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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-05/0179

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*	System Dennert Typ A System Dennert Typ B System Dennert Typ C System Dennert Typ D
Zulassungsinhaber *Holder of approval*	Veit Dennert KG Baustoffbetriebe Hauptstraße 1 96191 Viereth DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	Mineralische Wärmedämmplatte *Thermal insulating board made of mineral material*
Geltungsdauer: *Validity:* vom *from* bis *to*	7 June 2013 14 September 2015
Herstellwerk *Manufacturing plant*	Poratec GmbH Industriestraße 13 96120 Bischberg

Diese Zulassung umfasst *This Approval contains*	8 Seiten *8 pages*
Diese Zulassung ersetzt *This Approval replaces*	ETA-05/0179 mit Geltungsdauer vom 15.09.2010 bis 14.09.2015 *ETA-05/0179 with validity from 15.09.2010 to 14.09.2015*

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 product and intended use

1.1 Definition of the construction product

This European technical approval applies to the thermal insulating boards made of mineral material with the designations:

"System Dennert Typ A",

"System Dennert Typ B",

"System Dennert Typ C" and

"System Dennert Typ D".

The thermal insulating boards are manufactured of quartz powder, calcium hydrate and cement by adding a foaming agent and are high-pressure steam cured (autoclaved).

The thermal insulating boards "System Dennert Typ A", "System Dennert Typ B", "System Dennert Typ C" and "System Dennert Typ D" differ as to the ratio of quartz powder, calcium hydrate and cement.

The thermal insulating boards are dyed, not coated and not laminated.

The boards are made with the following dimensions:

Nominal thicknesses:	40 mm to 200 mm ("System Dennert Typ D": 25 mm bis 200 mm)
Nominal length:	250 mm to 600 mm
Nominal width:	200 mm to 400 mm

The information concerning the dimensions corresponds to the manufacturer's delivery program.

1.2 Intended use

The thermal insulating boards can be used for the following intended uses:

- Internal insulation of walls
- Internal insulation of ceilings and roofs
- Internal insulation of floors below screeds in residential and office areas

The thermal insulating boards may only be installed in structures where they are protected from wetting, weathering and moisture.

This European technical approval does not cover the use of the thermal insulating boards in thermal insulation systems. Separate European technical approvals are necessary for certain intended uses regarding this (e.g. when using in external thermal insulation composite systems).

As to the application of the insulation product, the respective national regulations shall be additionally observed as well.

The provisions made in this European technical approval are based on an assumed working life of the thermal insulating boards of 50 years, provided that the conditions laid down in sections 4.2, 5.1 and 5.2 for the packaging, transport, storage, installation and use 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 product and methods of verification

2.1 Composition and production methods

With regard to the composition and production method the thermal insulating boards shall correspond to those which were the basis for the approval tests. The composition (separated for the products "System Dennert Typ A", "System Dennert Typ B", "System Dennert Typ C" and "System Dennert Typ D") and the production method are deposited with Deutsches Institut für Bautechnik. See also clause 4.1.

2.2 Dimensions

The thickness is determined according to the standard EN 823:1994-07. The test is performed with a load of 250 Pa. No test result (individual value) deviates from the nominal thickness by more than ± 2 mm.

Length and width of the thermal insulating boards are determined according to the standard EN 822:1994-07. The deviations (individual values) in the direction of length and width do not amount to more than ± 2 mm.

The squareness is determined according to the standard EN 824:1994-07. The deviation from the squareness in the direction of length and width for each individual value does not amount to more than 6 mm/m.

2.3 Density

The density of the thermal insulating boards is determined according to the standard EN 1602:1996-11. Each individual value of the density (dry[7]) shall be within the following ranges:

"System Dennert Typ A"	at least 75 kg/m³ and not more than 100 kg/m³
"System Dennert Typ B"	at least 85 kg/m³ and not more than 110 kg/m³
"System Dennert Typ C"	at least 101 kg/m³ and not more than 130 kg/m³
"System Dennert Typ D"	at least 131 kg/m³ and not more than 150 kg/m³

2.4 Water vapour diffusion

The water vapour diffusion resistance coefficient, determined according to the standard EN 12086:1997-06 for "System Dennert Typ A" is at least $\mu = 3$ and not more than $\mu = 6$, for "System Dennert Typ B", "System Dennert Typ C" and "System Dennert Typ D" at least $\mu = 3$ and not more than $\mu = 7$.

2.5 Water absorption

No performance determined.

2.6 Thermal conductivity

The thermal conductivity of the thermal insulating boards at dry state[8] is determined at a reference temperature of 10° C according to the standard EN 12667:2001-01. The effect of humidity on thermal conductivity is determined by measuring the thermal conductivity after storing the insulating boards at 23 °C and 50 % relative humidity and at 23°C and 80 % relative humidity.

The declared values of the thermal conductivity at dry state and after storing at 23 °C and 50 % relative humidity, determined according to the standard EN ISO 10456:2007-12 +AC:2009-12 amounts to:

$\lambda = 0.038$ W/(m·K) for "System Dennert Typ A",

$\lambda = 0.040$ W/(m·K) for "System Dennert Typ B",

$\lambda = 0.042$ W/(m·K) for "System Dennert Typ C",

7 Drying temperature 105 °C to constant mass

8 Drying temperature for determination of $\lambda_{10,dry}$: 70 °C to constant mass

λ = 0.049 W/(m·K) for "System Dennert Typ D".

The declared values of the thermal conductivity are limit values which must not be exceeded during production (Category 2) and apply to the density range given in section 2.3.

As to the conversion of humidity the following applies:

- the moisture content mass by mass at 23 °C/80 % relative humidity: u = 0.015 kg/kg
- the moisture conversion coefficient mass by mass: $f_{u(28/80)}$ = 0.98
- the moisture conversion factor: $F_{m(23/80)}$ = 1.01

2.7 Compressive strength

The determination of the compressive strength of the thermal insulating boards is performed according to the standard EN 826:1996-03.

The mean value of the compressive strength amounts to at least 150 kPa.

2.8 Dimensional stability

The determination of the dimensional stability under specified temperature and humidity conditions is performed according to the standard EN 1604:1996-11+A1:2006-09 after a 48 h storage at (70 ± 2) C and (90 ± 5) % relative humidity.

The dimensional changes in the direction of lengths, widths and thicknesses amount to a maximum of ± 0.5%.

2.9 Reaction to fire

The reaction to fire is tested by using the test methods relevant for the corresponding reaction to fire class and is classified according to the standard EN 13501-1:2007+A1:2009-09. The thermal insulating boards meet the requirements of reaction to fire class A1 according to EN 13501-1.

2.10 Emission of dangerous substances or radiation

Note: 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.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to Decision 1999/91/EC of the European Commission[9] amended by Decision 2001/596/EC[10] system 3 of attestation of conformity applies.

In addition, according to Decision 2001/596/EC of the European Commission system 1 of attestation of conformity applies with regard to the reaction to fire.

These systems of attestation of conformity are defined as follows:

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

(a) Tasks for the manufacturer:

(1) factory production control;

(2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;

[9] Official Journal of the European Communities L 29/44 of 25 January 1999
[10] Official Journal of the European Communities L 209/33 of 8 January 2001

(b) Tasks for the approved body:
(3) initial type–testing of the product;
(4) initial inspection of factory and of factory production control;
(5) continuous surveillance, assessment and approval of factory production control.

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

(a) Tasks for 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 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. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use initial materials stated in the technical documentation of this European technical approval.

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[11].

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 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 thermal insulating materials 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 this European technical approval.

3.2.2 Tasks of approved bodies

The approved body shall perform the

- initial type testing of the product,
- initial inspection of factory and of factory production control (for system 1),
- continuous surveillance, assessment and approval of factory production control (for system 1)

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.

[11] The control plan is a confidential part of the documentation of this European technical approval and only handed over to the approved body involved in the procedure of attestation of conformity. See section 3.2.2.

For initial type-testing the results of the test carried out as part of the assessment for the European technical approval shall be used, provided that nothing changes in the production or at the factory. Otherwise the necessary initial type-testing shall be agreed on between Deutsches Institut für Bautechnik and the approved body involved.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval (for system 1).

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform the Deutsches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed on the product and/or the packaging or the accompanying commercial document (e.g. the EC declaration of conformity). The letters "CE" shall be followed by the identification number of the approved certification body and be accompanied by the following additional information:

- the name and address of the producer,
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product (for system 1),
- the number of the European technical approval,
- identification of the product (trade name),
- nominal dimensions of length, width and thickness,
- density range,
- water vapour diffusion resistance coefficient,
- compressive strength,
- declared value of thermal conductivity,
- conversion factor for the thermal conductivity for the moisture content mass by mass at 23 °C/80 % relative humidity,
- reaction to fire: class according to EN 13501-1,
- indication of dangerous substances,
- indication of biocidal products (Directive 98/8/EEC).

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

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/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 ETA 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 Installation

The thermal insulating boards may only be installed in structures where they are protected from wetting, weathering and moisture.

The installation instructions given by the manufacturer shall be taken into account for installation of the thermal insulation boards. Where the thermal insulating boards are fixed by using adhesives and/or anchors, only such adhesions or anchors shall be used, which are suitable for this purpose. The assessment of these fixings is not part of this European technical approval.

The thermal insulating boards shall be protected from moisture during installation.

4.2.1 Parameters for the design of construction works or parts of construction works

4.2.1.1 Design value of the thermal conductivity

The design value of the thermal conductivity shall be laid down according to relevant national provisions.

4.2.1.2 Nominal thickness

When calculating the thermal resistance, the nominal thickness of the insulating material shall be applied.

4.2.1.3 Water vapour diffusion resistance coefficient

For the determination of the diffusion-equivalent air layer thickness of the insulating material the following water vapour diffusion resistance factors shall be applied for calculating[12]:

μ = 3 and/or μ = 6 for "System Dennert Typ A"

μ = 3 and/or μ = 7 for "System Dennert Typ B", "System Dennert Typ C" and "System Dennert Typ D".

5 Indications to the manufacturer

5.1 Packaging, transport and storage

Packaging of the product shall be performed such that the insulating material is protected from moisture during transport and storage, unless other measures are foreseen by the manufacturer for this purpose.

5.2 Use, maintenance, repair

In the information accompanying the CE marking the manufacturer shall specify that the product is to be protected from moisture during transport, storage and installation.

Dirk Brandenburger
Head of Department

beglaubigt:
Iffländer

[12] The more unfavourable value for the construction work shall be applied each.