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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

European Technical Assessment ETA-08/0312 of 18/12/2017

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:	Thermocell in-situ formed loose fill insulation
Product family to which the above construction product belongs:	In-situ formed loose fill thermal insulation material made of vegetable fibres
Manufacturer:	Thermocell Danmark A/S Næssundvej 423A DK 7960 Karby Telephone +45 96 69 50 60 Telefax +45 96 69 50 70 Internet www.thermocell.dk
Manufacturing plant:	Thermocell Danmark A/S Næssundvej 423A DK 7960 Karby
This European Technical Assessment contains:	7 pages and 1 annex 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:	European Assessment Document (EAD) 040138-00-1201 "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres"
This version replaces:	The previous ETA with the same number issued on 2008-11-24 and expiry 2013-11-24

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product
This European Technical Assessment applies to the insulation made of in-situ formed loose fill wood fibres with the designation:

Thermocell loose fill insulation

The wood fibres are derived from wood by mechanical crushing. During the manufacturing process the product is provided with a fire retardant and an additive for enhancing the biological resistance (amoniumpolyphosphate and boric acid).

The European Technical Assessment does not apply for a manual processing of the thermal insulation products.

2 Specification of the intended use in accordance with the applicable EAD

The insulating material serves for the production of insulation layers, not exposed to compression loads, by means of blowing at the place of use. The blowing is carried out in dry conditions.

The insulating material is used for thermal insulation. The insulation is not used for airborne sound insulation.

The insulating material can be used for the following intended uses:

Area of application for walls

- Space filling insulation in closed cavities of exterior and interior walls

Area of application for roofs and ceilings / floors

- Insulation in closed cavities between rafters and timber beams as well as cavities in similar structures
- Exposed insulation on horizontal or moderately pitched areas ($\leq 10^{o}$), e.g. insulation of topmost story ceilings which are not subject to foot traffic, however, are accessible
- Cavity insulation between floor joists battens and similar substructures

The performances given in Section 3 are only valid if the thermal insulation products are installed according to the manufacture's installation instructions, used in compliance with the specifications and conditions given in Annex A and if they are protected from precipitation, wetting or weathering in built-in state and during transport, storage and installation.

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

The provisions made in this European Technical Assessment are based on an assumed intended working life of the anchor of 50 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, 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

Characteristic	Assessment of characteristic
3.2 Safety in case of fire (BWR 2)	
Reaction to fire	The insulation material meets the classification criteria for **Euroclass D-s2,d0** with EN 13501-1 and Delegated Regulation 2016/364 with the following field of application: Nominal density of 26 – 58 kg/m^3 Substrates: Wood substrates at least 12 mm thick and any end use substrate of Euroclass A1 or A2 at least 12 mm thick, having a density ≥ 510 kg/m^3
3.3 Hygiene, health and the environment (BWR 3)	
Influence on air quality	The product does not contain/release dangerous substances specified in TR 034, dated March 2012, except fire retardants and additive for enhancing the biological resistance (amoniumpolyphosphate and boric acid), which have not been assessed in this ETA
Resistance to the growth of mould test acc. to EAD "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres", Annex B	The assessment of the growth of fungi according to the standard EN ISO 846, Table 4, resulted in the evaluation level 0.
3.5 Protection against noise (BWR 5)	
Sound absorption	No performance assessed
3.6 Energy economy and heat retention (BWR 6)	
Thermal conductivity	The fractile value of thermal conductivity for the density range of 26 kg/m³ - 47 kg/m³ is $\lambda_{10,dry,90/90}$ **= 0,0388 W/(mK)** representing at least 90 % of the production with a confidence limit of 90% The declared value of thermal conductivity for the density range of 26 kg/m³ - 47 kg/m³is $\lambda_{D(23,50)}$ **= 0,039 W/(mK)** – determined by conversion of the (10,dry,90/90) value. For conversion of humidity the following applies: • the moisture content mass by mass at 23 °C/50 % relative humidity: $u_{23,50}$ = 0,08 kg/kg • the moisture content conversion coefficient mass by mass: fu1 (dry – 23/50) = 0,042 kg/kg and 0,31 kg/kg for densities 26 kg/m³ and 47 kg/m³ respectively No performance is determined for the conversion factor to high moisture content. For the admissible deviation of an individual value of the thermal conductivity from the declared value the method described in EN 1317210 Annex F applies.
Water vapour diffusion resistance coefficient	For the determination of the diffusion-equivalent air layer thickness of the insulating material the water vapour diffusion resistance factor μ = 1 shall be used for calculating

Characteristic	Assessment of characteristic
Corrosion developing capacity on metal construction products	No performance assessed
Density	Depending on the area of application the minimum densities stated in Table 1 are to be observed.

Table 1: Densities depending on the area of application

Area of application	Installation density kg/m³
cavity insulation in walls	46
cavity insulation in pitched roofs, cavity insulation in floors in case of subsequent blowing into closed cavities	46
cavity insulation in floors, exposed insulation on horizontal and moderately pitched areas (≤ 10°)	30

Independent of the area of application the density shall not exceed the value of 47 kg/m^3

Settlement

Settling of loose fill insulation applied in ceilings:

Settling at repeated impacts:	2,0 %
Settling at increased temperature and humidity:	2,5%
Total settling S_y	4,5 %
Thickness before impacts	320 mm
Thickness after impact	305 mm

Settling under cyclical temperature and cyclic humidity for the insulation material with a dry density of 26 kg/m^3:

Cycles	S_{cyc}, %
1	2,0
1+2	7,5
1+2+3	12,0
1+2+3+4	15,5

Settling of loose fill under impact excitation and constant temperature and humidity conditions:

Settling S_D at repeated impacts:	2,9%
Thickness before impacts	320 mm
Thickness after impact	310 mm

Characteristic	Assessment of characteristic
Critical moisture content	No performance assessed
Specific airflow resistivity	At density 26 kg/m^3 with moisture content 0,14 kg/kg: 3,7 kPa×s/m^2 At density 47 kg/m^3 with moisture content 0,14 kg/kg: 15,7 kPa×s/m^2
Hygroscopic sorption properties	No performance assessed
3.7 Sustainable use of natural resources (BWR 7)	For the sustainable use of natural resources no performance was investigated for this product.

In addition to the specific clauses relating to dangerous substances contained in this European technical Assessment, 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 Regulation, these requirements need also to be complied with, when and where they apply.

4 Assessment and verification of constancy of performance (AVCP)

4.1 AVCP system

According to the decision 97/638/EC of the European Commission1, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is 2+.

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking

Issued in Copenhagen on 2017-12-18 by

Thomas Bruun
Managing Director, ETA-Danmark

Annex A

Aspects related to the performance of the product
Nominal thickness
When calculating the thermal resistance, the nominal thickness of the insulation layer according to the below table 3 shall be applied.

Table 3: Nominal thickness depending on processing

Processing of the insulating material	nominal thickness
Cavity insulation in walls	clear span of the filled cavity
Cavity insulation in pitched roofs, cavity insulation in floors in case of subsequent blowing into closed cavities	clear span of the filled cavity
Cavity insulation in floors, exposed insulation on horizontal, and moderately pitched areas (≤ 10°)	installation thickness of the insulating material minus 20 %

The insulation layer shall have a constant installation thickness taking account of the nominal thickness. For that purpose suitable height marks shall be arranged in sufficient distances before the processing. The executing company shall check the installation thickness.

When blowing in into closed cavities it shall be made sure by appropriate measures (e. g. control drillings) that the cavity is completely filled with the insulating material.

Application density
Depending on the area of application the densities at built-in stage stated in the below table 4 are to be observed.

Table 4: Densities depending on the area of application

Area of application	Installation density kg/m³
cavity insulation in walls	34
cavity insulation in pitched roofs, cavity insulation in floors in case of subsequent blowing into closed cavities	27
cavity insulation in floors, exposed insulation on horizontal and moderately pitched areas (≤ 10°)	30

The density is determined by calculation as a quotient from the mass of the material brought in and the full volume. The executing company shall check the density