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Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/106/EEC)

Deutsches Institut für Bautechnik

DIBt

Mitglied der EOTA
Member of EOTA

European Technical Approval ETA-13/0608

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*	"AQUAPANEL Cement Board"
Zulassungsinhaber *Holder of approval*	KNAUF USG SYSTEMS GmbH & Co. KG Zur Helle 11 58638 Iserlohn DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck	"AQUAPANEL Zementplatte 6 mm für nichttragende Anwendungen im Innenbereich und als Trägerplatte im Innenbereich" "AQUAPANEL Zementplatte 8 mm für nichttragende Anwendungen im Innenbereich" "AQUAPANEL Zementplatte 8 mm (hydrophobiert) für nichttragende Anwendungen im Außenbereich"
Generic type and use of construction product	*"AQUAPANEL Cement Board 6 mm for use in non-structural internal partitions and floor construction elements in indoor applications"* *"AQUAPANEL Cement Board 8 mm for use in non-structural internal partitions"* *"AQUAPANEL Cement Board 8 mm (hydrophobic) for use in non-structural exterior applications"*
Geltungsdauer: *Validity:*	vom *from* 21 June 2013 bis *to* 21 June 2018
Herstellwerk *Manufacturing plant*	Herstellwerke AQUAPANEL Cement Boards

Diese Zulassung umfasst *This Approval contains*	10 Seiten *10 pages*

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[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- *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[4], as amended by Article 2 of the law of 8 November 2011[5];*
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6].

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.

1 Official Journal of the European Communities L 40, 11 February 1989, p. 12
2 Official Journal of the European Communities L 220, 30 August 1993, p. 1
3 Official Journal of the European Union L 284, 31 October 2003, p. 25
4 *Bundesgesetzblatt Teil I 1998*, p. 812
5 *Bundesgesetzblatt Teil I 2011*, p. 2178
6 Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of the products and intended use

1.1 Definition of the construction products

The "AQUAPANEL® Cement Board 6 mm", "AQUAPANEL® Cement Board 8 mm" and "AQUAPANEL® Cement Board 8 mm (hydrophobic)" are specific boards made of cement according to EN 197-1[7], additions, admixtures, mineral lightweight aggregates and water. The boards are reinforced on both sides with alkali-resistant glass fibre fabrics.

The surfaces of the boards are not coated.

The characteristics of AQUAPANEL® Cement Boards are given in table 1.

Table 1: Characteristics of AQUAPANEL® Cement Boards

Board	Thickness	Density	Length	Width
	mm	kg/m³	mm	
"AQUAPANEL® Cement Board 6 mm"	6	1250	900 - 2500	900, 1200
"AQUAPANEL® Cement Board 8 mm"	8	1230		
"AQUAPANEL® Cement Board 8 mm (hydrophobic)"				

The AQUAPANEL® Cement Boards show a water absorption less than 25 % by mass.

The AQUAPANEL® Cement Boards are a non-combustible construction material (A1 according to EN 13501-1[8])

1.2 Intended use

The Cement-bonded boards are intended to be used for non-structural partitions, as lining, and for the manufacture of floor construction elements.

"AQUAPANEL® Cement Board 6 mm" is intended to be used for non-structural internal partitions, as lining of interior components, for suspended ceilings and floor construction elements in indoor applications.

"AQUAPANEL® Cement Board 8 mm" is intended to be used for non-structural internal partitions, as lining of interior components, for suspended ceilings in indoor applications.

"AQUAPANEL® Cement Board 8 mm (hydrophobic)" is intended to be used for non-structural external planking of walls and suspended ceilings in exterior applications.

The "AQUAPANEL® Cement board 8 mm" can be fixed on substructure with the fasteners according to clause 2.4.11.

The durability of the AQUAPANEL® Cement Boards are classified into category D ("6 mm" and "8 mm") and B ("8 mm (hydrophobic")) according to EN 12467[9].

[7] EN 197-1 Cement - Part 1: Composition, specifications and conformity criteria for common cements

[8] EN 13501-1 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

[9] EN 12467 Fibre-cement flat sheets - Product specification and test methods

The provisions made in this European technical approval are based on an assumed working life of 50 years for the AQUAPANEL® Cement Boards, provided that the conditions laid down in sections 4.2 / 5.1 / 5.2 relating to packaging / transport / storage / installation / use / maintenance / 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 products and methods of verification

2.1 Mechanical resistance and stability

Not relevant for non-structural applications.

2.2 Safety in case of fire

2.2.1 Reaction to fire

The AQUAPANEL® Cement Boards have been tested and classified in accordance with EN 13501-1[7]. They are considered to satisfy the requirements for class A1 of EN 13501-1[7].

2.3 Hygiene, health and enviroment

2.3.1 Content and/or release of dangerous substances

The product does not contain dangerous substances listed in EOTA TR 034 (Version endorsed at TB level – 71. meeting, agenda item 8.3.5).

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.

2.3.2 Vapour permeability

The vapour permeability μ shall be determined according to EN ISO 12572[10]. The vapour permeability's of the AQUAPANEL® Cement Boards are given in table 2.

Table 2: Vapour permeability of AQUAPANEL® Cement Boards

Board	Vapour permeability
"AQUAPANEL® Cement Boards 6 mm"	μ = 48
"AQUAPANEL® Cement Boards 8 mm"	μ = 40
"AQUAPANEL® Cement Boards 8 mm (hydrophobic)"	

2.4 Safety in use

2.4.1 Thickness

The thickness of the AQUAPANEL® Cement Boards shall be determined according to EN 12467[9], clause 7.2 for large size sheets. The tolerances on thickness shall be in accordance with table 3.

[10] EN ISO 12572 Hygrothermal performance of building materials and products - Determination of water vapour transmission properties

Table 3: Thicknesses including tolerances of AQUAPANEL® Cement Boards

Board	Thickness
"AQUAPANEL® Cement board 6 mm"	6,0 ± 0,6 mm
"AQUAPANEL® Cement board 8 mm"	8,0 ± 0,8 mm
"AQUAPANEL® Cement board 8 mm (hydrophobic)"	

2.4.2 Applied quantity and solid content of surface coating

The AQUAPANEL® Cement Boards are not coated.

2.4.3 Length and width

The length and width of the AQUAPANEL® Cement Boards shall be determined according to EN 12467[9], clause 7.2 for large size sheets.

The length, width and the tolerances on length and width shall be in accordance with table 4.

Table 4: Length and width including tolerances of the AQUAPANEL® Cement Boards

Board	Width	Length
"AQUAPANEL® Cement Board 6 mm" "AQUAPANEL® Cement Board 8 mm" "AQUAPANEL® Cement Board 8 mm (hydrophobic)"	898 ± 3 mm	1197 ± 3,6 mm 1247 ± 3,8 mm 2397 ± 5,0 mm 2497 ± 5,0 mm
	1198 ± 3,6 mm	897 ± 3,0 mm 2397 ± 5,0 mm 2497 ± 5,0 mm

2.4.4 Straightness of edges

The straightness of edges of the AQUAPANEL® Cement Boards shall be determined according to EN 12467[9], clause 7.2.3.3. The edges shall be straight and shall not exceed 0,1 %.

2.4.5 Squareness of edges

The squareness of edges of the AQUAPANEL® Cement Boards shall be determined according to EN 12467[9], clause 7.2.3.4. The edges shall be square and shall not be greater than 2 mm/m.

2.4.6 Density

The density of the AQUAPANEL® Cement Boards shall be determined according to EN 12467[9], clause 7.3.1. The density and the tolerances on the density are listed in table 4.

Table 4: Densities including tolerances of AQUAPANEL® Cement Boards

Board	Density (dry)
"AQUAPNEL® Cement Board 6 mm"	1250 ± 175 kg/m³
"AQUAPANEL® Cement Board 8 mm"	1230 ± 175 kg/m³
"AQUAPANEL® Cement Board 8 mm (hydrophobic)"	

2.4.7 Moisture content

The moisture content shall be determined according to EN 322[11] by storing the specimens at a standard climate (20 °C / 65 % air humidity). The moisture content of the AQUAPANEL® Cement Boards shall be declared and shall not be greater than 13 % by mass under standard climate conditions (20/65).

2.4.8 Water impermeability

The AQUAPANEL® Cement Boards, tested according to EN 12467[9], clause 7.3.3, are water impermeable.

2.4.9 Dimensional stability

The dimensional stability shall be determined on the basis of the shrinkage and swelling behaviour of the boards. The shrinkage and swelling have to be determined according to EN 318[12].

The relative length changes following a change in relative air humidity (dimensional stability), tested according to EN 318[12], for the AQUAPANEL® Cement Boards are given below:

- 0,38 mm/m when the relative air humidity changes from 65 % to 85 % (swelling properties)
- -0,32 mm/m when the relative air humidity changes from 65 % to 30 % (effect of shrinkage)

The relative changes in thickness following a change in relative air humidity (dimensional stability), tested according to EN 318[12], for the AQUAPANEL® Cement Boards are given below:

- 0,3 % when the relative air humidity changes from 65 % to 85 % (swelling properties)
- -0,3 % when the relative air humidity changes from 65 % to 30 % (effect of shrinkage)

2.4.10 Bending strength, bending modulus of elasticity and type of bending behaviour

The bending strength of the AQUAPANEL® Cement Boards shall be determined according to EN 310[13] perpendicular to the plane and plane to the plane on specimens after storage under climatic condition of 20 °C/65 %.

The bending behaviour, the bending strength and the bending modulus of elasticity of the boards are given in table 5.

Table 5: Bending strength, type of bending behaviour and bending modulus of elasticity of AQUAPANEL® Cement Boards

Board	Loading direction	Type of bending behaviour	Bending strength	Bending modulus of elasticity
	-	-	MPa	
"AQUAPANEL® Cement Board 6 mm"	Perpendicular	Ductile	13,4	1690
	Plane		6,3	930
“AQUAPANEL® Cement Board 8 mm”	Perpendicular	Ductile	10,9	1750
	Plane		6,9	800
"AQUAPANEL® Cement Board 8 mm (hydrophobic)"	Perpendicular	Ductile	10,9	1750
	Plane		6,9	800

[11] EN 322 Wood-based panels; determination of moisture content

[12] EN 318 Wood-based panels - Determination of dimensional changes associated with changes in relative humidity

[13] EN 310 Wood-based panels; determination of modulus of elasticity in bending and of bending strength

2.4.11 Pull through resistance

The pull through resistance shall be determined according to EN 1383[14]. The characteristic strength of the board was determined with the following fasteners:

- "AQUAPANEL® Maxi Screw SN 25" with needle point (shank diameter: 4,2 mm, head diameter: 9 mm, screw length: 25 mm)
- "AQUAPANEL® Maxi Screw SN 39" with needle point (shank diameter: 4,2 mm, head diameter: 9 mm, screw length: 39 mm)
- "AQUAPANEL® Maxi Screw SB 39" with drill point (shank diameter: 3,9 mm, head diameter: 9 mm, screw length: 39 mm)

The pull through resistance of the AQUAPANEL® Cement Boards are shown in table 6.

Table 6: Pull through resistance of the "AQUAPANEL® Cement Boards".

Board	Maximum load	Pull through resistance
"AQUAPANEL® Cement Board 6 mm"	$F_{max,k}$ = 190 N	f_k = 2,29 N/mm²
"AQUAPANEL® Cement Board 8 mm"	$F_{max,k}$ = 229 N	f_k = 2,78 N/mm²
"AQUAPANEL® Cement Board 8 mm (hydrophobic)"	$F_{max,k}$ = 229 N	f_k = 2,78 N/mm²

The fastening in the substructure is not a matter for this ETA.

2.4.12 Impact Resistance

The impact resistance of the AQUAPANEL® Cement Board "6 mm", "8 mm" and "8 mm (hydrophobic)", tested according to EN 1128[15], is at least IR = 12,5 mm/mm.

2.5 Protection against noise

Not relevant.

2.6 Energy economy and heat retention

2.6.1 Thermal conductivity

The thermal conductivity of AQUAPANEL® Cement Boards at a reference temperature of 10 °C shall be determined in accordance with the EN 12664[16].

The nominal thermal conductivity, determined as specified in EN ISO 10456[17] for the AQUAPANEL® Cement Boards dried at 105 °C is:

"AQUAPANEL® Cement Boards 6 mm": λ = 0,34 W/(m· K)

"AQUAPANEL® Cement Boards 8 mm": λ = 0,36 W/(m· K)

[14] EN 1383 Timber structures - Test methods - Pull through resistance of timber fasteners
[15] EN 1128 Cement-bounded particle boards - Determination of hard body impact resistance
[16] EN 12664 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products with medium and low thermal resistance
[17] EN ISO 10456 Building materials and products - Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values

"AQUAPANEL® Cement Boards 8 mm (hydrophobic)": λ = 0,36 W/(m· K)

The nominal thermal conductivity applies to the apparent density range specified in section 2.5.

In addition, the thermal conductivity at 80 % RH (storage of the specimens at 23 °C/80 % RH until mass constancy) was measured and used to calculate the moisture conversion factor.

The determined moisture conversion factor F_u is 2,3.

2.6.2 Air permeability

The AQUAPANEL® Cement Boards are airtight.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the Decision 98/437/EC of the European Commission[18], system 4 of the attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 4: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks of the manufacturer:
  (1) initial type-testing of the product,
  (2) factory production control.

In addition, according to the decision of the European Commission[13], system 3 of the attestation of conformity applies to cement-bonded boards with regard to reaction to fire.

This system of attestation of conformity is defined as follows:

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 for the approved body:
  (2) initial type-testing of the product.

Note: Approved bodies are also referred to as "notified bodies".

3.2 Responsibilities

3.2.1 Tasks for 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. This 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 stated in the technical documentation of this European technical approval.

[18] Official Journal of the European Communities L 194/39 of 10.07.1998

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 with Deutsches Institut für Bautechnik.[19]

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

3.2.1.2 Other tasks for the 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 AQUAPANEL® Cement Boards in order to undertake the actions laid down in section 3.2.2. 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 shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European technical approval.

3.2.2 Tasks for the 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.

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 a label attached to it, on its packaging or on the accompanying commercial documents.

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

- the name and address of the producer (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 ETA-13/0608,
- application: "Cement-bonded board" for non-structural applications,
- trade name of the construction product,
- Reaction to fire: Class A1 according to EN 13501-1,
- Size (length, width and thickness).

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

4.1 Manufacturing

The AQUAPANEL® Cement Boards are manufactured on the basis of agreed data deposited with Deutsches Institut für Bautechnik.

[19] 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.

The European technical approval is issued for the product on the basis of agreed data/information, deposited with 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 Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval and if so whether further assessment or alterations to the approval shall be necessary.

4.2 Installation

If AQUAPANEL® Cement Board is used to construct non-structural internal partitions as lining of interior components and for the manufacture of floor construction elements or suspended ceilings, it shall not be fitted under tension.

The installation instructions specified by the manufacturer shall be taken into consideration.

The fasteners used to attach the AQUAPANEL® Cement Board to the substructure shall be suitable nails, screws, staples or rivets with sufficient corrosion protection.

The following fastener shall be used:

- "AQUAPANEL® Maxi Screw SN 25" with needle point (shank diameter: 4,2 mm, head diameter: 9 mm, screw length: 25 mm)
- "AQUAPANEL® Maxi Screw SN 39" with needle point (shank diameter: 4,2 mm, head diameter: 9 mm, screw length: 39 mm)
- "AQUAPANEL® Maxi Screw SB 39" with drill point (shank diameter: 3,9 mm, head diameter: 9 mm, screw length: 39 mm)

If AQUAPANEL® Cement Boards are used for non-structural internal partitions, as lining in the interior zone, as suspended ceilings or for the manufacture of dry floor construction elements national regulations shall be observed.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

The AQUAPANEL® Cement Boards and any component manufactured from it shall be stored according to the specifications given by the manufacturer. The AQUAPANEL® Cement Boards have to be protected against damage or detrimental effects of moisture, for example from precipitation or trapped moisture (by covering all sides of the boards or components with packaging film).

The packaging of AQUAPANEL® Cement Boards shall be marked permanently by the manufacturer in accordance to EN 12467[9].

5.2 Use, maintenance, repair

Damaged AQUAPANEL® Cement Boards or walls having been manufactured by using these boards shall not be installed nor used.

Until installation of the AQUAPANEL® Cement Boards the moisture of the wood of the frame, if in connection with solid wood, may not increase detrimentally (protection from precipitation or very high trapped moisture required).

Andreas Kummerow
p.p. Head of Department

beglaubigt:
Schröder