



ETA-Danmark A/S
Göteborg Plads 1
DK-2150 Nordhavn
Tel. +45 72 24 59 00
Fax +45 72 24 59 04
Internet www.etadanmark.dk

Authorized 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

MEMBER OF EOTA



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

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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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 ($\leq 10^\circ$), 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/m ³ - 47 kg/m ³ 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/m ³ - 47 kg/m ³ is $\lambda_D(23,50) = 0,039$ W/(mK) – determined by conversion of the (10,dry,90/90) value. For conversion of humidity the following applies: <ul style="list-style-type: none"> 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: f_{ul} (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 $\mu = 1$ shall be used for calculating

Characteristic	Assessment of characteristic																										
Corrosion developing capacity on metal construction products	No performance assessed																										
Density	<p>Depending on the area of application the minimum densities stated in Table 1 are to be observed.</p> <p>Table 1: Densities depending on the area of application</p> <table data-bbox="715 477 1362 925"> <thead> <tr> <th data-bbox="715 477 943 508">Area of application</th> <th data-bbox="1134 477 1362 542">Installation density kg/m³</th> </tr> </thead> <tbody> <tr> <td data-bbox="715 600 1011 631">cavity insulation in walls</td> <td data-bbox="1230 600 1262 631">46</td> </tr> <tr> <td data-bbox="715 647 1102 779">cavity insulation in pitched roofs, cavity insulation in floors in case of subsequent blowing into closed cavities</td> <td data-bbox="1230 674 1262 705">46</td> </tr> <tr> <td data-bbox="715 795 1102 925">cavity insulation in floors, exposed insulation on horizontal and moderately pitched areas (\leq 10°)</td> <td data-bbox="1230 822 1262 853">30</td> </tr> </tbody> </table> <p>Independent of the area of application the density shall not exceed the value of 47 kg/m³</p>	Area of application	Installation density kg/m ³	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 (\leq 10°)	30																		
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Settlement	<p>Settling of loose fill insulation applied in ceilings:</p> <table data-bbox="700 1128 1390 1344"> <tbody> <tr> <td data-bbox="700 1128 1034 1160">Settling at repeated impacts:</td> <td data-bbox="1289 1128 1362 1160">2,0 %</td> </tr> <tr> <td data-bbox="700 1176 1257 1207">Settling at increased temperature and humidity:</td> <td data-bbox="1289 1176 1362 1207">2,5%</td> </tr> <tr> <td data-bbox="700 1223 890 1254">Total settling S_y</td> <td data-bbox="1289 1223 1362 1254">4,5 %</td> </tr> <tr> <td data-bbox="700 1270 1002 1301">Thickness before impacts</td> <td data-bbox="1289 1270 1390 1301">320 mm</td> </tr> <tr> <td data-bbox="700 1317 970 1348">Thickness after impact</td> <td data-bbox="1289 1317 1390 1348">305 mm</td> </tr> </tbody> </table> <p>Settling under cyclical temperature and cyclic humidity for the insulation material with a dry density of 26 kg/m³:</p> <table data-bbox="700 1473 1270 1709"> <thead> <tr> <th data-bbox="700 1473 906 1505">Cycles</th> <th data-bbox="1050 1473 1270 1505">S_{cyc}, %</th> </tr> </thead> <tbody> <tr> <td data-bbox="700 1520 719 1552">1</td> <td data-bbox="1070 1520 1102 1552">2,0</td> </tr> <tr> <td data-bbox="700 1568 762 1599">1+2</td> <td data-bbox="1070 1568 1102 1599">7,5</td> </tr> <tr> <td data-bbox="700 1615 793 1646">1+2+3</td> <td data-bbox="1070 1615 1102 1646">12,0</td> </tr> <tr> <td data-bbox="700 1662 823 1693">1+2+3+4</td> <td data-bbox="1070 1662 1102 1693">15,5</td> </tr> </tbody> </table> <p>Settling of loose fill under impact excitation and constant temperature and humidity conditions:</p> <table data-bbox="700 1832 1276 1955"> <tbody> <tr> <td data-bbox="700 1832 1070 1863">Settling S_D at repeated impacts:</td> <td data-bbox="1174 1832 1236 1863">2,9%</td> </tr> <tr> <td data-bbox="700 1879 1002 1910">Thickness before impacts</td> <td data-bbox="1174 1879 1275 1910">320 mm</td> </tr> <tr> <td data-bbox="700 1926 970 1957">Thickness after impact</td> <td data-bbox="1174 1926 1275 1957">310 mm</td> </tr> </tbody> </table>	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	Cycles	S_{cyc} , %	1	2,0	1+2	7,5	1+2+3	12,0	1+2+3+4	15,5	Settling S_D at repeated impacts:	2,9%	Thickness before impacts	320 mm	Thickness after impact	310 mm
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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)

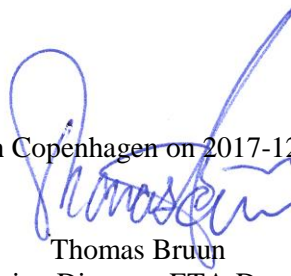
4.1 AVCP system

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 ($\leq 10^\circ$)	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/m ³
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 ($\leq 10^\circ$)	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