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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-12/0061

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*		H2 Wall isofloc H2 Wall
Zulassungsinhaber *Holder of approval*		H2 Therm UG Stahlstraße 5 33378 Rheda-Wiedenbrück DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*		Polystyrol-Granulat zur Kerndämmung von zweischaligem Mauerwerk *Granulated polystyrene for core thermal insulation of two-leaf masonry walls*
Geltungsdauer: *Validity:*	vom *from* bis *to*	25 May 2012 25 May 2017
Herstellwerk *Manufacturing plant*		WERK 1, DEUTSCHLAND

Diese Zulassung umfasst *This Approval contains*	7 Seiten *7 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 law of 31 October 2006[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 2006*, p. 2407, 2416
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

This European technical approval applies to the loose fill thermal insulation materials made of polystyrene granulate with the designations "H2 Wall" and "isofloc H2 Wall".

New expanded polystyrene is used for manufacturing the thermal insulation materials.

The particle size of the thermal insulation materials is between 4 mm and 7 mm (lentiform).

The thermal insulation materials are subsequently filled in into the cavity of two-leaf masonry walls without adhesive agent by means of machine processing.

1.2 Intended use

The thermal insulation materials serve for the production of insulation layers not exposed to compression loads for two-leaf masonry walls with core insulation by machine processing at the place of use. They are thereby used for full filling of the cavity of two-leaf external masonry walls in buildings up to a height of 12 m.

The thermal insulation materials shall be sufficiently protected from wetting, weathering and moisture by an appropriate outer leaf of masonry.

With regard to the application of the thermal insulation materials, the respective national regulations shall be observed in addition.

The provisions made in this European technical approval are based on an assumed working life of the thermal insulation materials of 50 years, provided that the conditions laid down in sections 4.2, 5.1 and 5.2 for 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 products and methods of verification

2.1 Composition and production methods

With regard to composition and production method the thermal insulation materials shall correspond to those which were the basis for the approval tests. Composition and production methods are deposited with Deutsches Institut für Bautechnik. See also clause 4.1.

2.2 Particle size and particle size distribution

The particle size distribution of the polystyrene granulate is determined according to EN 933-1: 1997+A1:2005 and shall correspond to the distribution determined within the approval tests.

2.3 Bulk density

The loose bulk density (individual value), determined according to EN 1097-3:1998-04 using a measuring vessel with a volume of 10 liter, amounts to at least 16 kg/m³ and does not exceed 18 kg/m³

2.4 Thermal conductivity

The thermal conductivity of the thermal insulation materials is determined at a reference temperature of 10° C according to EN 12667:2001-01 at samples compacted by 10 % by using a sample holder according to EN 14064-1:2010-02, Annex C. The declared value of thermal conductivity, determined according to the standard EN ISO 10456:2007+AC:2009 for a moisture content of the insulation material at 23 °C/50 % relative air humidity, amounts to:

$$\lambda_D = 0.033 \text{ W/(m} \cdot \text{K)}$$

The declared value is representative for at least 90 % of the production with a confidence level of 90 %. For the admissible deviation of an individual value of the thermal conductivity from the declared value the method described in EN 13172:2001+A1:2005, Annex F applies.

The moisture content at 23°C/50 % relative air humidity and at 23°C/80 % relative air humidity amounts to $\psi = 0$ according to EN ISO 10456:2007+AC:2009, Table 4. Therefore the influence of humidity on the thermal conductivity is negligible.

2.5 Reaction to fire

The reaction to fire of the thermal insulation materials is tested according to the standard EN ISO 11925-2:2010-11 and classified according to the standard EN 13501-1:2007+A1:2009. The thermal insulation materials meet the requirements of class E according to EN 13501-1.

2.6 Settlement in the cavity

By testing the settlement according to ISO/CD 18393[7], Method C - Settling of wall cavity insulation by vibration – with a test height of 2.30 m and cavity depths of 10 cm and 24 cm no settling of the thermal insulation materials occurs.

2.7 Water vapour diffusion

The water vapour diffusion resistance coefficient of the thermal insulation materials amounts to $\mu = 2$ according to the standard EN ISO 10456:2007+AC:2009.

2.8 Deformation under specified load and temperature

The deformation under specified load and temperature is determined following EN 1605:1996+A1:2006, test condition 2. Deviating from EN 1605 the test is carried out with a load of 1 kPa and 70 °C for 168 h. The change of relative deformation amounts to 3 % at the most.

Note: The test is used to check the shrinkage behaviour.

2.9 Water absorption

No performance determined

2.10 Adequacy of fill of the cavity space

No performance determined

2.11 Liquid water transmission

No performance determined

2.12 Emission of dangerous substances or radiation

The product contains a flame retardant consisting of hexabromcyclododecan.

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.

[7] ISO/CD 18393:2002-08 Thermal insulation – Accelerated ageing of thermal insulation materials – Assessment of settling of loose-fill thermal insulation used in attic and closed cavity applications

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the communication of the European Commission[8] system 3 of the attestation of conformity applies.

According to the Decision 2001/596/EC of the European Commission[9] the system 3 of the attestation of conformity applies also 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 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 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 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 with Deutsches Institut für Bautechnik.[10]

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 for the construction product 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 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.

8 Letter of the European Commission of 20.3.2009 to EOTA

9 Official Journal of the European Communities L 209/33 of 2.8.2001

10 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.

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 packaging of the construction product. 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,
- "Thermal insulation material for core insulation of two-leaf masonry walls",
- declared value of thermal conductivity,
- reaction to fire: class E according to EN 13501-1,
- filling weight.

4 Assumptions under which the fitness of the products 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 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.

The manufacturer shall ensure that the polystyrene granulate is only made from initial materials which do not contain impurities.

4.2 Installation

4.2.1 Installation conditions

The thermal insulation materials shall be sufficiently protected from wetting, weathering and moisture by an appropriate outer leaf of masonry. The thickness and the execution of the outer leaf shall comply with the respective national regulations.

When installed the installation instructions, to be given by the manufacturer, shall be taken into account. Particular attention shall be paid to the fact that the thermal insulation materials are processed in the dry condition and that the cavity of the double-leaf masonry is completely filled.

The conditions according to clause 1.2 shall be taken into account.

Before executing the installation of the thermal insulation materials by machine processing with a compaction of 10 % the executing company shall make sure that the building component is suitable for the installation of the insulation and that the facing shell is in a proper state and shows no moisture penetrations. Cracks and defects in the joint shall be repaired before placing the core insulation.

The density of the insulation material after installation shall be between 18 kg/m³ and 20 kg/m³. The executing company has to check the density. The density is determined by calculation as a quotient from the mass of the material brought in and the filled volume.

If applicable openings in the wall are to be conveniently closed in order to prevent that insulation material escapes. Existing ventilation openings in the facing shell at the base of the wall shall be maintained.

The thickness of the core insulation layer to be subsequently installed is defined by the mean distance of both masonry shells. This distance is defined by spot-drilling the facing shell at at least 5 spots per floor and wall surface in the bed joint. The means of the 5 respective measurements shall apply (rounded to 5 mm).

The thermal insulation material shall only be installed using suitable equipment approved by the approval holder.

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

4.2.2.1 Thermal conductivity

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

4.2.2.2 Thickness of the core insulation

When calculating the thermal resistance of the core insulation the mean distance of both masonry shells shall be applied.

4.2.3.2 Water vapour diffusion resistance coefficient

For the determination of the diffusion-equivalent air layer thickness of the thermal insulation layer the water vapour diffusion resistance coefficient $\mu = 2$ shall be applied for calculating.

4.2.3 Executing companies

The insulating material may only be machine processed by companies stated in a list of the manufacturer which have adequate experience in installing the material. Concerning this matter the manufacturer has to train these companies.

The executing company shall issue a certificate which contains the following information with reference to this European technical approval for each application place:

- identification of the product (trade name),
- number of the European technical approval,
- executing company,
- building project and building component,
- date of installation,
- mean thickness of the core insulation,
- density of the insulation after installation.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

Packaging, transport and storage shall be performed such that the construction product is protected from moisture. The thermal insulation materials shall be delivered in bags with a volume of 200, 250, 600, 800 ore 1000 litre.

5.2 Use, maintenance, repair

In the information accompanying the CE marking the manufacturer shall specify that the product shall be installed following the installation instructions given by the manufacturer (machine processed only by trained companies according to 4.2.3) and that it shall be protected from moisture during transport, storage and installation.

Uwe Bender
Head of Department

beglaubigt:
Iffländer