



EUROPEAN ASSESSMENT DOCUMENT

EAD 040288-00-1201

April 2016

FACTORY-MADE THERMAL AND ACOUSTIC INSULATIONS MADE OF POLYESTER FIBRES

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1 SCOPE OF THE EAD

1.1 Description of the construction product

Polyester fibre thermal and acoustic insulations consist of thermally bonded polyester fibres. Part of the fibres can be recycled. Products are delivered in form of mats, boards or cylinders. The products are coated or non-coated. Product dimensions are given in the ETA.

The product is not covered by a harmonised European standard (hEN).

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.

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.

Relevant manufacturer's stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

Polyester fibre thermal and acoustic insulations are used in buildings as insulation in walls, floors, intermediate floors, ceilings, partitions and ventilation ducts. Polyester fibre insulation is used in constructions where it is not exposed to wetting, weathering, heavy moisture transport, condensation, wind or compression loads.

1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the polyester thermal and acoustic insulations for the intended use of 50 years when installed in the works. These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works¹.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

¹ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than referred to above.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 1 shows how the performance of polyester thermal and acoustic insulations is assessed in relation to the essential characteristics.

Table 1 Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 1: Mechanical resistance and stability			
1	Corrosion developing capacity on metal constructions	2.2.1	Description
Basic Works Requirement 2: Safety in case of fire			
2	Reaction to fire	2.2.2	Class
Basic Works Requirement 3: Hygiene, health and the environment			
3	Water absorption	2.2.3	Level
4	Water vapour permeability	2.2.4	Level
5	Air permeability	2.2.5	Level
Basic Works Requirement 5: Protection against noise			
7	Sound absorption	2.2.6	Level
Basic Works Requirement 6: Energy economy and heat retention			
8	Thermal conductivity	2.2.7	Level
9	Dimensional stability	2.2.8	Level
10	Tensile strength parallel to faces	2.2.9	Level

2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product

2.2.1 Corrosion developing capacity on metal constructions

The corrosion developing capacity on metal constructions is assessed on the basis of composition of the polyester insulation product including possible additives. If such evaluation is not feasible the corrosion developing capacity of the product is assessed in accordance with EN 15101-1 Annex E.

2.2.2 Reaction to fire

The polyester insulation shall be tested, using the test method(s) relevant for the corresponding reaction to fire class, in order to be classified according to Commission Delegated Regulation (EU) 2016/364.

Detailed instructions for mounting and fixing are set in Annex A of this EAD.

2.2.3 Water absorption

For flat products short term water absorption by partial immersion, W_p , shall be determined in accordance with EN 1609. Water absorption threshold value given in EN 13162 is applied.

For cylindrical products the short term water absorption by partial immersion, W_p , shall be determined in accordance with EN 13472. Water absorption threshold value given in EN 14303 is applied.

2.2.4 Water vapour permeability

Water vapour permeability shall be determined in accordance with EN 12086 for flat specimens and in accordance with EN 13469 for cylindrical specimens in case the pipe insulation is not cut from a flat product. Results of the tests including water vapour resistance factor μ are given in the ETA

2.2.5 Air permeability

Air permeability and air flow resistance is determined in accordance with EN 29053.

2.2.6 Sound absorption

Sound absorption coefficient shall be determined in accordance with EN ISO 354. The sound absorption characteristics shall be calculated in accordance with EN ISO 11654 using the values for the practical sound absorption coefficient, α_p , at the following frequencies: 125 Hz, 250 Hz, 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz, and the single number value for the weighted sound absorption coefficient, α_w . The obtained results for α_p and α_w shall be rounded to the nearest 0,05 (α_p larger than 1 shall be expressed as $\alpha_p = 1$). The results for α_p and α_w shall be declared in levels with steps of 0,05.

2.2.7 Thermal conductivity

For flat products thermal conductivity is tested according to EN 12667 or EN 12939 for thick products. For cylindrical products that are used for isolation of ventilating ducts in buildings thermal conductivity is tested according to EN ISO 8497. The measurements shall be made at mean temperature of 10 °C and in dry conditions. The possibly needed conversion with regard to moisture content shall be carried out according to EN ISO 10456 and with regard to air permeability according to national provisions.

The declared value of thermal conductivity is calculated according to EN ISO 10456 for a moisture content of the insulation product at 23 °C/50 %RH and shall be given as a 90/90 value. At least 10 thermal conductivity measurement results are needed for the calculation. If conversion of the thermal conductivity due to moisture is necessary, the moisture conversion coefficient, f_u , and the moisture content, u , at 23 °C/50 %RH and at 23 °C/80 %RH shall be given in ETA.

2.2.8 Dimensional stability

Dimensional stability is measured in accordance with EN 1603 or EN 1604 (23 °C/90 %RH).

2.2.9 Tensile strength parallel to faces

Tensile strength parallel to faces is measured in accordance with EN 1608.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is: Decision 99/91/EC as amended by Decision 2001/596/EC.

The system is: **3**

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: Decision 1999/91/EC as amended by Decision 2001/596/EC.

The systems to be applied are: **1, 3, 4**

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 2.

Table 2 Control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
	Thermal conductivity	2.2.7			Once per two years, indirect testing 1 per 4 h
2	Density	3.4.1			Each batch or 1 per 24 h
3	Dimensions	3.4.2			Each batch or 1 per 24 h
4	Water absorption	2.2.3			1 per year
5	Tensile strength parallel to faces	2.2.9			1 per year
6	Reaction to fire: Reaction to fire class B, C or D	2.2.2			1 per 2 years and indirect testing (loss of ignition) 1 per 4 h or per batch

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
	Reaction to fire E	2.2.2			1 per 2 years direct testing

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for polyester insulations are laid down in Table 3.

Table 3 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Type testing performed by notified testing laboratory					
1	Reaction to fire	2.2.2		1	
Initial inspection of the manufacturing plant and of factory production control <i>(for systems 1+, 1 and 2+ only)</i>					
2	Inspection of the factory and factory production control related to reaction to fire parameters				In connection of initial inspection of FPC and when relevant changes take place
Continuous surveillance, assessment and evaluation of factory production control <i>(for systems 1+, 1 and 2+ only)</i>					
3	Continuous surveillance, assessment and evaluation of FPC related to reaction to fire parameters				Once a year

3.4 Special methods of control and testing used for the verification of constancy of performance

3.4.1 Density

The apparent density of the polyester insulation is determined in accordance with EN 1602.

3.4.2 Dimensions

Dimensions of flat products are measured in accordance with EN 822 (width and length), EN 823 (thickness), EN 824 (squareness) and EN 825 (flatness). The loads in thickness measurement shall be according to EN 13162:2012 clause 4.2.3.

Length, thickness and inside diameter for cylindrical products are measured in accordance with EN 13467.

4 REFERENCE DOCUMENTS

As far as no edition date is given in the list of standards thereafter, the standard in its current version at the time of issuing the European Technical Assessment, is of relevance.

EN ISO 354	Acoustics. Measurement of sound absorption in a reverberation room
EN 822	Thermal insulating products for building applications. Determination of length and width
EN 823	Thermal insulating products for building applications. Determination of thickness
EN 824	Thermal insulating products for building applications. Determination of squareness
EN 825	Thermal insulating products for building applications. Determination of flatness
EN 1602	Thermal insulating products for building applications. Determination of density
EN 1603	Thermal insulating products for building applications. Determination of dimensional stability under constant normal laboratory conditions (23 C/50 % relative humidity)
EN 1604	Thermal insulating products for building applications. Determination of dimensional stability under specified temperature and humidity conditions
EN 1608	Thermal insulating products for building applications. Determination of tensile strength parallel to faces
EN 1609	Thermal insulating products for building applications. Determination of short term water absorption by partial immersion
EN ISO 10456	Building materials and products. Procedures for determining declared and design thermal values (ISO 10456:1999)
EN ISO 11925-2	Reaction to fire tests – Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test
EN 12086	Thermal insulating products for building applications. Determination of water vapour transmission properties
EN 12667	Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance
EN 12939	Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Thick products of high and medium thermal resistance
EN 13162:2012	Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification
EN 13469	Thermal insulating products for building equipment and industrial installations – Determination of water vapour transmission properties of preformed pipe insulation
EN 13467	Thermal insulating products for building equipment and industrial installations – Determination of dimensions, squareness and linearity of preformed pipe insulation
EN 13472	Thermal insulating products for building equipment and industrial installations – Determination of short term water absorption by partial immersion of preformed pipe insulation
EN 13823	Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item
EN 14303	Thermal insulation products for building equipment and industrial installations – Factory made mineral wool (MW) products – Specification
EN 13501-1	Fire classification of construction products and building elements. Part 1: Classification using test data from reaction to fire tests
EN 15101-1:2013	Thermal insulation products for buildings – In-situ formed loose fill cellulose (LFCI) products – Part 1: Specification for the products before installation
EN 15715	Thermal insulation products – Instructions for mounting and fixing for reaction to fire testing – Factory made products

ANNEX A - Reaction to fire

A.1 Conditioning

All specimens shall be conditioned according to the provisions given in EN 13238 before testing.

A.2 Testing according to EN ISO 1182 and EN ISO 1716

Not relevant for polyester insulations.

A.3 Testing according to EN 13823 (SBI)

Mounting and fixing rules of EN 15715:2009 chapters 5.3.2.1 – 5.3.2.7 for flat products with following additions shall be used:

- The test specimen shall contain both vertical and horizontal joint
- The test specimen shall be fixed mechanically. Glued fixing needs separate testing considering each relevant adhesive its highest amount per square meter.

Ventilation pipe insulations with outer diameter smaller than 300 mm shall be tested according to the mounting and fixing rules of EN 15715:2009 chapter 5.3.2.8.

The following parameters shall be taken into account when conducting the SBI tests:

- Each different chemical composition
- The highest and lowest thickness
- The highest and lowest density
- The type of facing/coating
- The type and amount of adhesive of facing/coating.

Test specimens shall be prepared and tested taking into account both the length as well as the cross direction of the product process orientation.

The test results are valid for:

- The tested chemical composition
- The tested thickness or all thicknesses between those tested, the test results on 180 mm thickness are also valid for higher thicknesses
- For the all apparent densities between those tested
- The tested type of facing/coating
- The tested type and amount of adhesive for facing/coating
- The tested thickness / area weight of facing/coating tested
- The tested type and amount of facing/coating adhesive and for adhesives with equal or lower amount and PCS values than the adhesive tested
- End-use applications without air gaps/cavities
- For all joint arrangements
- All edge types if tested with butt edges, if tested with any other type of edge the rest result is valid for that type only
- For all product sizes

Test results on the standard substrates are valid for those end use substrates for which the standard substrate is representative according to the rules given in EN 13238.

Test result obtained with a mechanical fixing is valid for the product as placed on the market. Test results on glued fixing are valid for the tested adhesive type and amount and adhesives with equal or lower amount and PCS value. The test result for glued fixing is also valid for mechanical fixing.

A.4 Testing according to EN ISO 11925-2

Mounting and fixing rules of EN 15715:2009 chapters 5.3.1.1 and 5.3.1.2 shall be applied. Tests shall be performed with surfaces exposure as well as with edge exposure on unprotected edges.

The following parameters shall be taken into account when preparing the specimens:

- Each different chemical composition
- The highest and lowest thickness
- The highest and lowest density
- The type of facing or coating
- The type and amount of adhesive of facing or coating

Test specimens shall be prepared and tested taking into account both the length as well as the cross direction of the product process orientation.

The test results are valid for:

- The tested chemical composition
- The tested thickness or all thicknesses between those tested, the test results on 60 mm thickness are also valid for higher thicknesses
- For all apparent densities between those tested