



## European Technical Approval ETA-07/0086

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung <i>Trade name</i>	Vidiwall
Zulassungsinhaber <i>Holder of approval</i>	KNAUF Bulgaria EOOD Angelov Vrach 27 1618 SOFIA BULGARIEN
Zulassungsgegenstand und Verwendungszweck  <i>Generic type and use of construction product</i>	KNAUF-Gipsfaserplatten für die Beplankung und Bekleidung von Bauteilen  <i>KNAUF-Gypsum fibre boards for planking and lining of building components</i>
Geltungsdauer: <i>Validity:</i>	vom <i>from</i> 17 March 2008 bis <i>to</i> 16 March 2013
verlängert <i>extended</i>	vom <i>from</i> 17 March 2013 bis <i>to</i> 17 March 2018
Herstellwerk <i>Manufacturing plant</i>	Knauf Bulgaria EOOD Werk Vidin BULGARIEN

Diese Zulassung umfasst  
*This Approval contains*

9 Seiten einschließlich 2 Anhänge  
*9 pages including 2 annexes*

## I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:

Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products<sup>1</sup>, modified by Council Directive 93/68/EEC<sup>2</sup> and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council<sup>3</sup>;

Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998<sup>4</sup>, as amended by Article 2 of the law of 8 November 2011<sup>5</sup>;

Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC<sup>6</sup>.

2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Deutsches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

<sup>1</sup> Official Journal of the European Communities L 40, 11 February 1989, p. 12

<sup>2</sup> Official Journal of the European Communities L 220, 30 August 1993, p. 1

<sup>3</sup> Official Journal of the European Union L 284, 31 October 2003, p. 25

<sup>4</sup> *Bundesgesetzblatt Teil I* 1998, p. 812

<sup>5</sup> *Bundesgesetzblatt Teil I* 2011, p. 2178

<sup>6</sup> Official Journal of the European Communities L 17, 20 January 1994, p. 34

## II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

### 1 Definition of product/ products and intended use

#### 1.1 Definition of the construction product

KNAUF-Gypsum fibre boards "Vidiwall" are special building boards made of gypsum and cellulose fibres. They will be produced with a range of thickness between 10 mm and 18 mm. The uncoated KNAUF-Gypsum fibre boards meet the class A2-s1, d0 according to EN 13501-1<sup>7</sup>.

#### 1.2 Intended use

1.2.1 KNAUF-Gypsum fibre boards are used for the planking (structural) and lining (non-structural) of building components. They may be used both as load-bearing and as stiffening boards.

The KNAUF-Gypsum fibre boards may be used in the service classes 1 and 2 according to EN 1995-1-1<sup>8</sup>.

1.2.2 The provisions made in this European technical approval are based on an assumed intended working life of the gypsum fibreboards of at least 50 years, provided that the conditions laid down in sections 4 and 5 for the packaging, transport, storage, installation, use, maintenance and repair are met. 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.

### 2 Characteristics of the construction product and methods of verification

#### 2.1 Characteristics of the construction product

##### 2.1.1 Mechanical resistance and stability

2.1.1.1 The characteristic value of bending strength perpendicular to the plane of the board is:

$$f_{m,k} = 4.5 \text{ N/mm}^2.$$

The characteristic strength values and the stiffness values of the KNAUF-Gypsum fibre boards are indicated in Annex 1, table 1.

2.1.1.2 For bending strength perpendicular to the plane of the board, tested according to section 3.2.1.1, 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.

2.1.1.3 The density of the KNAUF-Gypsum fibre boards, tested according section 3.2.1.1, shall be at least 1000 kg/m<sup>3</sup> and must not exceed 1250 kg/m<sup>3</sup>.

<sup>7</sup> EN 13501-1:2007+A1:2009 Fire classification of construction products and building elements - Part 1:Classification using data from reaction to fire tests

<sup>8</sup> EN 1995-1-1 + AC:2006 + A1:2008 Eurocode 5: Design of timber structures; Part 1-1: General – Common rules and rules for buildings

### 2.1.2 Reaction to fire

Based on tests carried out to EN 13823 (SBI) in combination with EN ISO 1716 the uncoated KNAUF-Gypsum fibre boards meet the class A2-s1, d0 according to EN 13501-1.

### 2.1.3 Hygiene, health and environment

The ETA is issued for the building product with the chemical composition and other characteristics as deposited with the issuing approval body. Changes of materials, of composition or characteristics, should be immediately notified to the approval body, which will decide whether a new assessment will be necessary.

In addition to the specific clauses relating to dangerous substances contained in this European technical approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

### 2.1.4 Safety in use

The value of the impact resistance of the KNAUF-Gypsum fibre boards, tested according to EN 1128, is at least IR = 11 mm/ mm thickness of the board.

### 2.1.5 Protection against noise

not relevant

### 2.1.6 Energy economy and heat retention

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

2.1.6.2 The KNAUF-Gypsum fibre boards are airtight.

2.1.6.3 The value of the water vapour diffusion resistance of the KNAUF-Gypsum fibre boards, tested according to EN ISO 10456, is  $\mu = 21$ .

### 2.1.7 Aspects of durability, serviceability and identification

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

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

2.1.7.2 The moisture content of the KNAUF-Gypsum fibre boards in normal climate (20 °C/ 65 % humidity), tested according to EN 322, ranges between 0.9 and 1.3 %.

2.1.7.3 The value for swelling and shrinkage in plane of the board, tested according to EN 318, does not exceed 0.30 mm/m with a change in the relative air moisture by 30 %.

2.1.7.4 The chemical composition of the KNAUF-Gypsum fibre boards shall correspond to the details deposited with the Deutsches Institut für Bautechnik.

### 3 Evaluation of conformity and CE marking

#### 3.1 System of attestation of conformity

In its Decision 95/467/EC the European Commission has specified system 3 for the attestation of conformity of gypsum products (in the present case: gypsum fibre boards). The system is described in the Council Directive (89/106/EEC) in Annex III, 2 (ii), second possibility and provides for the following:

System 3: Declaration of conformity of the product by the manufacturer on the basis of:

- (a) Tasks of the manufacturer:
  - (1) factory production control;
- (b) Tasks of the approved body:
  - (2) initial type-testing of the product.

#### 3.2 Responsibilities

##### 3.2.1 Tasks of the manufacturer

###### 3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. The factory production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use raw and constituent materials in consensus to the details deposited by the Deutsches Institut für Bautechnik.

The factory production control shall be in accordance with the control plan, which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at the Deutsches Institut für Bautechnik.<sup>9</sup>

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

The manufacturer shall control in each manufacturing plant compliance with the requirements given in section 2.1 of the present ETA for the bending strength  $f_{m,test}$ , the density and the thickness as well as with the requirements given in section 3.3 of the present ETA for the CE marking.

- The bending strength perpendicular to the plane of the board has to be tested according EN 15283-2:2008+A1:2009 on samples which are dried by 40 °C to mass constancy.
- The support distance for all thicknesses must be  $l_A = 350$  mm.

The tests shall be performed by one sample per work shift as follows: per sample four tests: parallel and perpendicular to manufacturing direction of the boards and when loading each side of the board (top and bottom side).

- The density shall be verified in accordance with EN 15283-2:2008+A1:2009 on two samples per work shift.

<sup>9</sup> The control plan is a confidential part of the European technical approval and only handed over to the approved body/bodies involved in the procedure of attestation of conformity. See section 3.2.2.

#### 3.2.1.2 Other tasks of manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of gypsum fibre boards in order to undertake the actions laid down in section 3.3. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer must give an attestation of conformity for his product. So he declares that the KNAUF-Gypsum fibre boards are in accordance with the European technical approval ETA-07/0086.

#### 3.2.2 Tasks of approved bodies

The approved body shall perform the

- initial type-testing of the product,

in accordance with the provisions laid down in the control plan (see section 3.2.1.1). The results of the approval testing may be used for the purposes of initial type testing.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

#### 3.3 CE marking

The CE marking shall be affixed on the product itself, on the label attached to it, on the packaging or on the accompanying commercial documents.

The letters "CE" shall be followed by the following additional information:

- the name and address of the manufacturer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the European technical approval,
- the trading name Vidiwall,
- Reaction to fire: class A2-s1, d0 according to EN 13501-1,
- the thickness of the board.

#### 4 Assumptions under which the fitness of the product for the intended use was favourably assessed

##### 4.1 Manufacturing

The manufacturing procedure for the KNAUF-Gypsum fibre boards has been deposited by the Deutsches Institut für Bautechnik.

The European technical approval is issued for the product on the basis of tested data and information, deposited with the Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to the Deutsches Institut für Bautechnik before the changes are introduced. The Deutsches Institut für Bautechnik will decide whether or not such changes affect the European technical approval and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

#### 4.2 Design, calculation and execution of building components

The design, calculation and execution of building components which are manufactured using the present KNAUF-Gypsum fibre boards can take place according to Annex 2 or accomplish the standards EN 1995-1-1 and EN 1993-1-1<sup>10</sup>.

The data of this European technical approval including Annex 1 and if necessary the references in valid additional national regulations are to be considered.

#### 4.3 Installation

As connectors for the KNAUF-Gypsum fibre boards with the substructure can be used zinc-coated and/or stainless nails, screws or staples. Following conditions must be considered:

- The nails must have a diameter  $2.0 \text{ mm} \leq d \leq 3.1 \text{ mm}$  and a diameter of the nail head at least  $\geq 1.8 \cdot d$ .  
The tensile strength of the nail steel must be at least  $600 \text{ N/mm}^2$ .
- The staples must have a wire diameter  $d \geq 1.5 \text{ mm}$ . The back width  $b_R$  of the staples shall be  $b_R \geq 6 d$ .
- The screws, e.g. "Vidiwall Spezialschrauben", must have an outside diameter of the screw thread  $3.5 \text{ mm} \leq d \leq 5.5 \text{ mm}$ .

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

Tips for calculation of connecting systems contain Annex 2.

### 5 Indications for the manufacturer and user

#### 5.1 Packaging, transport and storage

During transport and storage the KNAUF-Gypsum fibre boards and the components manufactured by using the present boards shall be protected against damaging and inadequate moisture, e. g. due to precipitation or high construction moisture (all-round covering of the boards or components by means of a foil).

#### 5.2 Use, maintenance and repair

Damaged KNAUF-Gypsum fibre boards or components manufactured by using the present boards must not be used or installed.

Where components are produced on site by using fibre gypsum boards the moisture of the wood substructure must not increase inadequately until installation of the fibre gypsum boards.

Georg Feistel  
Head of Department

*beglaubigt:*  
Niebur

<sup>10</sup> EN 1993-1-1:2005 + AC:2009 Eurocode 3: Design of steel structures - Part 1-1: General rules and rules for buildings

Annex 1:

Characteristic strength values and stiffness values of the KNAUF-Gypsum fibre boards, which are to be used during design and calculation

Table 1: Characteristic strength values and stiffness values of the KNAUF-Gypsum fibre boards in N/mm<sup>2</sup>

Type of stress	Thickness of boards in mm			
	10 mm	12.5 mm	15 mm	18 mm
<b>Characteristic strength values</b>				
<b>Perpendicular to the plane of the board</b>				
Bending	$f_{m,k}$	<b>4.5</b>		
Shear	$f_{v,k}$	<b>1.4</b>		
<b>In plane of the board</b>				
Tension	$f_{t,k}$	<b>2.3</b>		
Compression	$f_{c,k}$	<b>7.5</b>		
Shear	$f_{v,k}$	<b>3.5</b>		
<b>Stiffness values</b>				
<b>Perpendicular to the plane of the board</b>				
Modulus of elasticity	$E_{m,mean}$	<b>3900</b>		
Shear modulus	$G_{mean}$	<b>1300</b>		
<b>In plane of the board</b>				
Modulus of elasticity Bending, Tension, Compression	$E_{m,t,c,mean}$	<b>3900</b>		
Shear modulus	$G_{mean}$	<b>1750</b>		
<b>Value of density (in kg/m<sup>3</sup>)</b>				
Density	$\rho$	<b>1000 - 1250</b>		



Annex 2:

**Describing notes for design and calculation**

1. Design, calculation and execution of building components which are manufactured by using the present KNAUF-Gypsum fibre boards can take place according to EN 1995-1-1 considering the Table 1 in Annex 1 and the regulations in mark 3 of this annex.

Additional national regulations are to be considered.

2. For this calculation the characteristic strength values and values of stiffness indicated in table 1 and the regulations in mark 3 are relevant.

3. As design data of the modification factor  $k_{mod}$  the following values are valid:

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

As design data of the deformation parameter  $k_{def}$  the following values are valid:

service class 1	service class 2
3.0	4.0

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

The characteristic embedding strength of the face of the hole can be determined as follows:

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

with  $d$  = nominal diameter of the connector (mm)

$t$  = thickness of board (mm)