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European Technical Assessment

ETA-06/0076 of 08.05.2018

General part

Technical Assessment Body issuing the Österreichisches Institut für Bautechnik (OIB) **European Technical Assessment** Austrian Institute of Construction Engineering Trade name of the construction product Clima-super, Isocell, trendisol, Isodek, Dobry -Ekovilla, Fibra-Natur, Domexcell, Naturafloc, Renocell, Isolare, Poesis; isECO, ISOCELL F, greenwool Product family to which the construction Insulation material made of loose, free cellulose product belongs fibres ZELLULOSEDÄMMSTOFFPRODUKTION CPH Manufacturer Beteiligungs GmbH & Co KG Am Ökopark 6 8230 Hartberg **AUSTRIA** Manufacturing plant Plant 1, Plant 2, Plant 3 **This European Technical Assessment** 10 pages contains **This European Technical Assessment** European Assessment Document (EAD) "In-situ is issued in accordance with Regulation formed loose fill thermal and/or acoustic (EU) No 305/2011, on the basis of insulation products made of vegetable fibres", EAD 040138-00-1201 This European Technical Assessment European Technical Approval ETA-06/0076 with replaces validity form 08.05.2013 to 07.05.2018



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Specific part

Technical description of the product

1.1 Definition of the construction product

This European technical assessment applies to insulation materials with the designation:

"Clima-super, Isocell, trendisol, Isodek, Dobry - Ekovilla, Fibra-Natur, Domexcell, Naturafloc, Renocell, Isolare, Poesis; isECO, ISOCELL F, greenwool"

This product consists of cellulose fibres and serves for the production of insulation layers by means of machine processing.

The machine processing is carried out in dry conditions.

The cellulose fibre insulation material is installed with different densities (density range **28 - 65 kg/m³**) depending on the area of application.

1.2 Manufacturing

The cellulose fibres are made from waste paper by mechanical crushing.

The waste paper used in the manufacturing process has to fulfil the following quality criteria:

Paper according to the European list of standard grades of recovered paper and board – recovered paper grade EN 643-2-01-00.

During this manufacturing process the fibres are provided with a fire protection equipment.

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with the Österreichisches Institut für Bautechnik, which identifies the product that has been assessed and judged.

Changes to the product or manufacturing process, which could result in this deposited data/information being incorrect, should be notified to the Österreichisches Institut für Bautechnik before the changes are introduced.

The Österreichisches Institut für Bautechnik will decide whether or not such changes affect the European Technical Assessment and consequently the validity of the CE marking on the basis of the European Technical Assessment and if so whether further assessment or alterations to the European Technical Assessment, shall be necessary.

Specification of the intended use(s) in accordance with the applicable European Assessment Document

2.1 Intended use

"Clima-super, Isocell, trendisol, Isodek, Dobry - Ekovilla, Fibra-Natur, Domexcell, Naturafloc, Renocell, Isolare, Poesis; isECO, ISOCELL F, greenwool" made of cellulose fibres are used as non-loadable insulating material mainly for intended uses where vertical or horizontal cavities are completely filled or horizontal, arched or moderately pitched ($\leq 10^{\circ}$) exposed areas are covered.

Area of application for walls

- Machine processed cavity insulation material for exterior, density range: 38 65 kg/m³.
- Machine processed cavity insulation material for interior walls, density range: 38 65 kg/m³.

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Area of application for roofs

- Machine processed cavity insulation material for pitched roofs without ventilation, density range: 38 – 65 kg/m³ (full rafter insulation).
- Machine processed cavity insulation material for flat roofs with upper covering and nonventilated cavity under the waterproofing, density range: 38 – 65 kg/m³.

Area of application for ceilings / floors

- Machine processed exposed insulation material not subject to foot traffic for ceilings under non habitable attics, density range 28-40 kg/m³ (thermal insulation layer between or above the load-bearing structure).
- Machine processed cavity insulation material between floor-joists under floor constructions for insulation or cavity damping, density range 38 65 kg/m³.

2.2 General assumptions

Concerning the application of the insulation material also the respective national regulations shall be observed.

In case of use of the product as airborne sound insulation it is necessary to determine the airborne sound insulation for the specific construction work in question in accordance with the relevant technical rules in force.

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

The release of dangerous substances of the insulation product has not been determined. An additional assessment of the product according to national or European provisions in this respect might be necessary.

A European method of testing glowing combustion behavior does not exist. An additional assessment of the product according to national provisions might be necessary until the existing European classification system has been completed.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product, as he considers necessary.

The provisions made in this ETA are based on an assumed intended working life of the insulation product of 50 years. 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 product in relation to the expected economically reasonable working life of the works.

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals to guarantee a precise compression of the cellulose fibres.

The installation is carried out by appropriate personnel which have adequate experience in installing the material under the supervision of the person responsible for technical matters on site. Concerning this matter the manufacturer has to regularly train installers.

When calculating the thermal resistance, the nominal thickness (see table below) of the insulation layer shall be applied.

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Area of application	Nominal thickness
Vertical: machine processed cavity insulation in exterior-, interior walls,	clear span of the filled cavity
Pitched: machine processed cavity insulation in roofs (pitch >10°)	clear span of the filled cavity
Horizontal: machine processed cavity insulation in flat roofs and floor constructions	clear span of the filled cavity
<u>Horizontal:</u> machine processed exposed insulation not subject to foot traffic on ceiling constructions (pitch $\leq 10^{\circ}$)	up to 25 cm 10 % and over 25 cm installation thickness 15% insulation thickness shall be added to the nominal thickness

For horizontal machine processed installation of exposed insulation not subject to foot traffic the insulation layer shall have a constant installation thickness taking into account the nominal thickness. For that purpose suitable height marks shall be arranged in sufficient distances before the processing.

When blowing 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.

In case of installation on pitched or arched areas slipping of the thermal insulation product is to be prevented by suitable measures.

The construction shall be designed and installed in such a way that no harmful condensation occurs within the works.



Performance of the product and references to the methods used for its assessment

The performance of the product only applies if the insulation material is installed according to the manufacture's installation instructions and if they are protected from precipitation, wetting or weathering in built-in state and during transport, storage and installation.

For sampling, conditioning and testing the provisions of the EAD No 040138-00-1201 "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres" apply.

Basic requirements for construction works	Essential characteristics	Method of verification	Performance	
BWR 2	Reaction to fire	EN 13501-1:2009	Clause 3.1.1 of the ETA	
BWR 3	Biological resistance	EAD "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres", Annex B	Clause 3.2.1 of the ETA	
BWR 5	Sound absorption	No performance assessed		
	Thermal conductivity	EAD "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres", Annex A	Clause 3.4.1 of the ETA	
	Water vapour diffusion resistance VR 6 Water absorption	EAD " In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres ", clause 2.2.4, last paragraph	Clause 3.4.2 of the ETA	
BWR 6		EN 1609, Method A	Clause 3.4.3 of the ETA	
	Corrosion developing capacity	EN 15101-1, Annex E	Clause 3.4.4 of the ETA	
	Settlement / density	EN 15101-1, Annex B and EAD	Clause 3.4.5 of the ETA	
	Critical moisture content	No performance assessed		
	Specific airflow resistivity	EN 29053, Method A	Clause 3.4.7 of the ETA	
	Hygroscopic sorption properties	No performance assessed.		

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3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

The reaction to fire of "Clima-super, Isocell, trendisol, Isodek, Dobry - Ekovilla, Fibra-Natur, Domexcell, Naturafloc, Renocell, Isolare, Poesis; isECO, ISOCELL F, greenwool" is classified according to EN 13501-1.

End use application	Class according to EN 13501-1
 installation density of the cellulose fibre insulation material is 28 kg/m³ to 65 kg/m³ insulation layer thickness ≥ 100 mm, end use application without air gap end use application substrates defined in EN13238 for the following standard substrate: "wood based panel": density of the board ≥ 680 ± 50 kg/m³, board thickness ≥ 12 ± 2 mm, reaction to fire of the board: class D; 	B-s2,d0
"calcium silicate board": density of the board 870 \pm 50 kg/m ³ , board thickness \geq 11 \pm 2 mm, reaction to fire of the board: class A2-s1,d0	
 installation density of the cellulose fibre insulation material is 28 kg/m³ to 65 kg/m³, 	E
 insulation layer thickness ≥ 40 mm 	

3.2 Hygiene, health and the environment (BWR 3)

3.2.1 **Biological resistance**

The test and the assessment of the resistance to growth of mould fungus has been verified according to the EOTA testing procedure (Annex B of EAD "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres"; issued November 2015.). The reached class of "Clima-super, Isocell, trendisol, Isodek, Dobry - Ekovilla, Fibra-Natur, Domexcell, Naturafloc, Renocell, Isolare, Poesis; isECO, ISOCELL F, greenwool" is 0.

3.3 Protection against noise (BWR 5)

3.3.1 Sound absorption

No performance assessed.

3.4 Energy economy and heat retention (BWR 6)

3.4.1 Thermal conductivity

> The assessment of the thermal conductivity of the cellulose fibre insulation material is carried out according to Annex A of EAD "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres". The declared value of thermal conductivity is determined according to EN 10456.

> The fractile value of thermal conductivity for the density range of 28 kg/m³ - 65 kg/m³ is $\lambda_{(10,drv,90/90)} = 0,0368$ 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 28 kg/m³ - 65 kg/m³ is $\lambda_{D(23,50)} = 0.037 \text{ W/(m·K)}$ determined by conversion of the $\lambda_{(10,drv,90/90)}$ value.

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For conversion of humidity the following applies: the mass related moisture content at 23 °C/50 % relative humidity: $u_{23,50} = 0,081 \text{ kg/kg}$ the mass related moisture content at 23 °C/80 % relative humidity: $u_{23,80} = 0,130 \text{ kg/kg}$ - the mass related moisture conversion coefficient: $f_{u1(dry - 23/50)} = 0,076 \text{ kg/kg}$ $f_{u2} (23/50 - 23/80) = 0,256 \text{ kg/kg}^1$ the moisture conversion factor dry to 23 °C/50 % relative humidity $F_{m1} = 1,006$ the moisture conversion factor 23 °C/50 % relative humidity to 23 °C/80 % relative humidity $F_{m2} = 1,013$ 3.4.2 Water vapour diffusion resistance The water vapour diffusion resistance is 3 3.4.3 Water absorption The water absorption of the cellulose fibre insulation material is assessed according to EN 1609, method A. The mean water absorption at a density of 29 kg/m³ did not exceed 14,1 kg/m². 3.4.4 Corrosion developing capacity The test and the assessment of the corrosion developing capacity on metal products has been verified according to EN 15101, Annex E. No corrosion developing potential of "Clima-super, Isocell, trendisol, Isodek, Dobry - Ekovilla, Fibra-Natur, Domexcell, Naturafloc, Renocell, Isolare, Poesis; isECO, ISOCELL F, greenwool" was determined. The reached class is CR. 3.4.5 Settlement / density The assessment of the settlement of the cellulose fibre insulation material is carried out according to the test methods stated in EN 15101-1, Annex B. Test method according to Settlement Max. thickness Min density Class (mm) EN 15101-1, Annex B and EAD (%) (kg/m^3) Settling in ceilings acc. Annex B3 $S_V = 4$ 550 28 and EAD clause 2.2.8.1a Settling in cavities of walls and SC 0 240/100 38/33 $S_d = 0$ between rafters acc. Annex B2 Not required Settling under impact excitation _ and constant temperature and humidity condition acc. Annex B3 Settling cyclical $S_{cyc} = 20$ SH 20 28 under temperature and cyclic humidity $S_{cvc} = 9$ SH 10 40 acc. Annex B1

3.4.6 Critical moisture content

No performance assessed.

3.4.7 Specific airflow resistivity

The airflow resistance of the cellulose fibre insulation material is assessed according to EN 29053, method A. The mean longitudinal airflow resistance is at least

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3.4.8 Hygroscopic sorption properties No performance assessed

Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the Decision 1999/91/EC¹, as amended, the system of assessment and verification of constancy of performance (according to Annex V of Regulation (EU) No 305/2011) is 3.

In addition, according to the Decision 1999/454/EC, amended by Decision 2001/596/EC of the European Commission the system(s) of assessment and verification of constancy of performance, with regard to reaction to fire class B, is 1.

Technical details necessary for the implementation of the AVCP system, as provided for the applicable European Assessment Document

5.1 Tasks of the manufacturer

At the manufacturing plant the manufacturer has to implement and continuously maintain a factory production control system.

All elements, requirements and provisions adopted by the manufacturer in this respect are documented in a systematic manner in the form of written policies and procedures.

The records shall be kept at least for ten years and presented to Österreichisches Institut für Bautechnik on request.

The factory production control system ensures that the performance of the product is in conformity with the European Technical Assessment.

If test results are unsatisfactory, the manufacturer shall immediately implement measures to eliminate the defects. Construction products not in conformity with the requirements shall not be CE marked.

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Official Journal of the European Communities no. L 178, 14.7.1999, p. 52



Technical details of the actions to be undertaken by the manufacturer in relation to the factory production control are laid down in the control plan deposited at Österreichisches Institut für Bautechnik.

When all criteria of the assessment and verification of constancy of performance are met, the manufacturer shall issue a declaration of performance.

5.2 Tasks of the notified product certification body

Technical details of the actions to be undertaken by the notified product certification body are specified in the control plan.

The results of the continuous surveillance, assessment and evaluation of the factory production control shall be made available by the notified product certification body to Österreichisches Institut für Bautechnik on demand.

The notified product certification body shall decide on the issuing, restriction, suspension or withdrawal of the certificate of constancy of performance of the construction product on the basis of the outcome of the assessments and verifications specified in the control plan.

When the provisions of the European Technical Assessment and the control plan are no longer fulfilled, the certificate of constancy of performance is withdrawn by the notified product certification body.

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The original document is signed by:

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