

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

ETA-18/0267  
of 14 May 2018

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Austrotherm XPS TOP 30 TB  
Austrotherm XPS TOP 50 TB  
Austrotherm XPS TOP 70 TB

Product family  
to which the construction product belongs

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

Manufacturer

Austrotherm GmbH  
Friedrich-Schmid-Straße 165  
2754 Waldegg/Wopfing  
ÖSTERREICH

Manufacturing plant

Werk 1  
A-7083 Purbach  
Werk 2  
DE-20322 Wittenberge

This European Technical Assessment  
contains

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

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

EAD 040650-00-1201

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**Specific part**

**1 Technical description of the product**

The multilayer extruded polystyrene foam boards are manufactured from up to five layers of extruded polystyrene foam boards (single boards). The single boards with thicknesses of 60 mm and 80 mm are bonded together by full-surface thermal welding. The single boards are made of rigid cellular plastics material extruded from polystyrene or one of its copolymers and which have a closed cell structure. The blowing agent mixture is carbon dioxide (CO<sub>2</sub>), isobutene and additives.

The multilayer extruded polystyrene foam boards have a foam skin on both surfaces and a special edge treatment (shiplap).

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

The multilayer extruded polystyrene foam boards have the following designations:

- "Austrotherm XPS TOP 30 TB",
- "Austrotherm XPS TOP 50 TB" and
- "Austrotherm XPS TOP 70 TB"

The multilayer extruded polystyrene foam boards are manufactured with the following dimensions:

Nominal thicknesses:

"Austrotherm XPS TOP 30 TB"	140 mm to 340 mm
"Austrotherm XPS TOP 50 TB"	140 mm to 300 mm
"Austrotherm XPS TOP 70 TB"	140 mm to 300 mm

Nominal length: 1250 mm

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:

- 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 test acc. to EN ISO 11925-2:2010	Class E 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 "Austrotherm XPS TOP 30 TB" "Austrotherm XPS TOP 50 TB" "Austrotherm XPS TOP 70 TB"	$\lambda_{D(90d)} = 0,034 \text{ W/(m} \cdot \text{K)}$ $\lambda_{D(90d)} = 0,034 \text{ W/(m} \cdot \text{K)}$ $\lambda_{D(90d)} = 0,034 \text{ W/(m} \cdot \text{K)}$
Moisture conversion coefficient	No performance assessed
Water absorption Long term water absorption by total immersion test acc. to EN 12087:2013 (method 2A) "Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB" Long term water absorption by diffusion test acc. to EN 12088:2013 "Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"	WL(T)0,7 ( $W_{it} \leq 0,7 \text{ Vol.}\%$ )  WD(V)3 ( $W_{dv} \leq 3,0 \text{ Vol.}\%$ )

Essential characteristic	Performance
<p>Freeze-thaw resistance test acc. to EN 12091:2013 using the wet test specimens from having done the water diffusion test in accordance with EN 12088:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p> <p>Reduction in compressive stress at 10 % deformation or in compressive strength of the re-dried specimens, when tested in accordance with EN 826:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p> <p>Reduction in shear strength of the re-dried specimens, when tested in accordance with EN 12090:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p>	<p>FTCD1 (<math>W_v \leq 1,0</math> Vol.%)</p> <p><math>\leq 10 \%</math></p> <p><math>\leq 10 \%</math></p>
Water vapour diffusion resistance factor	See Annex A
<p>Geometrical properties</p> <p>Thickness test acc. EN 823:2013 (clause 7.2, figure 2, measuring set-up 3)</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p> <p>Length, width test acc. EN 822:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p> <p>Squareness in direction of length and width; in direction of thickness test acc. EN 824:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p>	<p>tolerance</p> <p>+4/-2 mm</p> <p><math>\pm 8</math> mm</p> <p>5 mm/m</p>

Essential characteristic	Performance
<p>Geometrical properties</p> <p>Flatness</p> <p>in direction of length and width</p> <p>test acc. EN 825:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p>	<p>tolerance</p> <p>3 mm</p>
<p>Compressive stress at 10 % deformation or compressive strength</p> <p>test acc. to EN 826:2013</p> <p>"Austrotherm XPS TOP 30 TB" "Austrotherm XPS TOP 50 TB" "Austrotherm XPS TOP 70 TB"</p>	<p>Level (individual values may fall below this level up to 10 %):</p> <p>≥ 300 kPa ≥ 500 kPa ≥ 700 kPa</p>
<p>Density</p> <p>test acc. to EN 1602:2013</p> <p>"Austrotherm XPS TOP 30 TB" "Austrotherm XPS TOP 50 TB" "Austrotherm XPS TOP 70 TB"</p>	<p>density range:</p> <p>29 kg/m<sup>3</sup> - 33 kg/m<sup>3</sup> 32 kg/m<sup>3</sup> - 36 kg/m<sup>3</sup> 36 kg/m<sup>3</sup> - 39 kg/m<sup>3</sup></p>
<p>Deformation under specified compressive load and temperature conditions</p> <p>test acc. to EN 1605:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p>	<p>load: 40 kPa; temperature: (70 ± 1) °C; time: (168 ± 1) h</p> <p>≤ 5 %</p>
<p>Dimensional stability under specified conditions</p> <p>test acc. to EN 1604:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p>	<p>temperature: 70 °C and 90% R.H.</p> <p>DS(70,90) (Δε<sub>l</sub> ≤ 5 %, Δε<sub>b</sub> ≤ 5 %, Δε<sub>d</sub> ≤ 5 %)</p>
<p>Tensile strength perpendicular to faces</p> <p>test acc. to EN 1607:2013</p> <p>"Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"</p>	<p>TR150 (σ<sub>mt</sub> ≥ 150 kPa)</p>

Essential characteristic	Performance
Volume percentage of closed cells test acc. to EN ISO 4590:2003 (method 1 with correction) "Austrotherm XPS TOP 30 TB", "Austrotherm XPS TOP 50 TB", "Austrotherm XPS TOP 70 TB"	≥ 95%
Shear strength test acc. to EN 12090:2013	≥ 200 kPa
Compressive creep	No performance assessed

**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

The system to be applied is:

System 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 with Deutsches Institut für Bautechnik.

Issued in Berlin on 14 May 2018 by Deutsches Institut für Bautechnik

Prof. Gunter Hoppe  
Head of Department

*beglaubigt:*  
Wendler

Austrotherm XPS TOP 30 TB  
Austrotherm XPS TOP 50 TB  
Austrotherm XPS TOP 70 TB

Annex A

**Water vapour transmission**

in accordance with EN 12086, climatic condition A

<b>Austrotherm XPS TOP 30 TB</b>	<b>thickness 140 mm (60 mm + 80 mm)</b>	<b>thickness 180 mm (3x 60 mm)</b>
density (kg/m <sup>3</sup> )	30	31
sliced thickness of the specimens in mm		
Skin layer	20 (30)	4,4
Adhesion layer	30	9,3
Core layer	25 (35)	33,8
<b>water vapour diffusion resistance factor (mean values for the sliced thickness)</b>		
$\mu_{skin}$	131 (152)	222
$\mu_{ad}$	127	128
$\mu_{core}$	86 (105)	100

<b>Austrotherm XPS TOP 70 TB</b>	<b>thickness 180 mm (3x 60 mm)</b>
density (kg/m <sup>3</sup> )	36
sliced thickness of the specimens in mm	
Skin layer	20
Adhesion layer	30
Core layer	40
<b>water vapour diffusion resistance factor (mean values for the sliced thickness)</b>	
$\mu_{skin}$	114
$\mu_{ad}$	121
$\mu_{core}$	64