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European Technical Assessment

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General part

Technical Assessment Body issuing the European Technical Assessment

Österreichisches Institut für Bautechnik (OIB)
Austrian Institute of Construction Engineering

Trade name of the construction product

clima-super Evolution, Isocell Evolution,
greenwool Evolution, isECO green

Product family to which the construction product belongs

Insulation material made of loose, free cellulose fibres

Manufacturer

ZELLULOSEDÄMMSTOFFPRODUKTION CPH
Beteiligungs GmbH & Co KG
Am Ökopark 6
8230 Hartberg
AUSTRIA

Manufacturing plant

Plant 1, Plant 2, Plant 3

This European Technical Assessment contains

9 pages

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

European Assessment Document (EAD) "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres", EAD 040138-01-1201

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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 non-ventilated 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 in the EAD. 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.

Area of application	Nominal thickness
<u>Vertical:</u> machine processed cavity insulation in exterior-, interior walls,	clear span of the filled cavity
<u>Pitched:</u> machine processed cavity insulation in roofs (pitch >10°)	clear span of the filled cavity
<u>Horizontal:</u> machine processed cavity insulation in flat roofs and floor constructions	clear span of the filled cavity

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.

3 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 040138-01-1201 "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres" apply.

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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	
BWR 6	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	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
	Water absorption	No performance assessed	
	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.	

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

The reaction to fire of "clima-super Evolution, Isocell Evolution, greenwool Evolution, isECO green" is classified according to EN 13501-1.

End use application	Class according to EN 13501-1
<ul style="list-style-type: none"> - installation density of the cellulose fibre insulation material is 28 kg/m³ to 65 kg/m³, - insulation layer thickness ≥ 40 mm 	E

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 Evolution, Isocell Evolution, greenwool Evolution, isECO green” 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 30 kg/m³ - 65 kg/m³ is $\lambda_{(10,dry,90/90)} = \mathbf{0,0369\ W/(m\cdot K)}$ representing at least 90 % of the production with a confidence limit of 90%

The declared value of thermal conductivity for the density range of 30 kg/m³ - 65 kg/m³ is $\lambda_{D(23,50)} = \mathbf{0,037\ W/(m\cdot K)}$ determined by conversion of the $\lambda_{(10,dry,90/90)}$ value.

For conversion of humidity the following applies:

- the mass related moisture content at 23 °C/50 % relative humidity:
 $\mathbf{u_{23,50} = 0,081\ kg/kg}$
- the mass related moisture content at 23 °C/80 % relative humidity:
 $\mathbf{u_{23,80} = 0,130\ kg/kg}$
- the mass related moisture conversion coefficient:
 $\mathbf{f_{u1(dry - 23/50)} = 0,076\ kg/kg}$
 $\mathbf{f_{u2(23/50 - 23/80)} = 0,256\ kg/kg^1}$
- the moisture conversion factor dry to 23 °C/50 % relative humidity
 $\mathbf{F_{m1} = 1,006}$
- the moisture conversion factor 23 °C/50 % relative humidity to 23 °C/80 % relative humidity
 $\mathbf{F_{m2} = 1,013}$

3.4.2 Water vapour diffusion resistance

The water vapour diffusion resistance is **3**

3.4.3 Water absorption

No performance assessed.

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 Evolution, Isocell Evolution, greenwool Evolution, isECO green” 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.

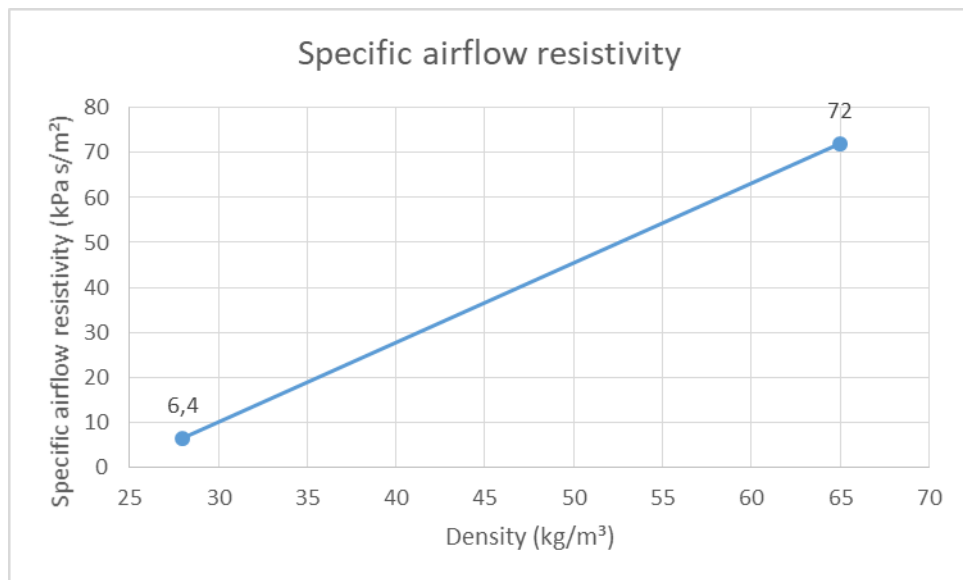
Test method according to EN 15101-1, Annex B and EAD	Settlement (%)	Class	Max. thickness (mm)	Min density (kg/m ³)
Settling in ceilings acc. Annex B3 and EAD clause 2.2.8.1a	$s_v = 4,5$	-	-	-
Settling in cavities of walls and between rafters acc. Annex B2	$s_d = 0$	SC 0	100/240	37/42
Settling under impact excitation and constant temperature and humidity condition acc. Annex B3	No performance assessed	-	-	-
Settling under cyclical temperature and cyclic humidity acc. Annex B1	$S_{cyc} = 24$	SH 25	-	31
	$S_{cyc} = 18$	SH 20	-	42

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



3.4.8 Hygroscopic sorption properties

No performance assessed

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