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General Part

Technical Assessment Body issuing the European Technical Assessment: Itecons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade	
Trade name of the construction product	U36/Acousticork U36
Product family to which the construction product belongs	Polyurethane foam mat to be used for impact sound insulation Product area code: 4
Manufacturer	Amorim Cork Composites Rua Comendador Américo Ferreira Amorim, 260 P.O. Box 1 4536-902 Mozelos-VFR Portugal amorimcorkcomposites.com
Manufacturing plant(s)	Rua Comendador Américo Ferreira Amorim, 260 P.O. Box 1 4536-902 Mozelos-VFR Portugal
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	EAD 040049-01-0502 - "*Polyurethane (PU) foam mat to be used for impact sound insulation*"
This version replaces	ETA 21/0770, version 1 issued on 26/10/2021

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Specific parts

1. Technical description of the product

This European Technical Assessment applies to polyurethane (PU) foam mats to be installed under floating screeds on solid slabs without contact to soil, ground and surface water. The assessed product, U36/Acousticork U36 (6/3 mm and 8/4 mm), is a mixture of recycled PU foam, recycled ethylene-vinyl acetate (EVA) foam and agglomerated natural cork. The mats have one profiled surface and one flat surface.

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

2.1 Intended use

The polyurethane foam mats U36/Acousticork U36 are used for the improvement of impact sound insulation of floors and are installed under floating screeds on solid slabs.

The assessment of the product only applies when the product is used only inside buildings in structures where it is protected from wetting and weathering.

The mats are loose-laid on the flat solid floor slab with the profiled surface faced down. A perimeter insulation barrier shall be applied vertically around the entire perimeter of the room with a width equal to that of the floor build up. The mats shall cover the entire flooring area without gaps and with joints securely taped.

As to the application of the PU-foam-mat, the respective national regulations shall be observed in addition.

2.2 Working life/Durability

The provisions made in this European Technical Assessment (ETA) are based on an assumed intended working life of at least 25 years when installed in the works, provided that the mat is subject to appropriate installation. These provisions are based upon the current state of the art and the available knowledge and experience. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer or the Technical Assessment Body, but should only be regarded only as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the product.

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

The assessment for the intended use of U36/Acousticork U36 to be used for impact sound insulation was performed according with the EAD 040049-01-0502 “Polyurethane (PU) foam mat to be used for impact sound insulation”.

3.1. Mechanical resistance and stability (BWR 1)

Not relevant.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire

The reaction to fire was tested according to ISO 11925-2:2010, ISO 11925-2:2010/Cor1:2011 and classified according to EN 13501-1:2018. The classification is presented in Table 1.

Table 1: Reaction to fire

Product		Classification EN 13501-1:2018
U36 Acousticork U36	6/3 mm	Class E
	8/4 mm	

3.3 Hygiene, health and environment (BWR 3)

3.3.1 Content, emission and/or release of dangerous substances

The content emission and/or release of dangerous substances was assessed taking into account the release scenario applicable: IA2 (product with indirect contact to indoor air but possible impact on indoor air).

3.3.1.1 Specific organic compounds PAH and B[a]P

The content of specific organic compounds PAH and B[a]P of U36/Acousticork U36 was determined according to AfPS GS 2014:01 PAK and the results are listed in Table 2.

Table 2: Content of specific organic compounds PAH and B[a]P

Parameter	Content of specific organic compounds PAH and B[a]P (mg/kg)	Parameter	Content of specific organic compounds PAH and B[a]P (mg/kg)
Benzo(a)pyrene	< 0.2	Indeno(1,2,3-cd)pyrene	< 0.2
Benzo(e)pyren	< 0.2	Acenaphthylene	< 0.2
Benzo(a)anthracene	< 0.2	Acenaphthene	< 0.2
Benzo(b)fluoranthene	< 0.2	Fluorene	< 0.2
Benzo(j)fluoranthene	< 0.2	Phenanthrene	< 0.2
Benzo(k)fluoranthene	< 0.2	Pyrene	< 0.2
Chrysen	< 0.2	Anthracene	< 0.2
Dibenzo(a,h)anthracen	< 0.2	Fluoranthene	< 0.2
Benzo(g,h,i)perylene	< 0.2	Naphthalene	< 0.2

3.3.1.2 Nitrosamines

Not relevant.

3.3.1.3 SVOC and VOC

Tests were carried out according to EN 16516:2017. Table 3 presents the results of the assessment of the VOCs in U36/Acousticork U36.

Table 3: Emissions of volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) after 28 days of exposure

Compound	CAS	Concentration (µg/m³)	Compound	CAS	Concentration (µg/m³)
1,1,2,2-Tetrachloroethane	79-34-5	< 5	Cyclohexanone	108-94-1	< 5
1,1,1-Trichloroethane	71-55-6	< 5	Dibromochloromethane	124-48-1	< 5
1,1,2-Trichloroethane	79-00-5	< 5	Ethyl acetate	141-78-6	< 5
1,2,4-Trichlorobenzene	120-82-1	< 5	Ethylbenzene	100-41-4	< 5
1,2,4-Trimethylbenzene	95-63-6	< 5	Formaldehyde	50-00-0	< 2
1,2-Dibromoethane	106-93-4	< 5	Hexachloro-1,3-butadiene	87-68-3	< 5
1,2-Dichlorobenzene	95-50-1	< 5	Methyl iso-butyl ketone (MIBK)	108-10-1	< 5
1,2-Dichloroethane	107-66-2	< 5	Methyl n-butyl ketone	591-78-6	< 5
1,2-Dichloropropane	78-87-5	< 5	m-Xylene	108-38-3	< 5
1,3,5-Trimethylbenzene	108-67-8	< 5	n-Hepthane	142-82-5	< 5
1,3-Dichlorobenzene	541-73-1	< 5	n-Hexadecane	544-76-3	< 5
1,4-Dichlorobenzene	106-46-7	< 5	n-Hexane	110-54-3	< 5
1,4-Dioxane	123-91-1	< 5	o-Xylene	95-47-6	< 5
1-Ethyl-4-methyl benzene	622-96-8	< 5	Phenol	108-95-2	< 5
2-Butoxyethanol	111-76-2	< 5	p-Xylene	106-42-3	< 5
Acetaldehyde	75-07-0	< 3	Styrene	100-42-5	< 5
Benzyl chloride	100-44-7	< 5	Tetrachloroethylene	127-18-4	< 5
Bromodichloromethane	75-27-4	< 5	Tetrahydrofuran	109-99-9	< 5
Bromoform	75-25-2	< 5	Toluene	108-88-3	< 5
Butylacetate	123-86-4	< 5	trans-1,3-Dichloropropene	10061-02-6	< 5
Carbon tetrachloride	56-23-5	< 5	Benzene*	71-43-2	< 1
Chlorobenzene	108-90-7	< 5	Bis(2-ethylhexyl)phthalate*	117-81-7	< 1
Cis-1,2-Dichloroethylene	156-59-2	< 5	Dibutylphthalate*	84-74-2	< 1
Cis-1,3-Dichloropropene	10061-01-5	< 5	Trichloroethylene*	79-01-6	< 1
Cloroform	67-66-3	< 5	TVOC	---	56
Cyclohexane	110-82-7	< 5	TSVOC	---	8

* CRM - Carcinogenic, mutagenic and reprotoxic substances

3.4 Safety and accessibility in use (BWR 4)

Not relevant.

3.5 Protection against noise (BWR 5)

3.5.1 Dynamic stiffness

The dynamic stiffness was tested according to ISO 9052-1:1989 and ISO 7626-5:1994. The mean value of the apparent dynamic stiffness S'_t for each different thickness of the U36/Acousticork U36 is listed in Table 4.

Table 4: Dynamic stiffness

Product		Apparent dynamic stiffness, S'_t [MN/m^3]
U36 Acousticork U36	6/3 mm	42
	8/4 mm	29

3.5.2 Impact sound reduction

The impact sound reduction ΔL 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 assessed build up and results are listed in Table 5.

Table 5: Impact sound reduction

Product		Assessed build up	Assessed ΔL_w[1]
U36 Acousticork U36	6/3 mm	Screed: concrete floating paving flag with 70 mm thickness and about 190kg/m^2 of mass per unit area Resilient layer: U36/Acousticork U36 – 6/3 mm Base: reinforced concrete slab of thickness 140 mm	$\Delta L_w \geq 23$ dB
	8/4 mm	Screed: concrete floating paving flag with 70 mm thickness and about 190kg/m^2 of mass per unit area Resilient layer: U36/AcoustiCork U36 – 8/4 mm Base: reinforced concrete slab of thickness 140 mm	$\Delta L_w \geq 25$ dB

[1] – The assessed ΔL_w includes a reduction of 2dB to take into account the influence of ageing.

3.5.3 Airborne sound insulation

No performance assessed.

3.5.4 Geometry

3.5.4.1 Length and width of thermal insulating products

The length and width of the polyurethane foam mat were tested according to EN 822:2013. The nominal length and the nominal with of U36/Acousticork U36 are listed in Table 6.

Table 6: Length and width

Product		Geometry	
		Length (mm)	Width (mm)
U36 Acousticork U36	6/3 mm	10 000	1 000
	8/4 mm	10 000	1 000
Dimensional deviation *(acc. to EN 16069:2012+A1:2015)*:		L4	W3

3.5.4.2 Squareness

The test results presented in Table 7 were determined using the test procedure according to the standard EN 824:2013.

Table 7: Squareness

Product		Geometry Squareness, S_b (mm/m)
U36 Acousticork U36	6/3 mm	≤ 5
	8/4 mm	

3.5.5 Thickness and compressibility

The tests were performed according to the standard EN 12431:2013 and the test results are listed in Table 8.

Table 8: Thickness and compressibility

Product		Thickness, d_L (mm)	Compressibility, c (mm)
U36 Acousticork U36	6/3 mm	≥ 6	≤ 0.5
	8/4 mm	≥ 8	≤ 0.7

3.5.6 Mass per unit area or density

The density of U36/Acousticork U36 was determined according to EN 1602:2013.

Table 9: Density

Product	Total apparent density (kg/m³)
U36/Acousticork U36	464

3.5.7 Compressive creep

The compressive creep was tested according to the procedure described in the standard EN 1606:2013. The total deformation extrapolated for 10 years is listed in Table 10.

Table 10: Compressive creep

Product		Test load (kPa)	Relative deformation, ε (%)	Thickness reduction, X_t (mm)
U36 Acousticork U36	**6/3 mm**	15	15	0.83
		20	18	1.04
		25	20	1.14
	8/4 mm	15	17	1.48
		20	20	1.78
		25	24	2.12

3.5.8 Compressive strength

The compressive strength was determined according to EN 826:2013. The test results are listed in Table 11.

Table 11: Compressive strength

Product		Compressive stress at 10 % deformation, $\sigma_{10\%}$ (kPa)
U36 Acousticork U36	6/3 mm	≥ 7.1
	8/4 mm	≥ 8.3

3.5.9 Deformation under specified load and temperature

The deformation under specified load and temperature was determined according to EN 1605:2013 with the following test conditions:

- Compressive load: 20 kPa;
- Temperature and duration:
  - step A: (23 ± 5) °C / (48 ± 1) h
  - step B: (35 ± 1) °C / (48 ± 1) h

The test results are listed in Table 12.

Table 12: Maximum change of the relative deformation

Product		Maximum change of the relative deformation, $\Delta\varepsilon^1$ (%)
U36 Acousticork U36	6/3 mm	< 5
	8/4 mm	

[1] Δε corresponds to the difference between the relative deformation ε1 after step A and ε2 after step B.

3.5.10 Tensile strength perpendicular to faces

No performance assessed.

3.6 Energy economy and heat retention (BWR 6)

3.6.1 Thermal conductivity and thermal resistance

No performance assessed.

3.7 Sustainable use of natural resources (BWR 7)

Not relevant.

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

According to the Decision of the Commission 2000/273/EC, as amended, and the Commission

Delegated Regulation (EU) No. 2016/364, the systems of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table applies:

Product	Intended use(s)	Level(s) or classe(es)	System(s)
Thermal insulating products	any	---	3
	for uses subject to regulations on reaction to fire	E*	3

* Products of Class D or higher are out of the scope of EAD 040049-01-0502.

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

The ETA is issued on the basis of agreed data/information, deposited at Itecons, which identifies the product that has been assessed and judged. It is the manufacturer's responsibility to make sure that all those who use the product are appropriately informed of specific conditions laid down in this ETA.

Changes to the assessed product or its production process should be notified to the Itecons before the changes are introduced. Itecons will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

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By

Technical Assessment Unit of

Itecons – Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade

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