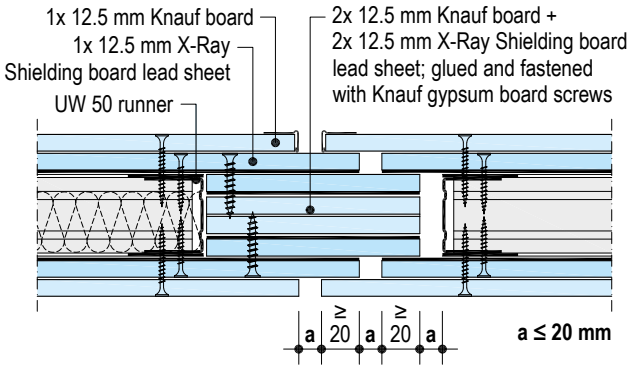
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K136.de-BFU2 Movement joint

Horizontal section



- The rigid connection of the wall shells causes a local reduction of the sound insulation.
- Knauf recommendation for partition cavity 50 mm.

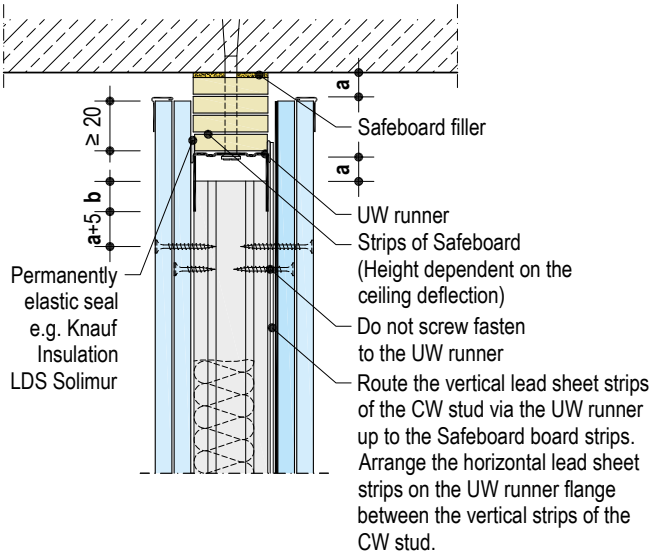
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

Connections to ceiling

Scale 1:5 I Dimensions in mm

K135.de VO2 Connection to deflection head[1)]

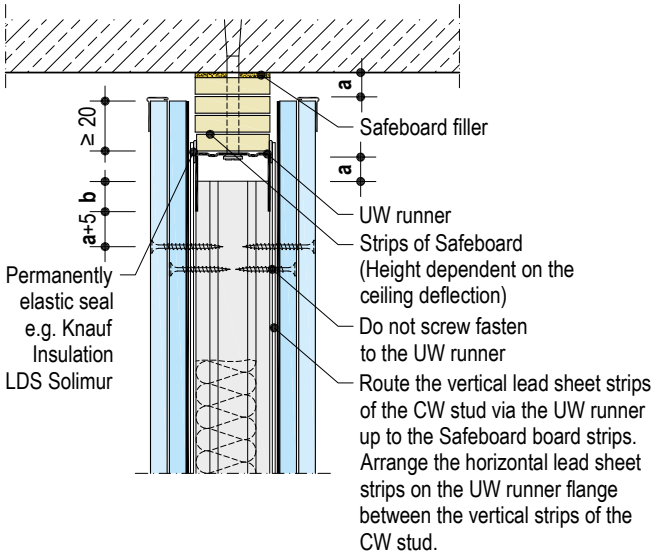
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

K136.de VO2 Connection to deflection head[1)]

Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

1) Details for deflection heads

System		Without Fire resistance a mm	Without Fire resistance b mm	With Fire resistance a mm	With Fire resistance b mm	Max. permissible partition height m
K135.de	Single layer	≤ 20	≥ 20	–	–	6.50
	Double layer	≤ 30	≥ 10	≤ 20	≥ 20	
K136.de	Single layer	≤ 30	≥ 10	–	–	
	Double layer	≤ 30	≥ 10	≤ 20	≥ 20	
K137.de	Double layer	≤ 30	≥ 10	≤ 20	≥ 20	

Observe the permissible partition heights of the respective system (see page 11)

Influence of a deflection head on the sound reduction index

System		Assigned
K135.de	Single-layer	-1 dB
	Double-layer	-2 dB
K136.de	Single-layer	-1 dB
	Double-layer	-2 dB
K137.de	Double-layer	-2 dB

In suspended ceilings under the deflection head, the deflection head does not have any negative effect on the airborne sound reduction index of the wall construction.

Notes

- For determination of the lead equivalence against stray radiation with Safeboard gypsum board strip, use the required lead layer thicknesses acc. to DIN 6812 Section 5.2. In certain cases, a partition wall thickness with ≥ CW 75 is necessary.
- Do not remove the upper end of the silicone protective paper for approx 100 mm on the vertical lead sheet strip (CW profiles) to ensure it can slide.
- Apply a deflection head in case of ceiling deflection ≥ 10 mm.
- Larger ceiling deflections / larger partition heights on request.
- See also Knauf YouTube Channel

Door openings

Scheme drawings

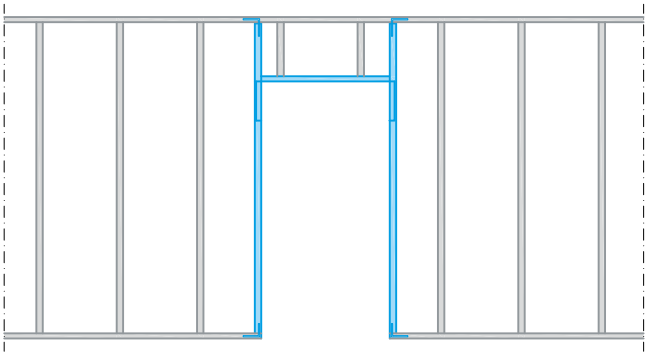
Maximum door leaf weights

Door leaf width	UA profile UA 50	UA 75	UA 100	UA 125	UA 150
≤ 885 mm	≤ 50 kg	≤ 75 kg	≤ 100 kg	≤ 125 kg	≤ 150 kg
≤ 1010 mm	≤ 50 kg	≤ 75 kg	≤ 100 kg	≤ 125 kg	≤ 150 kg
≤ 1260 mm	≤ 40 kg	≤ 60 kg	≤ 80 kg	≤ 100 kg	≤ 120 kg
≤ 1510 mm	≤ 35 kg	≤ 50 kg	≤ 65 kg	≤ 80 kg	≤ 95 kg

Note

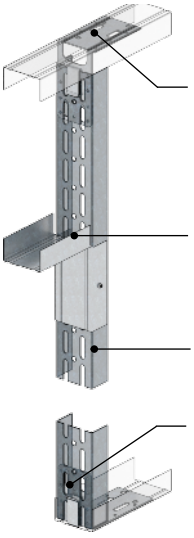
In case of higher door leaf weights see Installation instructions for Knauf Heavy load profile K691-A01.de

Substructure



Door opening profiles – UA profile

Acc. to DIN 18340 Partition height > 2.60 m
Door width > 0.885 m
Door leaf weight > 25 kg



- Remove the plastic strips on the Door Frame Bracket.
- Alternative: Knauf Connection Angle for UA profiles.

When partitions applied with profiles 125 or 150

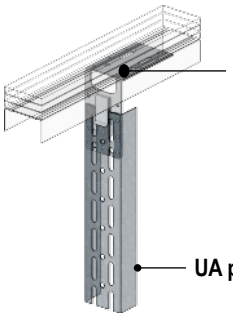
UA 125 or 150

- Screw fasten the Door Frame Bracket 100 in the oblong slots top and bottom each with two enclosed carriage bolts using nuts and washers.
- In case of a deflection head only hand tighten the carriage bolt on the upper Door Frame Bracket.

- Manufacture the lintel runner from UW profiles.

Door openings with deflection head

For a ceiling deflection up to max. 20 mm



Knauf recommendation:
Door opening profiles approx. 40 mm shorter than the stud frame profiles; observe additional constructional situation / constraints, e.g. deflection head.

Notes

The door must feature the same lead equivalence as the partition (observe the manufacturer's installation instructions).

Door openings may be installed at any position.

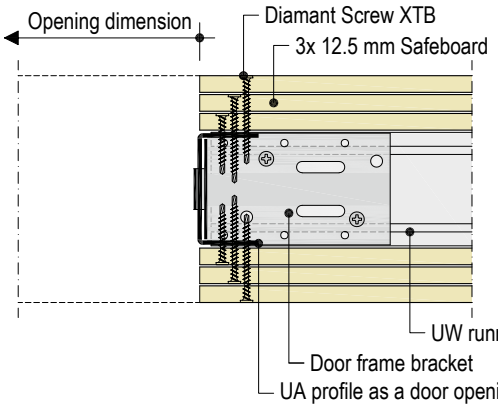
Fire protection only in conjunction with a corresponding fire protection connection.

Details

Scale 1:5

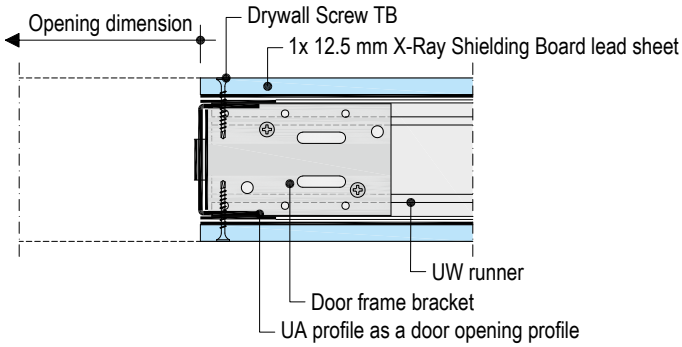
K133.de E1 Door opening with UA profile

Horizontal section I Without fire resistance



K136.de E1 Door opening with UA profile

Horizontal section I Without fire resistance

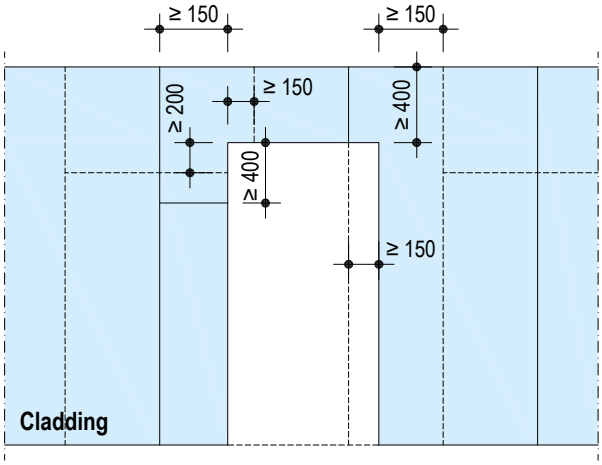


Cladding

Scheme drawing I Dimensions in mm

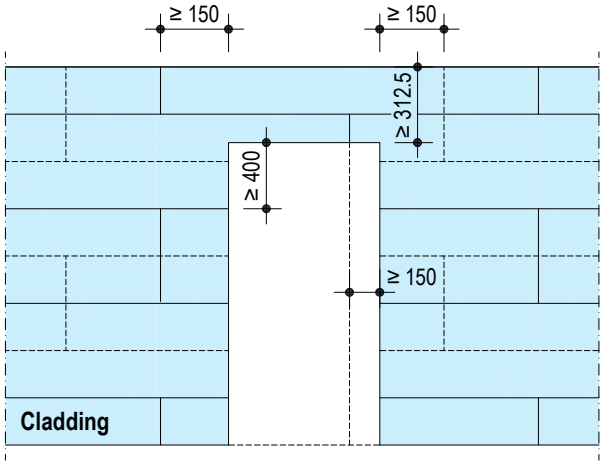
Board layer vertical

- Arrange the long joints on the door lintel and not along the door opening, rather offset it to the door lintel center.
- Arrange the horizontal joints on the door lintel and not along the door opening, rather offset it to the door opening center.
- Cladding above the door lintel < 400 mm is only permissible in case of floor-to-ceiling boards.



Horizontal board layer

- Arrange the front joints on the door lintel and not along the door opening, rather offset it to the door lintel center.
- Arrange the horizontal joints on the door lintel and not along the door opening, rather offset it to the door opening center.



Legend

- - - - - - Lower layer
——— Upper layer

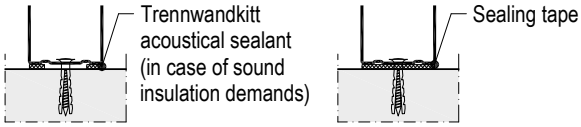
Caution	Do not apply board joints to door opening profiles.

Notes	The door must feature the same lead equivalence as the partition (observe the manufacturer's installation instructions). Door openings may be installed at any position. Furthermore, the details of the door manufacturers are to be observed (e.g. fire protection approval, additional constructional measures, etc.) Fire protection only in conjunction with a corresponding fire protection connection.

Substructure

General

Apply a suitable sealant to the rear side of runners for the connection to flanking constructional components. Ensure a carefully applied seal for sound insulation requirements analogue to the specifications of the DIN 4109-33:2016-07 section 4.1.1.3 (e.g. Trennwandkitt acoustical sealant).



If a deflection of the ceiling ≥ 10 mm can be expected, install deflection heads.

Anchor wall perimeter runners to the floor and ceiling. Anchor wall perimeter runners with suitable dowels to flanking walls. Use suitable spacings and fasteners in accordance with the tables below.

Use suitable fasteners

- Solid flanking constructional components: Knauf Drehstiftdübel nailable plugs with masonry or Knauf Deckennagel ceiling steel dowels with reinforced concrete.
- Non-solid flanking constructional components: Anchors specially suited for the building material, e.g. Knauf Universalschraube FN multi-purpose screws for metal stud partitions, etc.

Maximum permissible fastener spacings

Without fire resistance

Supporting fastening perimeter runner (UW) connection to basic floor and basic ceiling		
Partition height m	Knauf Ceiling Steel Dowels (with reinforced concrete) **1x** mm	Knauf Drehstiftdübel nailable plugs **1x** mm
≤ 3.00	1000	1000
> 3.00 to ≤ 6.50	1000	500
> 6.50 to ≤ 12.00	500	–

- Constructional anchoring of the wall connection profiles (CW) to the flanking walls at centres of 1000 mm (at least 3 anchoring points).
- Fastening of the perimeter runner in the deflection head area with a spacing of 250 mm.

Maximum permissible fastener spacings

With fire resistance

Supporting fastening perimeter runner (UW) connection to basic floor and basic ceiling		
Partition height m	Knauf Ceiling Steel Dowels (with reinforced concrete) **1x** mm	Knauf Drehstiftdübel nailable plugs **1x** mm
≤ 3.00	1000	1000
> 3.00 to ≤ 5.00	1000	500
> 5.00 to ≤ 6.50	500	500
> 6.50 to ≤ 7.00	500	–
K133.de > 6.50 to ≤ 9.00	500	–

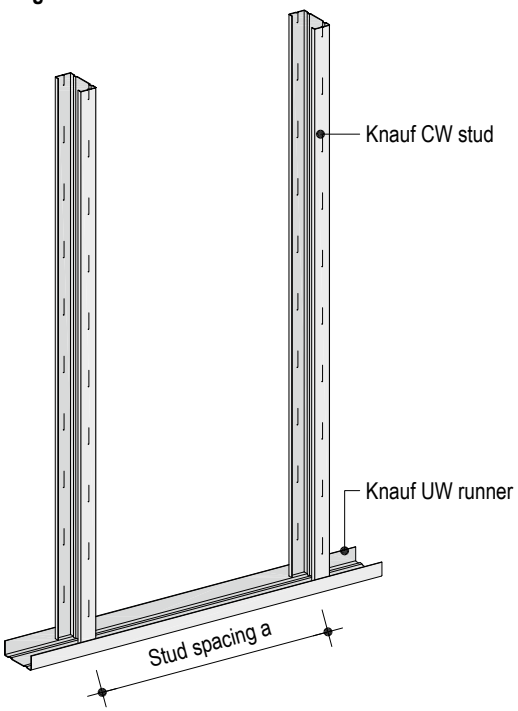
- Constructional anchoring of the wall connection profiles (CW) to the flanking walls at centres of 1000 mm (at least 3 anchoring points), with partition height > 5.00 m at spacing of max. 500 mm.
- Fastening of the perimeter runner in the deflection head area with a spacing of 250 mm.

Grid (continued)

Scheme drawings

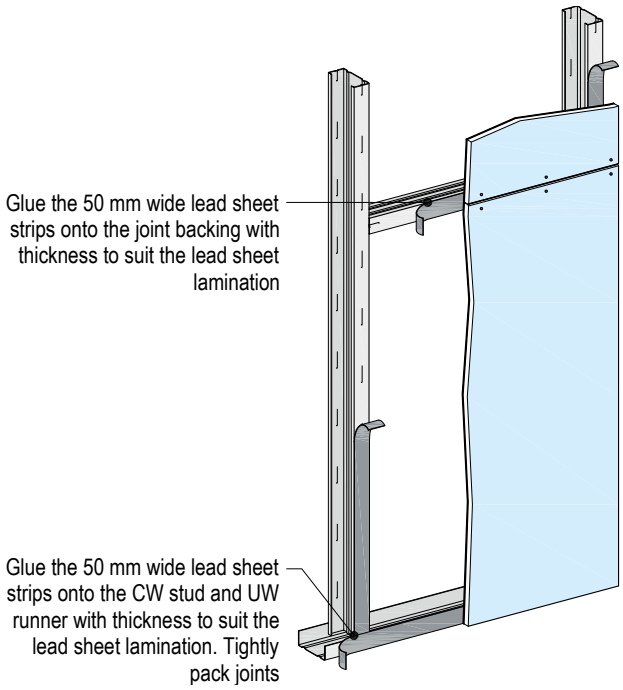
Place the CW studs into the UW runners arranged along the length at the required axial spacing and align them.

Single metal stud frame



Installation of lead sheet on studs (K135.de, K136.de and K137.de)

Glue lead sheet strip to all profiles (studs profiles and perimeter profiles) on the grid. Self-adhesive lead sheet strip, 50 mm wide, thickness depending on the lead lamination of the Knauf X-Ray Shielding boards.



Grid (continued)

Knauf recommendation: Use floor-to-ceiling profiles.

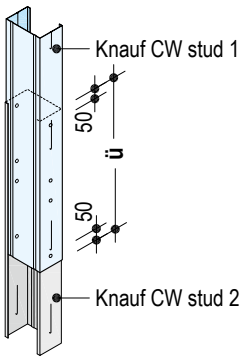
Profile extensions plus

Scheme drawings I Dimensions in mm

- Stagger the heights of the profile joints (alternating upper and lower wall half).
- With fire protection requirements a maximum or 2 profile joints per stud is permitted.

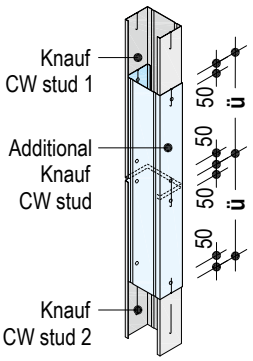
Option 1

2 CW studs interlaced to form a box.



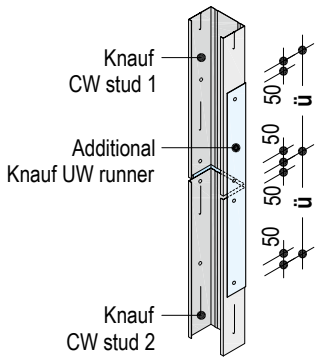
Option 2

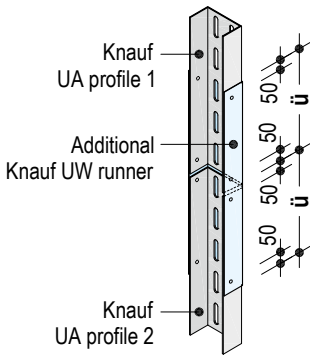
CW studs butt joint connected, interlaced with additional CW stud



Option 3

2 CW studs or 2 UA profiles butt jointed, connected with additional UW runner





Stud Crimper for crimping

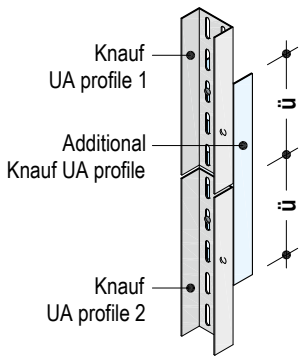
Options 1 to 3

Rivet, screw fix or, if possible, crimp the profiles in the overlapping area.

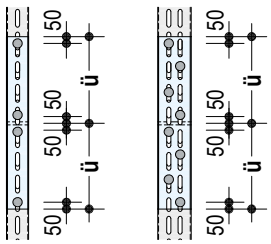
Option 4

2 UA profiles butt joint connected with additional UA profiles at the web side.

For **UA profiles under load** e.g. door framing or Sanistand installation



Screw fasten using 2x per UA profile with M8 carriage bolts or self-tapping screws ≥ Ø 4.5 mm



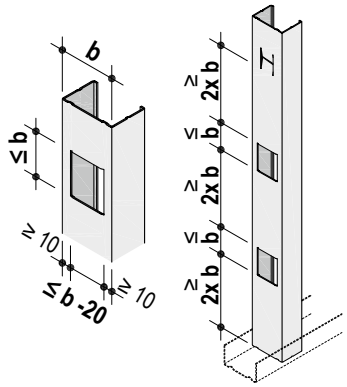
Profile extensions Knauf profiles	Overlap ü
CW 50 / UA 50	≥ 500 mm
CW 75 / UA 75	≥ 750 mm
CW 100 / UA 100	≥ 1000 mm
CW 125 / UA 125	≥ 1250 mm
CW 150 / UA 150	≥ 1500 mm

Web cut-out / H punches

Web cut-out – on-site

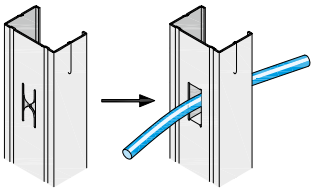
- Maximum **2** web cut-outs per metal stud (for CW 50 maximum 1 web cut-out)
- Observe the dimensions in acc. with the drawing
- Knauf CW studs / UA profiles **50/75/100/125/150**
- Cladding thickness per wall side **≥ 12.5 mm**

- Large number of smaller openings possible on request
- The openings can be provided in addition to the usual factory made H punches.
- Additional web cut-outs in the local load introduction area (cantilever loads / beam loads / dynamic loads) are not permissible.



H punches – factory-made

For **cable penetrations** in Knauf CW studs

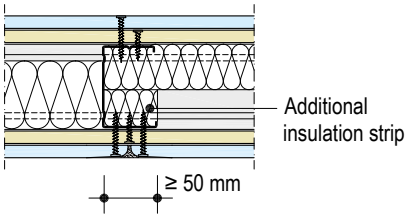


Insulation layer

General

Depending on the requirements for fire protection, sound insulation and thermal insulation, secure the insulation against sliding (compress up to approx. 10 mm) and tightly joint in the grid (or if necessary install insulation strips to prevent sliding in the stud profiles).

Additional insulation strips for deviation of the insulation material thickness > 20 mm from the stud web width.



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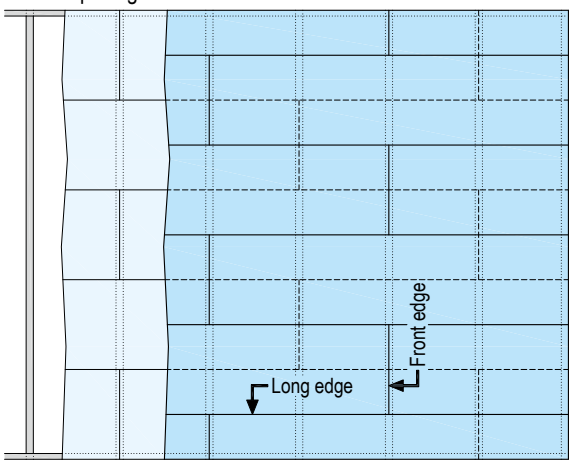
X-Ray Shielding Partitions Safeboard installation schemes

Horizontal board layer

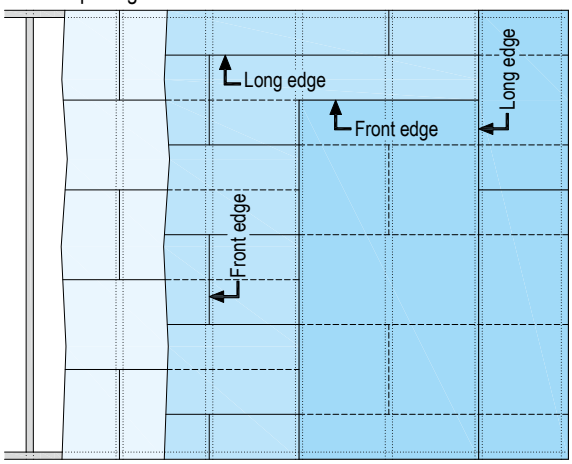
- Board width: **625** mm
- Stud spacing: 625 mm



- Front edge joints must be staggered by at least one stud spacing.
- Stagger the long joints between the cladding layers by at least half a board width.
- Board joints of cladding on opposing sides must also be staggered to one another.

Board layers 1 and 2 horizontal, board layer 3 vertical

- Board width: **625** mm (1st and 2nd layer horizontal)
- Board width: **1250** mm (3rd layer vertical)
- Stud spacing: 625 mm



Lower layers:

- Front edge joints must be staggered by at least one stud spacing.

Upper layer:

- If floor-to-ceiling boards are not used, stagger the front edge joints by ≥ 400 mm.

Offset between lower and upper layer:

- Stagger the board joints of the upper layer by approx 312.5 mm to the board joints of the lower layer.

Offset of cladding on opposing sides:

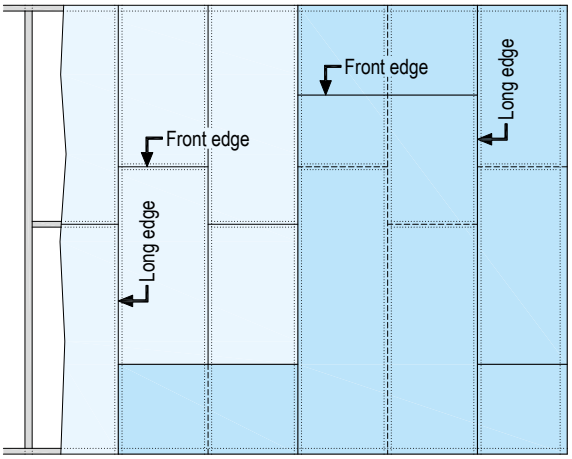
- Board joints must also be staggered to one another.

Note	In order to avoid dust formation, it is recommended to break the boards (score board liner with a knife and break board along the edge, cut rear side board liner). Rework and bevel the edges with a rasp. When working with Knauf Safeboard, particularly when sanding and sawing (e.g. using a keyhole saw), a dust mask (P2 respiratory filter rating) must be worn.

X-Ray Shielding Partition lead sheet details installation schemes

Board layers vertical

- Board width: **625** mm (lower layer vertical)
- Board width: **1250** mm (upper layer vertical)
- Stud spacing: 625 mm



Lower layer:

- Arrange the long edge joints on the studs.
- If floor-to-ceiling boards are not used, stagger the front edge joints by at least 400 mm and apply backing of profiles and lead sheet strip.

Upper layer:

- If floor-to-ceiling boards are not used, stagger the front edge joints by ≥ 400 mm.

Offset between lower and upper layer:

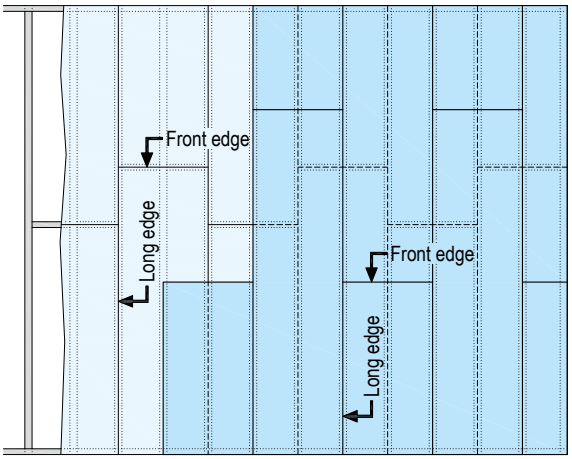
- Stagger the board joints of the upper layer by approx 400 mm to the board joints of the lower layer.

Offset of cladding on opposing sides:

- Board joints must also be staggered to one another.

Board layers vertical

- Board width: **625** mm
- Stud spacing: 312.5 mm



- Arrange the long edge joints on the studs.
- If floor-to-ceiling boards are not used, stagger the front edge joints by at least 400 mm and apply backing of profiles and lead sheet strip.
- Board joints of cladding on opposing sides must also be staggered to one another.

Fastening of the cladding to the stud frame with Knauf drywall screws

Fasteners to be used with Safeboard X-Ray Shielding partitions

Dimensions in mm

Cladding thickness mm	**Metal stud frame** (penetration ≥ 10 mm) Metal gauge **s ≤ 0.7 mm** Diamant Screws **XTN**	Metal gauge **0.7 mm < s ≤ 2.25 mm** Diamant Screws **XTB**
12.5	XTN 3.9 x 23	XTB 3.9 x 38
2x 12.5	XTN 3.9 x 23 + 3.9 x 38	XTB 3.9 x 38 + 3.9 x 55
3x 12.5	XTN 3.9 x 23 + 3.9 x 38 + 3.9 x 55	XTB 3.9 x 38 + 3.9 x 55 + 3.9 x 55

Maximum fastener spacings, all board layers fastened to frame with screws

Cladding	**1st layer** Horizontal Board width 625	**2nd layer** Vertical Board width 1250	**2nd layer** Horizontal Board width 625	**3rd layer** Vertical Board width 1250	**3rd layer** Horizontal Board width 625
1-layer	200	–	–	–	–
2-layer	600	250	200	–	–
3-layer	600	–	300	250	200

Fasteners to be used with X-Ray Shielding partitions lead sheet

Dimensions in mm

Cladding thickness mm	**Metal stud frame** (penetration ≥ 10 mm) Metal gauge **s ≤ 0.7 mm** Drywall Screw **TN**	Diamant Screw **XTN**	Metal gauge **0.7 mm < s ≤ 2.25 mm** Drywall Screw **TB**	Diamant Screw **XTB**
12.5 X-Ray Shielding Board lead sheet	TN 3.5 x 35	–	TB 3.5 x 35	–
12.5 Knauf Wallboard / Knauf Piano fire-resistant board	TN 3.5 x 25	–	TB 3.5 x 25	–
12.5 X-Ray Shielding Board lead sheet + 12.5 mm Knauf Piano fire-resistant board	TN 3.5 x 35 + TN 3.5 x 45	–	TB 3.5 x 35 + TB 3.5 x 55	–
12.5 X-Ray Shielding Board lead sheet + 12.5 Diamant	TN 3.5 x 35 +	XTN 3.9 x 55 mm[1)]	TB 3.5 x 35 +	XTB 3.9 x 55 mm[1)]
2x 12.5 X-Ray Shielding Board lead sheet	TN 3.5 x 35 + 3.5 x 55	–	TB 3.5 x 35 + 3.5 x 55	–
2x 12.5 mm Knauf Piano fire-resistant board	TN 3.5 x 25 + 3.5 x 35	–	TB 3.5 x 25 + 3.5 x 45	–
2x 12.5 Diamant	–	XTN 3.9 x 23 + 3.9 x 38	–	XTB 3.9 x 38 + 3.9 x 55

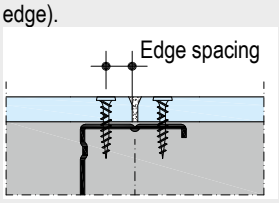
1) Combined cladding (Knauf X-Ray Shielding Board lead sheet + Diamant)

Maximum fastener spacings, all board layers fastened to frame with screws

Cladding	**1st layer** vertical Board width 1250	**1st layer** vertical Board width 625	**2nd layer** vertical Board width 1250	**2nd layer** vertical Board width 625
1-layer	250	250	–	–
2-layer	750	750	250	250

Note

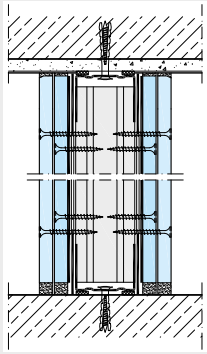
For optimum sound insulation arrange the screws as far as possible from the profile lap, i.e. with minimum spacing from edge (10 mm edge covered with board liner, 15 mm cut edge).



Arrange board joint on centre of profile flange.

Note

Alternative screw fastening only permissible in the CW stud up to wall heights ≤ 6.50 m.

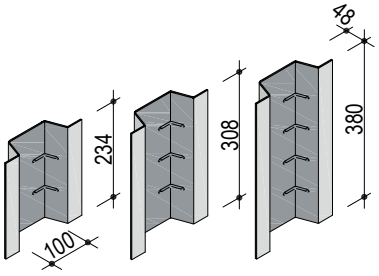


Power socket installation

With fire protection requirements

Power sockets, switch sockets, splitter sockets, etc. may be installed at any position with partitions, but not directly opposite one another.
The entry of single electrical cables is permissible, but the remaining openings must be sealed with gypsum mortar or in case of Safeboard with Safeboard filler.

Installation with X-Ray Shielding Caps

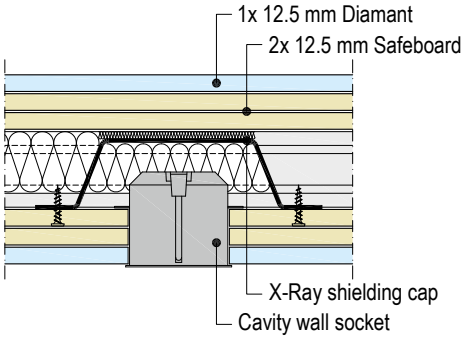


Cut-outs for electrical cavity wall sockets and other applications are fully shielded to ensure provision of a full X-ray shield. The X-ray shielding caps are attached using Drywall Screws TN or Diamant Screws XTN. Knauf X-ray shielding caps are available for single, double and triple cavity wall sockets.

Details Scale 1:5

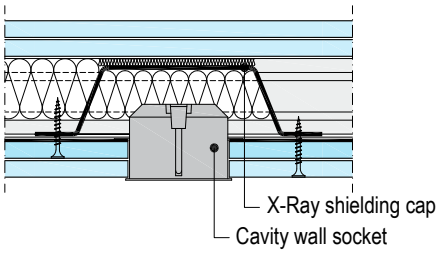
K133.de-SO1 Cavity wall socket

Horizontal section I Without fire resistance



K135.de-SO1 Cavity wall socket

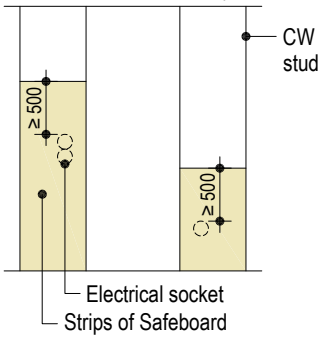
Horizontal section I Without fire resistance



Scheme drawings I Dimensions in mm

Installation with Safeboard board strip

- Application of Safeboard board strips with the same thickness as the Safeboard cladding (glue to rear of board or fasten with Knauf gypsum board screws).
- The board strips must fully cover the following area:

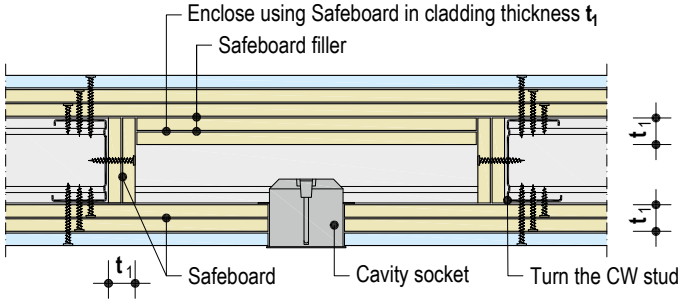


  - Up to min. 500 mm above the highest power socket
  - Down to the floor and laterally to the next studs on each side

Detail Not to scale

K133.de-SO2 Cavity wall socket

Horizontal section



- From a fire protection perspective the thickness of the enclosing cladding must be at least 2x 12.5 mm Safeboard

plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 5 recommended

Installation of X-Ray shielding sockets

Alternatively, the installation of Kaiser X-ray shielding sockets in Safeboard X-Ray Shielding partitions is possible. Installation without additional shielding measures. Retrofitting is possible:
www.kaiser-elektro.de

Sound Insulation

Notes for avoidance of performance losses in noise reduction measures

- Avoid rigid connections to the opposite layer of partition cladding.
- On partitions with sound insulation up to R_w 60 dB:
  - Do not install power sockets opposite one another for each partition section
  - Seal any remaining openings after installation of the sockets
- Solutions for partitions with sound insulation exceeding R_w 60 dB or for sockets positioned opposite one another, please refer to the sound insulation brochure: Interior walls
SS04.de (chapter Built-ins).

Note	Observe the radiation protection and fire resistance specifications.

Jointing

Jointing of the boards in the required quality level Q1 to Q4 in accordance with Code of Practice no. 2 “Verspachtelung von Gipsplatten, Oberflächengüten” [1].

Fill in visible screw heads.

Suitable jointing materials

Safeboards

- Safeboard Filler
  (Powder jointing compound pigmented in yellow for purposes of easy identification)
  Hand filling without joint tape strips in the long joint edges

Caution	Wear a dust mask (P2 respiratory filter rating) when sprinkling the powder compound.

Gypsum boards

- Uniflott
  Hand filling without joint tape strips in the long joint edges
- Fugenfüller Leicht
  Hand filling with joint tape, preferably with Knauf Fugendeckstreifen Kurt joint tape

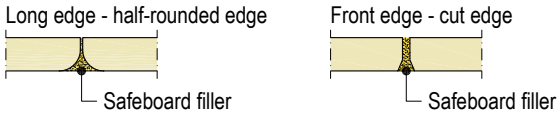
Suitable finish filling compounds

- Q2, application by hand
  Uniflott, Fill & Finish Light, Super Finish
- Q3/Q4, application by hand
  Spritzspachtel Plus, Super Finish, Fill & Finish Light
- Q3/Q4, machine application
  Spritzspachtel Plus

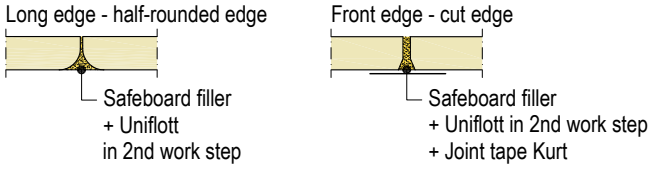
Safeboard jointing

- Fill all joints (board joints and connections) fully, i.e. uniformly and over the entire cladding thickness of all Safeboard layers with Safeboard filler.
- With visible cladding layers for manufacture of surface quality Q2, create a level transition to the board surface in the second step with Knauf Uniflott.

Board joints – hidden cladding layers



Board joints – visible cladding layers



Jointing of the gypsum board joints

For multi-layer cladding, fill the lower layers with filler; fill the joints of the visible layer. Filling the joints of covered cladding layers with multi-layer cladding is necessary to ensure technical X-ray shielding, fire protection and sound insulation properties as well as the structural properties.

Recommended

Front edge and cut edge joints as well as mixed joints (e.g. half-rounded tapered edge / half-rounded edge + cut edge) of the visible cladding layers filled using Uniflott or Knauf Safeboard filler with Fugendeckstreifen Kurt joint tape as well.

Joint filling of the connection joints

Apply Trenn-Fix or Fugendeckstreifen Kurt joint tape when filling joints to adjacent drywall constructions, taking into consideration the conditions and requirements for crack resistance.

Observe code of practice no. 3 “Gipsplattenkonstruktionen - Fugen und Anschlüsse” (German only)” [1] .

Apply Trenn-Fix when filling joints to adjacent solid construction components.

Sanding

Lightly sand visible surfaces after drying of the filler material, if required.

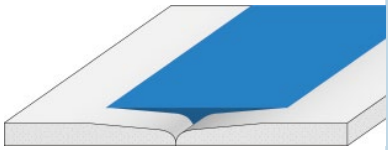
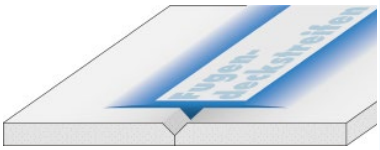
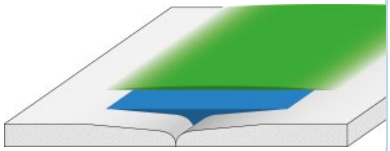
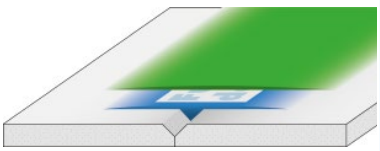
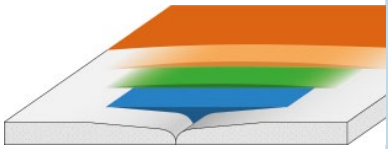
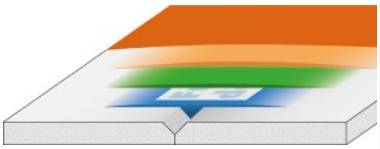
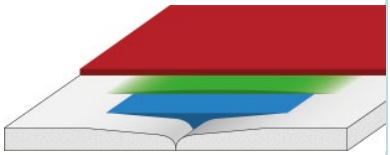
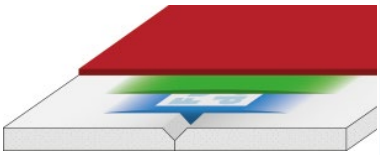
Caution	Wear a dust mask (P2 respiratory filter rating) when sanding Safeboard Filler.

Application temperature/climate

Filling and covering of joints should only take place when no more longitudinal changes can be expected, i.e. expansion or contraction due to humidity or temperature changes.
Do not apply filling at room or substrate temperatures below approx. +10 °C.
In case of mastic asphalt screed, cementitious screed and self-levelling screed, fill board joints only after screed has been applied.
Observe code of practice no. 1 “Baustellenbedingungen” [1].

1) Issued by the German Bundesverband der Gipsindustrie e. V.

Jointing (continued)

Quality levels	Joint implementation Long edges half-rounded tapered edge or half-rounded edge	Joint implementation Front edge bevelled cut edge	Description Working steps
Q1			■ Fill the Safeboard joints with Safeboard Filler or gypsum board joints with Uniflott. ■ Fill the visible parts of the fasteners for Safeboard with Safeboard Filler or those for gypsum boards with Uniflott
Q2			■ Preliminary jointing in acc. with quality level Q1 ■ Finish (fine finish compound) to achieve a smooth transition to the board surface e.g. with Uniflott, Spritzspachtel Plus, Fill & Finish Light or Super Finish No application marks or ridges may remain visible. Sand off the areas concerned if necessary.
Q3			■ Jointing in acc. with quality level Q2 ■ Wide jointing of the joints as well as clean and accurate removal of the remaining board liner filling the pores, e.g. with Fill & Finish Light, Super Finish or Spritzspachtel Plus If necessary, i.e. physical ridges and grooves are not acceptable and must be sanded.
Q4			■ Jointing in acc. with quality level Q2 ■ Complete surface covering of skim coat with a layer thickness of at least 1 mm, e.g. with Fill & Finish Light, Super Finish or Spritzspachtel Plus

Coatings and linings

Coating / lining	Recommended finish Gypsum boards EN 520[1)]
Tiles etc.	Q1
Coarsely structured wallpaper (e.g. woodchip wallpaper)	Q2
Finely structured wallpaper	Q3/Q4
Matt textured coats	Q3/Q4
Glossy, smooth coats	Q4
Plasters (grain size < 1 mm)	Q3/Q4
Plasters (grain size ≥ 1 mm)	Q2

Pretreatment

Before a further coating or lining is applied, the filled surface must be free of dust. Prime acc. to code of practice no. 6 of the BVG "Vorbehandlung von Trockenbauflächen aus Gipsplatten zur weitergehenden Oberflächenbeschichtung bzw -bekleidung" [2)].

The primer must suit the subsequent coating compound / coatings/linings.

In order to compensate for the differences in absorption of surfaces, coatings of primer such as Knauf Tiefengrund primer is suitable.

Where a wallpaper lining is used, a primer that facilitates easier removal of wallpaper for redecoration is recommended.

Sealing primer Flächendicht is required for covering splash water areas with tiles. Observe the DIN 18534.

Note	Gypsum board surfaces that have constantly been exposed to light without any protection can result in yellowing. Therefore, a trial coat is recommended that will extend across several boards including all joints. Yellowing can, however, be successfully avoided only by using a special primer, e.g. Aton Sperrgrund for finishing plasters, Knauf Sperrgrund for coatings.

Suitable coatings and linings

The following coatings/linings can be applied to Knauf boards:

- Wallpapers
  - Paper, fleece, textile and synthetic wallpapers
    Use only adhesives made of methyl cellulose according to Code of Practice no. 16 "Technische Richtlinien für Tapezier- und Spannarbeiten innen" [3)] released by the Bundesausschuss Farbe und Sachwertschutz.
- Plaster and filler materials
  - Top coats (e.g. Noblo, Raumklima Spritzputz spray plaster, Rotkalk Filz)
  - Full surface plaster (e.g. Spritzspachtel Plus).
    Application of plaster layers only in conjunction with Fugendeckstreifen Kurt joint tape.
- Coatings
  - Dispersion paint (e.g. Intol E.L.F., Malerweiss E.L.F.)
  - Silicate-based emulsion paints with suitable primer.
  - Others on request
- Ceramic coverings (e.g. tiles)
  - Minimum cladding thickness 18 mm (Diamant: 15 mm), e.g. 2x 12.5 mm with stud spacing 625 mm
  - With narrower cladding thickness, reduce the stud spacing to max. 500 mm (417 mm with vertical cladding).
  - Tile weights up to 25 kg/m^2 (one-sided) with a max. surface per tile of 1800 cm^2 (e.g. 60 x 30 cm) have proven to be uncritical (compare to Code of Practice 8: 2019-12 Partition heights of lightweight partitions[2)]).

Unsuitable coatings and linings

- Alkaline coats such as lime, water glass paints and silicate-based paints.

Notes	After wallpapering or after application of plasters, quick drying must be ensured through adequate airing. Other coatings or layers and vapour barriers up to about 0.5 mm thickness as well as claddings (with the exception of sheet steel), do not have any influence on the technical fire resistance classification of the Knauf X-Ray Shielding Partitions .

1) *In accordance with Code of Practice No. 2 "Verspacheltung von Gipsplatten, Oberflächengüten" (German only), Issued by the German Bundesverband der Gipsindustrie e. V.*
2) *Issued by the German Bundesverband der Gipsindustrie e. V.*
3) *Issued by the German Bundesausschuss Farbe und Sachwertschutz*

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Information on sustainability

Knauf X-Ray Shielding Partitions

Information on sustainability of Knauf X-Ray Shielding Partitions

Building assessment systems ensure the sustainable quality of buildings and constructional structures by a detailed assessment of ecological, economic, social, functional and technical aspects.

In Germany, the following certification systems are of particular relevance

- DGNB System
  Deutsches Gütesiegel Nachhaltiges Bauen
- BNB
  Bewertungssystem Nachhaltiges Bauen - Quality rating system for environmentally sustainable building)
- LEED
  Leadership in Energy and Environmental Design.

Knauf products and Knauf X-Ray Shielding Partitions can positively influence many of these criteria.

DGNB/BNB

Ecological quality

- Ecological performance evaluation of the building:
  Relevant environmental data are contained in the EPD for Safeboard, gypsum boards and filler
- Risks for the local environment:
  - Safeboard is a lead-free X-Ray Shielding Board
  - Gypsum as an ecological material
  - Profiles are hot-dip galvanized and free of Chromium VI

Economic quality

- Building related life-cycle costs:
  Cost-effective Knauf Drywalling
- Flexibility and suitability for conversion:
  Flexible Knauf Drywalling

Technical quality

- Sound insulation:
  Exceeding the demands of the standard with Knauf sound installation
- Ease of dismantling and recycling:
  Knauf Drywalling is fully compliant

LEED

Materials and Resources

- Building Life-Cycle Impact Reduction:
  Relevant ecological performance evaluation data are contained in the EPDs for Safeboard, gypsum boards and filler
- Environmental Product Declarations:
  Relevant environmental data are contained in the EPD for Safeboard, gypsum boards and filler
- Sourcing of Raw Materials:
  Recycled content in Knauf gypsum boards, e.g. board liner

Indoor Environmental Quality

- Low-Emitting Materials:
  Knauf products are regularly subject to VOC measurement

Videos for Knauf systems and products can be found under the following link:
youtube.com/knauf

Find the right system for your requirements!
knauf.de/systemfinder

The Knauf Infothek App now provides all the current information and documents from Knauf Gips KG at any time and in every location in a clear and comfortable way.
knauf.de/infothek

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The stated constructional and structural design specifications and characteristics of building physics of Knauf systems can only be ensured with the exclusive use of Knauf system components, or other products expressly recommended by Knauf.