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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments



European Technical Assessment

ETA-22/0569 of 23 November 2023

Deutsches Institut für Bautechnik

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:

uropean recinical Assessment.

Trade name of the construction product

SOPRA XPS AM SL SOPRA XPS AM 500 SOPRA XPS AM 700 SOPRA XPS AM SL TB SOPRA XPS AM 500 TB SOPRA XPS AM 700 TB

Product family

to which the construction product belongs

Manufacturer

Extruded polystyrene foam boards as load bearing layer and/or thermal insulation outside the waterproofing

SOPREMA SAS

14, Rue de Saint Nazaire

67025 STRASBOURG CEDEX 1

FRANKREICH

Manufacturing plant

Soprema NV Mammoetstraat 1 B-3700 Tongeren

This European Technical Assessment contains

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

This version replaces

8 pages including 1 annex which form an integral part of this assessment

040650-00-1201

ETA-22/0569 issued on 14 September 2022

Z85516.23



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Specific Part

1 Technical description of the product

The extruded polystyrene foam boards are made of rigid cellular plastics material extruded from polystyrene or one of its copolymers and which has a closed cell structure. The blowing agent mixture is carbon dioxide (CO₂), isobutane and additives. The extruded polystyrene foam boards are produced in single or multiple layers and have a skin on both surfaces and a special edge treatment (shiplap).

The extruded polystyrene foam boards do not contain Hexabromocyclododecane (HBCD).

Single-layer extruded polystyrene foam boards have the following designations:

"SOPRA XPS AM SL",

"SOPRA XPS AM 500" and

"SOPRA XPS AM 700".

Single-layer extruded polystyrene foam boards are manufactured in the following nominal thicknesses:

Nominal thicknesses: 50 mm to 120 mm for SOPRA XPS AM SL,

60 mm to 120 mm for SOPRA XPS AM 500, 60 mm to 120 mm for SOPRA XPS AM 700

Multi-layer extruded polystyrene foam boards have the following designations:

"SOPRA XPS AM SL TB",

"SOPRA XPS AM 500 TB" and

"SOPRA XPS AM 700 TB".

Multi-layer boards are manufactured from two, three or four layers (single-layer boards) of extruded polystyrene which are bonded together by full-surface thermal welding. Multi-layer extruded polystyrene foam boards "SOPRA XPS AM SL TB" are made of single-layer boards with thicknesses from 40 mm to 70 mm, the boards "SOPRA XPS AM 500 TB" are made of single-layer boards with thicknesses from 50 mm to 80 mm and the boards "SOPRA XPS AM 700 TB" are made of single-layer boards with thicknesses from 60 mm to 80 mm.

Multi-layer extruded polystyrene foam boards are manufactured in the following nominal thicknesses:

Nominal thicknesses: 80 mm to 280 mm for SOPRA XPS AM SL TB,

100 mm to 280 mm for SOPRA XPS AM 500 TB, 120 mm to 280 mm for SOPRA XPS AM 700 TB

Single-layer and multi-layer extruded polystyrene foam boards are manufactured in the following nominal length and widths:

Nominal length: 1250 mm (primarily)

Nominal widths: 600 mm

The European Technical Assessment has been issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed. The European Technical Assessment applies only to products corresponding to this agreed data/information.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The extruded polystyrene foam boards are intended to be used as thermal insulation outside the waterproofing. The boards are laid uniformly and even on the substrate to which they are applied. In particular the following applications are covered:



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- External horizontal and vertical thermal insulation of in-ground constructions in non-structural applications (also in case of groundwater)
- Inverted roof insulation (including park deck and green roof applications)

The performance according to section 3 only applies if the thermal insulation boards are installed according to the manufacture's installation instructions and if they are protected from precipitation, wetting or weathering during transport and storage before installation.

Concerning the application of the thermal insulation boards, also the respective national regulations shall be observed.

Where the thermal insulation boards are fixed by using adhesives, only such adhesions shall be used, which are suitable for this purpose. The assessment of these fixings is not subject of this European Technical Assessment.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the extruded polystyrene foam boards of at least 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 products in relation to the expected economically reasonable working life of the works.

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

For sampling, conditioning and testing the provisions of the EAD No 040650-00-1201 "Extruded polystyrene foam boards as load bearing layer and/or thermal insulation outside the waterproofing" apply.

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class E
test acc. to EN ISO 11925-2:2010	acc. to EN 13501-1:2007 + A1:2009

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal conductivity	
at mean reference temperature of 10 °C test acc. to EN 12667:2001 or EN 12939:2001 and aging procedure acc. EN 13164:2012+A1:2015, Annex C with deviating storage time period (sliced specimen) of (90 +2/-2) days prior to testing	
"SOPRA XPS AM SL"	
thickness 50 mm ≤ d ≤ 60 mm	$\lambda_{D(90d)} = 0.033 \text{ W/(m \cdot K)}$
thickness 60 mm < d ≤ 120 mm	$\lambda_{D(90d)} = 0.035 \text{ W/(m \cdot K)}$
"SOPRA XPS AM SL TB"	
thickness 80 mm	$\lambda_{D(90d)} = 0.033 \text{ W/(m \cdot K)}$
thickness 80 mm < d ≤ 280 mm	$\lambda_{D(90d)} = 0.035 \text{ W/(m \cdot K)}$



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Essential characteristic	Performance	
"SOPRA XPS AM 500"		
thickness 60 mm	$\lambda_{D(90d)} = 0.034 \text{ W/(m \cdot K)}$	
thickness 60 mm < d ≤ 120 mm	$\lambda_{D(90d)} = 0.035 \text{ W/(m \cdot K)}$	
"SOPRA XPS AM 500 TB"		
thickness 100 mm	$\lambda_{D(90d)} = 0.034 \text{ W/(m \cdot K)}$	
thickness 100 mm < d ≤ 280 mm	$\lambda_{D(90d)} = 0.035 \text{ W/(m \cdot K)}$	
"SOPRA XPS AM 700"		
thickness 60 mm	$\lambda_{D(90d)} = 0.034 \text{ W/(m \cdot K)}$	
thickness 60 mm < d ≤ 120 mm	$\lambda_{D(90d)} = 0.035 \text{ W/(m \cdot K)}$	
"SOPRA XPS AM 700 TB"		
thickness 120 mm < d ≤ 280 mm	$\lambda_{D(90d)} = 0.035 \text{ W/(m \cdot K)}$	
Moisture conversion coefficient	No performance assessed	
Water absorption		
Long term water absorption by total immersion		
test acc. to EN 12087:2013 (method 2A)	$WL(T)0,7 (W_{lt} \le 0,7 \text{ Vol.\%})$	
Long term water absorption by diffusion test acc. to EN 12088:2013	WD(V)3 (W _{dV} ≤ 3,0 Vol.%)	
Freeze-thaw resistance test acc. to EN 12091		
using the wet test specimens from having done the water diffusion test in accordance with EN 12088: 2013		
single-layer boards: "SOPRA XPS AM SL", "SOPRA XPS AM 500" and "SOPRA XPS AM 700"	FTCD1 (W _V ≤ 1,0 Vol.%)	
multi-layer boards: "SOPRA XPS AM SL TB", "SOPRA XPS AM 500 TB" and "SOPRA XPS AM 700 TB"	FTCD2 (WV ≤ 2,0 Vol.%)	
Reduction in compressive stress at 10 % deformation or in compressive strength of the re-dried specimens, when tested in accordance with EN 826:2013	≤ 10 %	
Reduction of shear strength of the re-dried specimens, when tested in accordance with EN 12090:2013	≤ 10 %	



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Essential characteristic	Performance
Reduction of tensile strength of the re-dried specimens, when tested in accordance with EN 1607:2013	≤ 10 %
Water vapour diffusion resistance factor	
acc. to EN 12086:2013	
multi-layer boards: "SOPRA XPS AM SL TB", "SOPRA XPS AM 500 TB" and "SOPRA XPS AM 700 TB"	see Annex A
Geometrical properties	tolerance
Thickness	
test acc. EN 823:2013 (clause 7.2, figure 2, measuring set-up 3)	± 2 mm
Length, width	
test acc. EN 822:2013	± 8 mm
Squareness in direction of length and width; in direction of thickness test acc. EN 824:2013	5 mm/m
Flatness	
in direction of length and width	
test acc. EN 825:2013	2 mm
Compressive stress at 10 % deformation or compressive strength	Level
test acc. to EN 826:2013	
"SOPRA XPS AM SL" and "SOPRA XPS AM SL TB	≥ 300 kPa
"SOPRA XPS AM 500" and "SOPRA XPS AM 500 TB"	≥ 500 kPa
"SOPRA XPS AM 700" and "SOPRA XPS AM 700 TB"	≥ 700 kPa
Density	
test acc. to EN 1602:2013	density range:
"SOPRA XPS AM SL" and "SOPRA XPS AM SL TB	32 kg/m³ - 36 kg/m³
"SOPRA XPS AM 500" "SOPRA XPS AM 500 TB"	35 kg/m³ - 41 kg/m³ 37 kg/m³ - 43 kg/m³
"SOPRA XPS AM 700" "SOPRA XPS AM 700 TB"	39 kg/m³ - 47 kg/m³ 44 kg/m³ - 48 kg/m³



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Essential characteristic	Performance
Deformation under specified compressive load and temperature conditions	
test acc. to EN 1605:2013	load: 40 kPa; temperature: (70 ± 1) °C; time: (168 ± 1) h ≤ 5 %
Dimensional stability under specified conditions	
test acc. to EN 1604:2013	temperature: 70 °C and 90 % R.H.
	DS(70,90) $(\Delta \epsilon_{l} \le 5 \%, \Delta \epsilon_{b} \le 5 \%, \Delta \epsilon_{d} \le 5 \%)$
Tensile strength perpendicular to faces test acc. to EN 1607:2013 multi-layer boards: "SOPRA XPS AM SL TB", "SOPRA XPS AM 500 TB" and "SOPRA XPS AM 700 TB"	TR200 (σ _{mt} ≥ 200 kPa)
Shear strength test acc. to EN 12090:2013 multi-layer boards: "SOPRA XPS AM SL TB", "SOPRA XPS AM 500 TB" and "SOPRA XPS AM 700 TB"	≥ 150 kPa
Volume percentage of closed cells test acc. to EN ISO 4590:2016 (method 1 with correction)	≥ 95 %

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

In accordance with EAD No. 040650-00-1201, the applicable European legal acts are: 1995/467/EC and $1999/91/EC^1$.

The system to be applied is:

System 3 all Essential characteristics

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 with Deutsches Institut für Bautechnik.

Issued in Berlin on 23 November 2023 by Deutsches Institut für Bautechnik

Frank Iffländer beglaubigt:
Head of Section Meyer

as amended



SOPRA XPS AM SL SOPRA XPS AM 500 SOPRA XPS AM 700 SOPRA XPS AM SL TB SOPRA XPS AM 500 TB SOPRA XPS AM 700 TB

Anlage A

Water vapour transmission in accordance with EN 12086

SOPRA XPS AM SL TB	thickness 80 mm (2x 40 mm)	thickness 280 mm (4x 70 mm)	
sliced thickness of the specimens in I	mm		
Skin layer	9	10	
Adhesion layer	27	170	
Core layer	37	90	
water vapour diffusion resistance factor (mean values for the sliced thickness)			
μ _{skin}	338	244	
μ _{ad}	203	141	
μ _{core}	171	119	

SOPRA XPS AM 500 TB	thickness 100 mm (2x 50 mm)	thickness 160 mm (2x 80 mm)	thickness 280 mm (4x 70 mm)
sliced thickness of the specimens in mm			
Skin layer	10	10	10
Adhesion layer	50	34	170
Core layer	33	110	92
water vapour diffusion resistance factor (mean values for the sliced thickness)			
µ skin	298	165	254
µ _{ad}	260	182	162
μ _{core}	243	169	135

SOPRA XPS AM 700 TB	thickness 120 mm (2x 60 mm)	thickness 160 mm (2x 80 mm)	thickness 280 mm (4x 70 mm)
sliced thickness of the specimens in mm			
Skin layer	10	10	10
Adhesion layer	35	34	170
Core layer	69	111	91
water vapour diffusion resistance factor (mean values for the sliced thickness)			
µ skin	264	171	202
µ _{ad}	207	191	155
µ _{core}	168	197	137

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