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European Technical Assessment

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General Part

Technical Assessment Body issuing the ETA: Itecons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade	
Trade name of the construction product	Feltro Termofixado - IsoFelt
Product family to which the construction product belongs	Factory-made thermal and acoustic insulation products made of textile waste of vegetable origin Product area code: 04
Manufacturer	Guimavil – Feltros para Colchões, Lda.
Manufacturing plant(s)	Guimavil – Feltros para Colchões, Lda. Rua de São Salvador – Arada, 3860-025 Avanca
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) No. 040005-00-1201 for "*Factory-made thermal and/or acoustic insulation products made of vegetable or animal fibres*"

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Specific parts

1. Technical description of the product

This European Technical Assessments applies to the factory-made thermal and acoustic insulation products made of textile waste of vegetable origin "Feltro Termofixado – IsoFelt".

Products consist of 75% of cotton fibres and 25% of thermoplastic binding agent - polypropylene (PP) fibres.

The insulating product is not intended to be used for external applications and is manufactured in the form of mats. The insulating material is not faced.

This European Technical Assessment applies to following insulation materials:

IsoFelt 10

Nominal thickness: 10 mm

Nominal length: adjustable according to the customer requirements.

Nominal with: up to 2300 mm

IsoFelt 20

Nominal thickness: 20 mm

Nominal length: adjustable according to the customer requirements.

Nominal with: up to 2300 mm

The dimensions correspond to the delivery program of the manufacturer.

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with Itecons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade, which identifies the product that has been assessed and judged. The European Technical Assessment applies only to products satisfying the requirements of this agreed data/information.

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

"Feltro Termofixado – IsoFelt" is intended to be used for buildings as thermal and acoustic insulation of walls, ceilings, floors, roofs, between rafters, timber work and as impact sound insulation product to be used under floating floors inside buildings.

The assessment of the insulation product only applies if the product is protected from precipitation, wetting or weathering in built-in state and during transport, storage and installation and if it will not be used for construction elements with contact to water and soil or in constructions with a risk that the critical moisture content will be exceeded.

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

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

The products shall be installed in accordance with the ETA holder's instructions.

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

The assessment for the intended use of the insulation products was carried out in compliance with the specific part of EAD 040005-00-1201 “Factory-made thermal and/or acoustic insulation products made of vegetable or animal fibres”.

3.1. Essential Characteristics of the Product

3.1.1 Mechanical resistance and stability (BWR 1)

Not relevant.

3.1.2 Safety in case of fire (BWR 2)

3.1.2.1 Reaction to fire

No performance determined.

3.1.3 Hygiene, health and environment (BWR 3)

3.1.3.1 Biological resistance

The biological resistance was assessed by the determination of the growth of mould fungus according to Annex B of EAD 040005-00-1201. The test results for biological resistance of the insulating product were evaluated according to Table 4 of EN ISO 846:1997 and are expressed in table 1 of this ETA.

Table 1: Biological resistance

Product	Intensity of growth
IsoFelt 10	1
IsoFelt 20	1

3.1.4 Safety and accessibility in use (BWR 4)

3.1.4.1 Corrosion developing capacity

No performance determined.

3.1.5 Protection against noise (BWR 5)

3.1.5.1 Specific airflow resistivity

The specific airflow resistance was assessed according to ISO 9053:1991, method A. Table 2 presents the results obtained for airflow resistance.

Table 2: Specific airflow resistance

Product	Airflow resistance, r [kPa.s/m^2]
IsoFelt 10	65
IsoFelt 20	72

3.1.5.2 Dynamic stiffness

The dynamic stiffness was assessed according to ISO 9052-1:1989 and ISO 7626-5:1994. The results are shown in the table 3.

Table 3 – Apparent dynamic stiffness

Product	Apparent dynamic stifness S'_t [MN/m^3]
IsoFelt 10	17
IsoFelt 20	9

3.1.5.3 Impact sound reduction

The impact sound reduction, ΔL_w, by floor coverings was tested according to ISO 10140-1:2016, ISO 10140-3:2010, ISO 10140-3:2010/Amd.1:2015, ISO 10140-4:2010 and ISO 717-2:2013. The specimen was a floor covering composed by a resilient mat (IsoFelt 10 or IsoFelt 20) under a 7 cm thick concrete floating slab supported (resting) on a 14 cm thick concrete slab. The total area of the specimen was 3,56 m x 3,56 m. The specimen perimeter, in a width of 20 cm, was supported on the test ring (frame). The test opening had, approximately, 10 m^2 (3.16 m x 3.16 m). The results are shown in the table 4.

Table 4 – Impact sound reduction

Product	Impact sound reduction ΔL_w [dB]
IsoFelt 10	25
IsoFelt 20	32

3.1.5.4 Compressibility

The compressibility, c, was assessed according to EN 12431:2013. The results are shown in the table 5.

Table 5 – Compressibility

Product	Compressibility c [mm]
IsoFelt 10	3.3
IsoFelt 20	4.8

3.1.5.5 Sound absorption

The sound absorption was assessed according to EN ISO 354:2003. The absorption coefficient and the weighted sound absorption coefficient were calculated according to EN ISO 11654:1997. The specimen was composed by a set of 6 mats of IsoFelt 10 or IsoFelt 20, with an area of 2000 mm x 1000 m. The specimen was tested without a reflect frame involving the set of the mats. The mats were arranged on the floor of the reverberation chamber according to NP EN ISO 354:2007, therefore, the arrangement is classified as type “A” according to this standard. The arrangement of the mats had an area of 12.14 m^2.

In the table 6 and table 7 are presented the test results for the sound absorption of insulation products.

Table 6: Sound absorption of Isolfelt 10

Product	Isolfelt 10					
Freq. (Hz)	125	250	500	1000	2000	4000
α_{pi}	0.05	0.05	0.20	0.50	0.80	1.00
α_w	0.25					

Table 7: Sound absorption of Isolfelt 20

Product	Isolfelt 10					
Freq. (Hz)	125	250	500	1000	2000	4000
α_{pi}	0.05	0.15	0.45	0.85	1.00	1.00
α_w	0.45					

3.1.6 Energy economy and heat retention (BWR 6)

3.1.6.1 Thermal conductivity

The thermal conductivity was assessed according to EN 12667:2001 and ISO 8301:1991. The results are presented in table 8.

Table 8– Thermal conductivity

Product	$\lambda_{10,dry,90/90}$ [W/mºC]	Mass-related moisture conversion coefficient (f_{u1})	$\lambda_{D,23/50}$ [W/mºC]	Mass-related moisture conversion coefficient to high moisture content (f_{u2})	Moisture factor conversion (F_{m1})	Moisture factor conversion (F_{m2})
IsoFelt 10	0.0364	0.33	0.0370	3.24	1.01	1.06
IsoFelt 20	0.0371	0.30	0.0380	4.53	1.01	1.09

3.1.6.2 Water vapour diffusion resistance

The water vapour diffusion resistance was carried out according to EN 12086:2013 for climate condition A. The results are shown in table 9.

Table 9 – Water vapour diffusion resistance

Product	Water vapour diffusion resistance μ [-]
IsoFelt 10	7.81
IsoFelt 20	4.55

3.1.6.3 Water absorption

The water absorption was determined according to EN 1609:2013 method A. The results are shown in table 10.

Table 10 – Water absorption

Product	Water absorption W_p [kg/m^2]
IsoFelt 10	6.0
IsoFelt 20	10.0

3.1.6.4 Geometry

The determination of length and width was carried out according to EN 822:2013. The determination of thickness was determined according to EN 823:2013, with a load of 50 Pa. The results are presented in table 11.

Table 11 – Geometric features

Product	Charateristics
IsoFelt 10	Lenght - the deviation from nominal length does not exceed ±2%
	Width - the deviation from nominal width does not exceed ± 1.5%
	Thickness - the deviation from nominal thickness does not exceed -1 mm or +3 mm. The reach class of the product is T5 according EN 13162
IsoFelt 20	Lenght - the deviation from nominal length does not exceed ± 2%
	Width - the deviation from nominal width does not exceed +1.5%
	Thikness - the deviation from nominal thickness does not exceed -1 mm or +3 mm. The reach class of the product is T5 according EN 13162

3.1.6.5 Density

The determination of density was carried out according to EN 1602:2013. The test conditions were 23ºC and 50%. The results are presented in table 12.

Table 12 – Density

Product	Density [kg/m^3]
IsoFelt 10	100.0 ± 10
IsoFelt 20	95 ± 10

3.1.6.6 Flatness after one-sided wetting

No performance determined.

3.1.6.7 Compressive stress or strength

Not applicable.

3.1.6.8 Dimensional stability under specified temperature and humidity

No performance determined.

3.1.6.9 Deformation under specified compressive load and temperature conditions

The determination of the deformation under specified compressive load and temperature conditions was carried out according to EN 1605:2013 for test condition 1 (20 kPa/80ºC). The results are presented in the table 13.

Table 13 – Relative change in thickness

Product	Relative change in Thickness $\Delta\varepsilon_{d1}$ [%]	Relative change in Thickness $\Delta\varepsilon_{d2}$ [%]
IsoFelt 10	34.6	44.5
IsoFelt 20	35.0	44.1

3.1.6.10 Tensile strength parallel to faces

The determination of the tensile strength parallel to faces has been carried out according to EN 1608:2013. The results are shown in the table 14.

Table 14 – Tensile strength parallel to faces

Product	Tensile strength parallel to faces σ_t [kPa]
IsoFelt 10	544.87
IsoFelt 20	506.95

3.1.6.11 Tensile strength perpendicular to faces

No performance determined.

3.1.6.12 Tensile strength perpendicular to faces in wet conditions

No performance determined.

3.1.6.13 Compressive creep

The compressive creep was carried out according to EN 1606:2013. The results are shown in the table 15.

Table 15 – Compressive creep

Product	Compressive creep X_{ct} [%]	Total thickness reduction X_t [mm]
IsoFelt 10	1.24	4.22
IsoFelt 20	1.96	5.69

3.1.6.14 Behaviour under point load

No performance determined.

3.1.6.15 Shear strength and shear modulus of elasticity

No performance determined.

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

According to EAD No. 040005-00-1201, the applicable European legal act is: Decision 1999/91/EC

The system to be applied is: 3

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Itecons Services.

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By

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