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European Technical Assessment Body
for construction products



European Technical Assessment

ETA-18/0619
of 5 March 2026

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

BACHL XPS 300 C-SF

Product family to which the construction product belongs

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

Manufacturer

Karl Bachl Kunststoffverarbeitung GmbH & Co. KG
Deching 3
94133 Röhrnbach
DEUTSCHLAND

Manufacturing plant

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94104 Tittling
GERMANY

This European Technical Assessment contains

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

This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) No 2024/3110, on the basis of

EAD 040650-00-1201

This version replaces

ETA-18/0619 issued on 10 March 2023

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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), isobutene and additives. The extruded polystyrene foam boards are manufactured as single layer boards (thickness 60 mm) and as multi-layer boards (thickness ≥ 80 mm), which welded together by full-surface bonding. The boards have a skin on both surfaces and a special edge treatment (shiplap).

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

The extruded polystyrene foam boards have the following designation:

"Bachl XPS 300-C SF".

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

Nominal thicknesses: 60 mm

Multi-layer extruded polystyrene foam boards are manufactured from two single-layer boards of extruded polystyrene which are bonded together by full-surface thermal welding. Multi-layer boards are made of single-layer boards with thicknesses from 40 mm to 80 mm.

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

Nominal thicknesses: 80 mm to 160 mm

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

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 load bearing layer and/or thermal insulation outside the waterproofing. The boards are laid uniformly on the substrate to which they are applied. In particular the following applications are intended:

- Load bearing and thermal insulation underneath foundation slabs
- 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 040650-00-1201 "Extruded polystyrene foam boards as load bearing layer and/or thermal insulation outside the water-proofing" apply.

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Compressive stress at 10 % deformation or compressive strength test acc. to EN ISO 29469:2022	Level (individual values may fall below this level up to 10 %): ≥ 300 kPa
Slip deformation	No performance assessed
Compressive stress or compressive strength in the transverse and longitudinal directions	No performance assessed
Characteristic value of compressive stress or compressive strength 5 %-fractile value for a one-sided confidence level of 75 % under unknown or known variance using ISO 12491:1997	$\sigma_{0,05} = 375 \text{ kPa}$ (n > 50); $\sigma_{\text{mean}} = 383 \text{ kPa}$; $s_{\sigma} = 5 \text{ kPa}$
Compressive creep	See Annex A
Behaviour under shear load (large-sized specimen) test acc. to EAD and the guidelines in EN 12090:2013	$T_{\text{large}} = 111 \text{ kPa}$
Creep under shear load	No performance assessed
Creep under combined compressive and shear load	No performance assessed
Compressive modulus of elasticity	No performance assessed
Adhesion behaviour under compressive and shear load on large-sized samples	No performance assessed
Shear strength test acc. to EN 12090:2013	≥ 200 kPa
Density test acc. to EN ISO 29470:2020	density range: 31 kg/m ³ - 35 kg/m ³

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire test acc. to EN ISO 11925-2:2020	Class E acc. to EN 13501-1:2018

3.3 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
<p>Thermal conductivity</p> <p>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</p> <p>thickness 60 mm ≤ d < 160 mm</p> <p>thickness 160 mm</p> <p>Moisture conversion coefficient</p>	<p>$\lambda_{D(90d)} = 0.034 \text{ W/(m} \cdot \text{K)}$</p> <p>$\lambda_{D(90d)} = 0.036 \text{ W/(m} \cdot \text{K)}$</p> <p>No performance assessed</p>
<p>Water absorption</p> <p>Long term water absorption by total immersion test acc. to EN ISO 16535:2019 (method 2A)</p> <p>Long term water absorption by diffusion test acc. to EN ISO 16536:2019</p>	<p>WL(T)0.7 ($W_{it} \leq 0.7 \text{ Vol.}\%$)</p> <p>WD(V)3 ($W_{dV} \leq 3.0 \text{ Vol.}\%$)</p>
<p>Freeze-thaw resistance test acc. to EN ISO 16546:2020</p> <p>using the wet test specimens from having done the water diffusion test in accordance with EN ISO 16536:2019</p> <p>single-layer boards, thickness 60 mm</p> <p>Reduction in compressive stress at 10 % deformation or in compressive strength of the re- dried specimens, when tested in accordance with EN ISO 29469:2022</p>	<p>FTCD1 ($W_V \leq 1.0 \text{ Vol.}\%$) ≤ 10 %</p>
<p>Freeze-thaw resistance test acc. to EN ISO 16546:2020</p> <p>using the wet test specimens from having done the water diffusion test in accordance with EN ISO 16536:2019</p> <p>double-layer boards, thickness ≥ 80 mm</p> <p>Reduction in compressive stress at 10 % deformation or in compressive strength of the re- dried specimens, when tested in accordance with EN ISO 29469:2022</p>	<p>FTCD2 ($W_V \leq 2.0 \text{ Vol.}\%$) ≤ 10 %</p>
<p>Reduction in shear strength of the re-dried specimens (double layer boards), when tested in accordance with EN 12090:2013</p>	<p>≤ 10 %</p>
<p>Water vapour diffusion resistance factor</p>	<p>See Annex A</p>

Essential characteristic	Performance
Geometrical properties Thickness test acc. EN ISO 29466:2022 (clause 7.2, figure 2, measuring set-up 3)	tolerance ± 2 mm
Geometrical properties Length, width test acc. EN ISO 29465:2022 Squareness in direction of length and width; in direction of thickness test acc. EN 824:2013 Flatness in direction of length and width test acc. EN ISO 29468:2022	tolerance ± 8 mm 5 mm/m 2 mm
Dimensional stability under specified conditions test acc. to EN 1604:2013	temperature: 70 °C and 90 % R.H. DS(70,90) ($\Delta\epsilon_l \leq 5 \%$, $\Delta\epsilon_b \leq 5 \%$, $\Delta\epsilon_d \leq 5 \%$)
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 %
Tensile strength perpendicular to faces test acc. to EN 1607:2013	TR150 ($\sigma_{mt} \geq 150$ 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 040650-00-1201, the applicable European legal acts are: 1995/467/EC and 1999/91/EC¹

The systems to be applied are:

- System 1 for Essential characteristics concerning Mechanical resistance and stability (BWR 1)
- System 3 all other Essential characteristics

¹ as amended

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 5 March 2026 by Deutsches Institut für Bautechnik

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Referatsleiter

beglaubigt:
Meyer

BACHL XPS 300 C-SF

Annex A

1. Compressive creep

1.1 Compressive creep (single-layer boards)

BACHL XPS 300 C-SF	thickness 60 mm		
density (kg/m ³)	31		
compressive stress / deformation acc. to EN ISO 29469:2022 (kPa / %)	362/3		
load stage (kPa)	100	120	150
X ₀ (mm)	0.37	0.44	0.62
X _{ct} (mm)	0.27	0.32	0.72
X _{ct50} (mm)	0.76	0.86	1.91
X_{t50}(mm)	1.13	1.30	2.53

1.2 Compressive creep (multi-layer boards)

BACHL XPS 300 C-SF	thickness 80 mm (2 x 40 mm)			
density (kg/m ³)	31			
compressive stress/ deformation acc. to EN ISO 29469:2022 (kPa / %)	369/3			
load stage (kPa)	80	100	120	150
X ₀ (mm)	0.30	0.39	0.61	0.71
X _{ct} (mm)	0.24	0.36	0.51	0.82
X _{ct50} (mm)	0.77	0.86	1.35	2.29
X_{t50}(mm)	1.07	1.25	1.96	3.00

BACHL XPS 300 C-SF	thickness 120 mm (2 x 60 mm)		
density (kg/m ³)	31.5		
compressive stress/ deformation acc. to EN ISO 29469:2022(kPa / %)	396/2		
load stage (kPa)	100	120	150
X ₀ (mm)	0.50	0.62	0.80
X _{ct} (mm)	0.36	0.43	0.66
X _{ct50} (mm)	0.94	1.24	1.88
X_{t50}(mm)	1.44	1.86	2.68

BACHL XPS 300 C-SF	thickness 160 mm (2 x 80 mm)		
density (kg/m ³)	32,7		
compressive stress/ deformation acc. to EN ISO 29469:2022(kPa / %)	446/2		
load stage (kPa)	100	120	150
X ₀ (mm)	0.66	0.72	0.98
X _{ct} (mm)	0.63	0.75	0.95
X _{ct50} (mm)	2.32	2.65	3.16
X_{t50}(mm)	2.98	3.37	4.14

2. Water vapour transmission
in accordance with EN 12086, climatic condition A

BACHL XPS 300 C-SF	thickness 80 mm (2 x 40 mm)	thickness 120 mm (2 x 60 mm)
density (kg/m ³)	32	32
sliced thickness of the specimens in mm		
Skin layer	4.8/4.9	4.4/4.4
Adhesion layer	9.9	9.3
Core layer	23.8/26.9	45.1/50.4
water vapour diffusion resistance factor (mean values for the sliced thickness)		
μ_{skin}	265	280
μ_{ad}	164	124
μ_{core}	134	91