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Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
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European Technical Assessment

ETA-07/0214 of 17.11.2017

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	ISOLENA-BLOCK ISOLENA-OPTIMAL ISOLENA-PREMIUM ISOLENA- OPTIMAL PLUS ISOLENA-KLEMMFILZ
Product family to which the construction product belongs	Thermal and/or acoustic insulation mat made of sheep wool
Manufacturer	ISOLENA Naturfaservliese GmbH Klosterstraße 20 A-4730 Waizenkirchen
Manufacturing plant	ISOLENA Naturfaservliese GmbH Klosterstraße 20 A-4730 Waizenkirchen
This European Technical Assessment contains	11 pages
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	European Assessment Document (EAD) "Factory-made thermal and/or acoustic insulation products made of vegetable or animal fibres", No 040005-00-1201
This European Technical Assessment replaces	ETA-07/0214 with validity from 17.11.2012 to 16.11.2017

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Specific part

1 Technical description of the product

1.1 Definition of the construction product

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

ISOLENA - BLOCK
This product is manufactured in the form of mats of:

nominal thickness:	from 30 mm to **160 mm**
nominal length:	from 2500 mm to 10000 mm
nominal width:	from 300 mm to 1500 mm

ISOLENA - OPTIMAL
This product is manufactured in the form of mats of:

nominal thickness:	from 30 mm to **160 mm**
nominal length:	from 2500 mm to 10000 mm
nominal width:	from **300 mm** to 1500 mm

ISOLENA - PREMIUM
This product is manufactured in the form of mats of:

nominal thickness:	from 80 mm to **300 mm**
nominal length:	from 1000 mm to 10000 mm
nominal width:	from 400 mm to 1500 mm

ISOLENA – OPTIMAL PLUS
This product is manufactured in the form of mats of:

nominal thickness:	from 30 mm to **80 mm**
nominal length:	from 2500 mm to 10000 mm
nominal width:	from **300 mm** to 1500 mm

ISOLENA - KLEMMFILZ
This product is manufactured in the form of mats of:

nominal thickness:	from 30 mm to **100 mm**
nominal length:	from 2500mm to 10000 mm
nominal width:	from **300 mm** to 1500 mm

The dimensions correspond to the delivery program of the manufacturer.

The insulation material is not faced.

1.2 Manufacturing

The with active substances against digestion in wool pests modified products consists of mainly horizontal arranged sheep wool lamellas which are either mechanically fixed without any additional fibers to a needle felt single-sided or by a needle loom process of all fleece layers from both sides. Due to the single-sided fixing to a needle felt both surfaces of the insulation matt have a different density.

The sheep wool used in the manufacturing process has to fulfil the following quality criteria

moisture content	max 17 % by weight
wool fiber thickness	27 – 40 µm
non curled wool	< 1%

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 production 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.

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

2.1 Intended use

The ISOLENA sheep wool insulation mats with the exception of ISOLENA BLOCK are used as non loadable insulating material mainly for the following intended uses:

Area of application for walls

- Insulation material for external walls in timber frame constructions and similar structures
- Partition insulation as thermal insulation
- Insulation in ventilated facades

Area of application for roofs

- Pitched roofs with ventilation
- Pitched roofs without ventilation (full rafter insulation)
- Pitched roof construction with insulation under the load bearing rafters
- Flat roof with upper covering and ventilated cavity under the waterproofing

All ISOLENA sheep wool insulation mats are used as non loadable insulating material mainly for the following intended uses:

Area of application for ceilings / floors

- Ceilings under non habitable attics (thermal insulation between or above the load-bearing structure)
- Cavity damping material respectively insulation material between floor-joists under floor constructions
- Cavity damping material respectively insulation material in intermediate ceilings

2.2 General assumptions

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.

The insulation product shall not be used in structures where it will be exposed to wetting or weathering and in such with direct contact to soil.

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.

When calculating the thermal resistance, the nominal thickness of the insulation materials shall be applied.

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.

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 040005-00-1201 "Factory made thermal and/or acoustic insulation products made of vegetable or animal 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 "Factory-made thermal and/or acoustic insulation products made of vegetable or animal fibres", Annex B and C	Clause 3.2.1 of the ETA
BWR 4	Corrosion developing capacity	No performance assessed	
BWR 5	Specific airflow resistivity	EN 29 053:1993, method A	Clause 3.4.1 of the ETA
	Sound absorption	EN ISO 354:203	Clause 3.4.2 of the ETA
BWR 6	Thermal conductivity	EN 12667:2001	Clause 3.5.1 of the ETA
	Water vapour diffusion resistance	EAD "Factory-made thermal and/or acoustic insulation products made of vegetable or animal fibres", clause 2.2.10, last paragraph	Clause 3.5.2 of the ETA
	Water absorption	EN 1609:1997, method A	Clause 3.5.3 of the ETA
	Geometry	EN 822:1995 EN 823:1995	Clause 3.5.4 of the ETA
	Density	EN 1602:2013	Clause 3.5.5 of the ETA
	Dimensional stability	No performance assessed	
	Tensile strength (parallel)	No performance assessed	

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

The reaction to fire of the products is determined according to EN 13501-1. The product reached the following classification.

	minimum density (kg/m³)	maximum thickness (mm)	class
ISOLENA-BLOCK	14 kg/m³	**160 mm**	**E**
ISOLENA-OPTIMAL	18 kg/m³	**160 mm**	
ISOLENA-PREMIUM	20 kg/m³	**300 mm**	
ISOLENA-OPTIMAL PLUS	22 kg/m³	**80 mm**	
ISOLENA-KLEMMFILZ	30 kg/m³	**100 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 “Factory-made thermal and/or acoustic insulation product made of vegetable or animal fibres”; edition June 2015). The reached level of the product is **0**.

The test and the assessment of the resistance to attack by vermins (insects, moth, anthrenus) has been verified according to ISO 3998:1977 (short term test) and the EOTA testing procedure (Annex C of EAD “Factory-made thermal and/or acoustic insulation product made of vegetable or animal fibres”; edition June 2015”). The tests are **passed**

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Corrosion developing capacity

No performance assessed

3.4 Protection against noise (BWR 5)

3.4.1 Specific airflow resistivity

The airflow resistance of the products is determined according to European standard EN 29 053, method A. The mean longitudinal airflow resistance at a density of 15,1 kg/m³ / 21,8 kg/m³ / 43,7kg/m³ is at least **0,9 kPa s/m² / 4,1 kPa s/m² / 10,2 kPa s/m²**.

3.4.2 Sound absorption

The sound absorption coefficient α_s is determined according to EN ISO 354 with mounting type A. Both the practical sound absorption coefficient α_{pi} and the weighted sound absorption α_w are calculated according to EN ISO 11654.

	ISOLENA BLOCK		ISOLENA OPTIMAL		ISOLENA KLEMMFILZ	
frequency (Hz)	α_s	α_{pi}	α_s	α_{pi}	α_s	α_{pi}
125	0,27	0,25	0,43	0,45	0,44	0,45
250	0,39	0.40	0,47	0,45	0,60	0,60
500	0,55	0,55	0,68	0,70	0,78	0,80
1000	0,61	0,60	0,76	0,75	0,98	1,00
2000	0,70	0,70	0,86	0,85	1,08	1,00
4000	0,75	0,75	0,95	0,95	1,14	1,00

product	density (kg/m³)	thickness (mm)	α_w
ISOLENA BLOCK	13	50	0,60
ISOLENA OPTIMAL	18	50	0,75
ISOLENA KLEMMFILZ	30	50	0.85

For the products ISOLENA PREMIUM and ISOLENA OPTIMAL PLUS no performance was assessed.

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal conductivity

The thermal conductivity of the products ISOLENA – BLOCK is determined according to EN 12667. The declared value of thermal conductivity is determined according to EN 10 456.

The fractile value of thermal conductivity for the density range of 12,7 kg/m³ - 15,4 kg/m³ is $\lambda_{(10,dry,90/90)}$ **= 0,0441 W/(m·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 12,7 kg/m³ - 15,4 kg/m³ is $\lambda_{D(23,50)}$ **= 0,045 W/(m·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:
  $u_{23,50}$ = 0,01 kg/kg
- the mass related moisture content at 23 °C/80 % relative humidity:
  $u_{23,80}$ = 0,07 kg/kg
- the mass related moisture conversion coefficient:
  $f_{u1(dry-23/50)}$ = 0,00 kg/kg
  $f_{u2\ (23/50-23/80)}$ = 0,00 kg/kg
- the moisture conversion factor dry to 23 °C/50 % relative humidity
  F_{m1} = **1,00**
- the moisture conversion factor 23 °C/50 % relative humidity to 23 °C/80 % relative humidity
  F_{m2} = **1,00**

The thermal conductivity of the products ISOLENA – OPTIMAL, ISOLENA – PREMIUM and ISOLENA – OPTIMAL PLUS is determined according to EN 12667. The declared value of thermal conductivity is determined according to EN 10 456.

The fractile value of thermal conductivity for the density range of 16,5 kg/m³ - 22 kg/m³ is $\lambda_{(10,dry,90/90)}$ **= 0,0422 W/(m·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 16,5 kg/m³ - 22 kg/m³ is $\lambda_{D(23,50)}$ **= 0,043 W/(m·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:
  $u_{23,50}$ = 0,08 kg/kg
- the mass related moisture content at 23 °C/80 % relative humidity:
  $u_{23,80}$ = 0,25 kg/kg
- the mass related moisture conversion coefficient:
  $f_{u1(dry-23/50)}$ = 0,12 kg/kg
  $f_{u2\ (23/50-23/80)}$ = 0,03 kg/kg
- the moisture conversion factor dry to 23 °C/50 % relative humidity
  F_{m1} = **1,010**
- the moisture conversion factor 23 °C/50 % relative humidity to 23 °C/80 % relative humidity
  F_{m2} = **1,005**

The thermal conductivity of the product ISOLENA – KLEMMFILZ is determined according to EN 12667. The declared value of thermal conductivity is determined according to EN 10 456.

The fractile value of thermal conductivity for the density range of 27,3 kg/m³ - 33,0 kg/m³ is $\lambda_{(10,dry,90/90)}$ **= 0,0354 W/(m·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 27,3 kg/m³ - 33,0 kg/m³ is $\lambda_{D(23,50)}$ **= 0,036 W/(m·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:
  $u_{23,50}$ = 0,05 kg/kg
- the mass related moisture content at 23 °C/80 % relative humidity:
  $u_{23,80}$ = 0,14 kg/kg
- the mass related moisture conversion coefficient:
  $f_{u1(dry-23/50)}$ = 0,16 kg/kg
  $f_{u2\ (23/50-23/80)}$ = 0,00 kg/kg
- the moisture conversion factor dry to 23 °C/50 % relative humidity
  F_{m1} = **1,008**
- the moisture conversion factor 23 °C/50 % relative humidity to 23 °C/80 % relative humidity
  F_{m2} = **1,000**

3.5.2 Water vapour diffusion resistance

The water vapour diffusion resistance factor μ is **1**.

3.5.3 Water absorption

The water absorption of the product is determined according to European standard EN 1609, method A. The mean water absorption at a density of 17,4 kg/m³/ 29,0 kg/m³ did not exceed **0,98 kg/m²/ 2,45 kg/m²**.

3.5.4 Geometry

The thickness of the product is determined according to European standard EN 823. The test is carried out with a load of 50 Pa.

The deviation from nominal thickness does not exceed:

- 5 % or - 5 mm
excess permitted

The reached class of the product is **T1** according EN 13162

The length of the products is determined according to European standard EN 822. The deviation from nominal length does not exceed **-2 %.**

The width of the products is determined according to European standards EN 822. The deviation from nominal width does not exceed **-1,5 %.**

3.5.5 Density

ISOLENA-BLOCK

The density of the product is determined according to European standard EN 1602. The density is at least 12,7 kg/m³ and does not exceed 15,4 kg/m³. (-9% +10% of the nominal density)

The nominal density is 14 kg/m³

ISOLENA-OPTIMAL

The density of the product is determined according to European standard EN 1602. The density is at least 16,5 kg/m³ and does not exceed 19,8 kg/m³. (-8,5% +10% of the nominal density)

The nominal density is 18 kg/m³

ISOLENA-PREMIUM

The density of the product is determined according to European standard EN 1602. The density is at least 18,3 kg/m³ and does not exceed 21,6 kg/m³. (-8,5% +8% of the nominal density)

The nominal density is 20 kg/m³

ISOLENA-OPTIMAL PLUS

The density of the product was not assessed

The nominal density is 22 kg/m³

ISOLENA-KLEMMFILZ

The density of the product is determined according to European standard EN 1602. The density is at least 27,3 kg/m³ and does not exceed 33,0 kg/m³. (-9% +10% of the nominal density)

The nominal density is 30 kg/m³

3.5.6 Dimensional stability under specified temperature and humidity

No performance assessed

3.5.7 Tensile strength parallel to faces

No performance assessed

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

According to the Decision 1999/91/EC[1], as amended, the system of assessment and verification of constancy of performance (according to Annex V of Regulation (EU) No 305/2011) is 3.

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

5.1 Task 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.

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.

Issued in Vienna on 17.11.2017
by Österreichisches Institut für Bautechnik

The original document is signed by:

Rainer Mikulits
Managing Director

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