

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
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European Technical Assessment

ETA-07/0086
of 23 March 2018

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

KNAUF Gypsum plasterboards Vidiwall and Vidiwall HI

Product family
to which the construction product belongs

Gypsum fibre boards for panelling and lining of building
components

Manufacturer

KNAUF Bulgaria EOOD
Angelov Vrach 27
1618 SOFIA
BULGARIEN

Manufacturing plant

Knauf Bulgaria EOOD
Werk Vidin
BULGARIEN

This European Technical Assessment
contains

8 pages including 2 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

EAD 070006-00-0504

This version replaces

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Specific part

1 Technical description of the product

KNAUF-Gypsum fibre boards Vidiwall and Vidiwall HI are special building boards made of gypsum and cellulose fibres. They will be produced in a range of thickness between 10 mm and 18 mm.

The gypsum fibre boards Vidiwall HI are covered with a hydrophobic agent and coloured blue.

2 Specification of the intended use in accordance with the applicable European Assessment Document

KNAUF-Gypsum fibre boards are used for the panelling (load-bearing/stiffening) and lining (non-load-bearing) of building components.

The KNAUF-Gypsum fibre boards may be used in the service classes 1 and 2 according to EN 1995-1-1¹.

The performances given in Section 3 are only valid if the KNAUF-Gypsum fibre boards Vidiwall and Vidiwall HI are used in compliance with the specifications and conditions given in Annexes 1 and 2.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of KNAUF-Gypsum fibre boards Vidiwall and Vidiwall HI of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Bending strength	See Annex 2
Shear strength	See Annex 2
Compression strength	See Annex 2
Tension strength	See Annex 2
Mechanical characteristics at increased moisture content	No performance assessed
Racking strength and stiffness	No performance assessed
Density	See Annex 2
Creep and duration of load	See Annex 2
Dimensionens	See Annex 2
Dimensional stability	See Annex 2
Surface hardness	See Annex 2
Embedment strength	See Annex 2
Head pull-through resistance	No performance assessed

¹ EN 1995-1-1 + AC:2006 + A1:2008 Eurocode 5: Design of timber structures; Part 1-1: General – Common rules and rules for buildings

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A2-s1, d0 according to EN 13501-1 ²

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Water vapour permeability – water vapour transmission	See Annex 2
Water absorption of board surface	See Annex 2
Water absorption of board	No performance assessed

3.4 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Hard body impact	See Annex 2

3.5 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal conductivity	See Annex 2

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 070006-00-0504 the applicable European legal act is: [95/467/EC(EU)].

The system to be applied is: 3

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 23 March 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Baumann

² EN 13501-1:2007+A1:2009 Fire classification of construction products and building elements - Part 1:Classification using data from reaction to fire tests

Annex 1 Specifications of intended use

A.1.1 Loading

Only for static and quasi-static load (not relevant to fatigue).

A.1.2 Installation

The installation of building components manufactured with KNAUF-Gypsum fibre boards can take place according to the Annexes as well as EN 1995-1-1¹ in conjunction with the respective national annex and EN 1993-1-1².

The reaction to fire class A2-s1, d0 is only verified if KNAUF gypsum fibre boards are butt-jointed or filled with jointing materials for gypsum plasterboards and closed. Joint filler materials class A1 or A2-s1,d0 according to DIN EN 13501-1³ are used which are regulated in accordance with DIN EN 13963-1⁴.

A.1.3 Connectors

As connectors for the KNAUF-Gypsum fibre boards with the substructure zinc-coated and/or stainless nails, screws or staples are used under consideration of the following conditions:

- Nails which have diameters of $2.0 \text{ mm} \leq d \leq 3.1 \text{ mm}$ and diameters of nail heads which have at least $\geq 1.8 d$.
- The tensile strength of the nail is at least 600 N/mm^2 .
- Staples which have wire diameters $d \geq 1.5 \text{ mm}$. The back width b_R of the staples is $b_R \geq 6 d$.
- The screws, e.g. "Vidiwall Spezialschrauben", which have an outside diameter of the screw thread of $3.5 \text{ mm} \leq d \leq 5.5 \text{ mm}$.

The distances of the connectors from the unstressed edge of the fibre gypsum board are at least $4 \cdot d$, from the stressed edge at least $7 \cdot d$.

A.1.4 Durability

The moisture content of the KNAUF-Gypsum fibre boards tested according to EN 322⁵ in normal climate ($20 \text{ }^\circ\text{C}$ / 65 % humidity), ranges between 0.9 and 1.3 %.

1	EN 1995-1-1:2004+A1:2008+A2:2014	Eurocode 5: Design of timber structures; Part 1-1: General – Common rules and rules for buildings
2	EN 1993-1-1:2005 + AC:2009	Eurocode 3: Design of steel structures - Part 1-1: General rules and rules for buildings
3	EN 13501-1:2007+A1:2009	Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests
4	EN 13963-1:2005	Jointing materials for gypsum plasterboards, Definitions, requirements and test methods
5	EN 322:1993-08	Wood-based panels; determination of moisture content

KNAUF Gypsum plasterboards Vidiwall and Vidiwall HI	Annex 1
Specifications of intended use	
Loading, installation, connectors and durability	

Annex 2 Specifications of essential characteristics

A.2.1 Characteristic strength values and stiffness values of the KNAUF-Gypsum fibre boards

Table 1: Characteristic strength values and stiffness values in N/mm²

Type of stress	Thickness of boards in mm			
	10 mm	12.5 mm	15 mm	18 mm
Characteristic strength values				
Perpendicular to the plane of the board				
Bending	$f_{m,k}$	4.5		
Shear	$f_{v,k}$	1.4		
In plane of the board				
Tension	$f_{t,k}$	2.3		
Compression	$f_{c,k}$	7.5		
Shear	$f_{v,k}$	3.5		
Stiffness values				
Perpendicular to the plane of the board				
Modulus of elasticity	$E_{m,mean}$	3900		
Shear modulus	G_{mean}	1300		
In plane of the board				
Modulus of elasticity Bending, Tension, Compression	$E_{m,t,c,mean}$	3900		
Shear modulus	G_{mean}	1750		
Value of density (in kg/m³)				
Density	ρ	1000 - 1250		

Bending strength perpendicular to the plane of the board

For bending strength perpendicular to the plane of the board, tested according to EN 15283-2+A1⁶

- on samples which are dried by 40 °C to mass constancy and
- the support distance for all thicknesses is $l_A = 350$ mm

The following minimum value is required:

$$f_{m,test} \geq 5.8 \text{ N/mm}^2.$$

This value has to be kept in tests for each board thickness as follows:

From 100 samples in sequence not more than 5 samples are allowed to remain under the minimum value. No sample is allowed to remain more than 10 % under the minimum value.

⁶ EN 15283-2:2008+A1:2009 Gypsum boards with fibrous reinforcement – Definitions, requirements and test methods – Part 2: Gypsum fibre boards

KNAUF Gypsum plasterboards Vidiwall and Vidiwall HI	Annex 2.1
Specifications of essential characteristics	
Characteristic strength values and stiffness values	

A.2.2 Creep and duration of the load

Table 2: Modification factor k_{mod}

Class of load action duration	service class 1	service class 2
permanent	0.20	0.15
long	0.40	0.30
average	0.60	0.45
short term	0.80	0.60
very short	1.10	0.80

Table 3: Deformation parameters k_{def}

service class 1	service class 2
3.0	4.0

A.2.3 Dimensions and dimensional stability

The thickness of the KNAUF-Gypsum fibre boards is between 10 mm and 18 mm.

The dimensional tolerances are ± 0.2 mm for the thickness, $+0 / -5$ mm for the length and $+0 / -4$ mm for the width of the boards.

The value for swelling and shrinkage in plane of the board, tested according to EN 318⁷, does not exceed 0.30 mm/m with a change in the relative air moisture by 30 %.

A.2.4 Surface hardness

The diameter of impression for KNAUF Gypsum plasterboards Vidiwall and Vidiwall HI, type GF-I according to EN 15283-2, Clause 5.11 is ≤ 15 mm.

A.2.5 Embedment strength

The characteristic embedding strength shall be determined according to equation (1):

$$f_{h,k} = 35 \cdot d^{-0.2} \cdot t^{0.1} \text{ (N/mm}^2\text{)} \quad (1)$$

with d = nominal diameter of the connector (mm)
 t = thickness of board (mm)

A.2.5 Partial safety factor

As partial safety factor of fibre gypsum boards $\gamma_m = 1.3$ is recommended in absence of national regulations.

⁷ EN 318:2002 Wood-based panels - Determination of dimensional changes associated with changes in relative humidity

KNAUF Gypsum plasterboards Vidiwall and Vidiwall HI	Annex 2.2
Specifications of essential characteristics Creep and duration of the load, dimensions and dimensional stability, surface hardness, embedment strength, partial safety factor	

A.2.7 Water vapour permeability – water vapour transmission

The value of the water vapour diffusion resistance of the KNAUF-Gypsum fibre boards, tested according to EN ISO 10456⁸, is $\mu = 21$.

A.2.8 Water absorption of board surface

The water absorption of board surface of KNAUF Gypsum plasterboards Vidiwall and Vidiwall HI, tested in accordance with EN 15283-2, Clause 5.8, is for:

- Type GF-W2 $\leq 1.500 \text{ g/m}^2$ and
- Type GF-W1 $\leq 300 \text{ g/m}^2$

A.2.9 Hard body impact

The value of the impact resistance of the KNAUF-Gypsum fibre boards, tested according to EN 1128⁹, is at least IR = 11 mm/ mm thickness of the board.

A.2.10 Thermal conductivity

The value of thermal conductivity λ of the KNAUF-Gypsum fibre boards, tested according to EN ISO 10456, is $\lambda \leq 0.30 \text{ W/mK}$.

⁸	EN ISO 10456:2010	Building materials and products - Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values
⁹	EN 1128:1995	Cement-bounded particleboards - Determination of hard body impact resistance

KNAUF Gypsum plasterboards Vidiwall and Vidiwall HI	Annex 2.3
Specifications of essential characteristics Water vapour permeability – water vapour transmission, water absorption of board surface, hard body impact, thermal conductivity	