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GRADBENIŠTVO  
SLOVENIJE

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## European Technical Assessment

**ETA-21/0681**  
**of 08.08.2023**

*English version prepared by ZAG*

### GENERAL PART

**Technical Assessment Body issuing the  
European Technical Assessment**

**ZAG**

**Trade name of the construction product**

**POFIX XPS 300**

**Product family to which the construction  
product belongs**

**04: Thermal insulation products. Extruded  
polystyrene foam boards as load bearing  
layer and/or thermal insulation outside the  
waterproofing**

**Manufacturer**

**Pofix d.o.o.  
Dereboj b.b.  
1200 Tetovo  
North Macedonia**  
<https://pofix.com>

**Manufacturing plant**

**Pofix d.o.o.  
Dereboj b.b.  
1200 Tetovo  
North Macedonia**

**This European Technical Assessment  
contains**

**7 pages**

**This European Technical Assessment is  
issued in according to Regulation (EU)  
No. 305/2011, on the basis of**

**EAD 040650-00-1201, December 2017**

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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# SPECIFIC PART

## 1 Technical description of the product

The extruded polystyrene foam boards **POFIX XPS 300** 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 (CO<sub>2</sub>). The extruded polystyrene foam boards have a skin on both surfaces, the edge could be produced with special edge treatment (shiplap) or without (straight edges). The extruded polystyrene foam boards do not contain Hexabromocyclododecane (HBCD).

The extruded polystyrene foam boards have the designation "POFIX XPS 300" and can be sold under this trade name.

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

Nominal thicknesses: 50 mm to 200 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 Slovenian National Building and Civil Engineering Institute (ZAG), 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(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

### 2.1 Intended use

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.

The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works. The real working life of a product incorporated in a specific works, depends on the environmental conditions to which this work is subject, as well as on the particular conditions of the design, execution, use and maintenance of it. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than the working life mentioned above.

These provisions are based upon the current state of the art and the available knowledge and experience.

## **2.2 Manufacturing**

The European Technical Assessment is issued for the extruded polystyrene boards (XPS boards) on the basis of agreed data/information, deposited with Zavod za gradbeništvo Slovenije (ZAG), which identifies the XPS boards that has been assessed and judged. Changes to the XPS boards or production process, which could result in the deposited data/information being incorrect should be notified to ZAG Ljubljana before the changes are introduced. ZAG Ljubljana will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

## **2.3 Design and installation**

The installation instructions including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation.

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.

## **2.4 Packaging, transport and storage**

The information on packaging, transport and storage is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made known to the concerned people.

## **2.5 Use, maintenance and repair**

It is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the use, maintenance and repair of the product as he considers necessary.

The information on use, maintenance and repair is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made known to the concerned people.

### 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 Mechanical resistance and stability (BWR 1)

| Essential characteristic  | Performance  |     |     |      |      |      |      |      |      |      |      |
|---|--|-----|-----|------|------|------|------|------|------|------|------|
| <p><b>COMPRESSIVE STRESS AT 10 % DEFORMATION OR COMPRESSIVE STRENGTH</b></p> <p>Test according to EN 826:2013</p> <p>Slip deformation</p> <p>Compressive stress or compressive strength in the transverse and longitudinal directions</p>   | <p>Level (individual values may fall below this level up to 10 %)</p> <p>≥ 300 kPa</p> <p>No performance assessed</p> <p>No performance assessed</p>   |     |     |      |      |      |      |      |      |      |      |
| <p><b>CHARACTERISTIC VALUE OF COMPRESSIVE STRESS OR COMPRESSIVE STRENGTH</b></p> <p>5 %-fractile value for a one-sided confidence level of 75 % under unknown or known variance using ISO 12491:1997</p> <p>thickness <math>50 \text{ mm} \leq d \leq 200 \text{ mm}</math></p>   | <p><math>\sigma_{0,05} = 306 \text{ kPa}</math></p> <p>(<math>n = 31</math>; <math>\sigma_{\text{mean}} = 401 \text{ kPa}</math>; <math>s_{\sigma} = 51 \text{ kPa}</math>)</p> <p><math>k_n</math> used in the calculation: 1,87</p>  |     |     |      |      |      |      |      |      |      |      |
| <p><b>COMPRESSIVE CREEP</b></p> <p>Single layered board POFIX XPS 300</p> <p>compressive stress/deformation (acc. EN 826)</p> <p>Load stage [kPa]</p> <p><math>X_0</math> [%]</p> <p><math>X_{ct}</math> [%]</p> <p><math>X_{ct50}</math> [%]</p> <p><math>X_{150}</math> [%]</p> | <p>CC (3,5 / 3,5 / 50)120;</p> <p>CC (3 / 3 / 50)100</p> <p>312 kPa / 10 %</p> <table> <tr> <td>100</td> <td>120</td> </tr> <tr> <td>0,06</td> <td>0,07</td> </tr> <tr> <td>1,65</td> <td>1,81</td> </tr> <tr> <td>2,81</td> <td>3,21</td> </tr> <tr> <td>2,87</td> <td>3,28</td> </tr> </table> | 100 | 120 | 0,06 | 0,07 | 1,65 | 1,81 | 2,81 | 3,21 | 2,87 | 3,28 |
| 100   | 120  |     |     |      |      |      |      |      |      |      |      |
| 0,06  | 0,07   |     |     |      |      |      |      |      |      |      |      |
| 1,65  | 1,81   |     |     |      |      |      |      |      |      |      |      |
| 2,81  | 3,21   |     |     |      |      |      |      |      |      |      |      |
| 2,87  | 3,28   |     |     |      |      |      |      |      |      |      |      |
| <p><b>BEHAVIOUR UNDER SHEAR LOAD (LARGE-SIZED SPECIMEN)</b></p>   | <p>No performance assessed</p>   |     |     |      |      |      |      |      |      |      |      |

| Essential characteristic  | Performance                                     |
|---|---|
| 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                         |
| DENSITY<br>test according to EN 1602:2013<br>thickness $50 \text{ mm} \leq d \leq 200 \text{ mm}$ | Density range:<br>28,7 - 33,6 kg/m <sup>3</sup> |
| SHEAR STRENGTH  | No performance assessed                         |

### 3.2 Safety in case of fire (BWR 2)

| Essential characteristic  | Performance |
|---|-------------|
| REACTION TO FIRE<br>test according to EN ISO 11925-2:2010 and classification according to EN 13501-1:2010 | Class E     |

### 3.3 Energy, economy and heat retention (BWR 6)

| Essential characteristic  | Performance   |
|---|---|
| THERMAL CONDUCTIVITY<br>at mean reference temperature of 10 °C<br>Test according to EN 12667:2001 or EN 12939:2001 and aging procedure acc. EN 13164:2012+A1:2015, Annex C<br><ul style="list-style-type: none"> <li>- thickness <math>50 \text{ mm} \leq d &lt; 100 \text{ mm}</math></li> <li>- thickness <math>100 \text{ mm} \leq d \leq 200 \text{ mm}</math></li> </ul> Moisture conversion coefficient | $\lambda_{10, \text{dry}} = 0,037 \text{ W/(m}\cdot\text{K)}$<br>$\lambda_{10, \text{dry}} = 0,035 \text{ W/(m}\cdot\text{K)}$<br>No performance assessed |

| <b>Essential characteristic</b>  | <b>Performance</b>  |
|--|---|
| <p><b>WATER ABSORPTION</b></p> <p>Long term water absorption by total immersion, test according to EN 12087:2013 (method 2A)</p> <p>Long term water absorption by diffusion, test according to EN 12088:2013</p> <ul style="list-style-type: none"> <li>– thickness <math>50 \text{ mm} \leq d &lt; 80 \text{ mm}</math></li> <li>– thickness <math>80 \text{ mm} \leq d \leq 200 \text{ mm}</math></li> </ul> | <p>WL(T)1,5<br/>(<math>W_{it} \leq 1,5 \text{ Vol. \%}</math>)</p> <p>WD(V)4 .....(<math>W_{dv} \leq 4,0 \text{ Vol. \%}</math>)</p> <p>WD(V)2 .....(<math>W_{dv} \leq 2,0 \text{ Vol. \%}</math>)</p>                    |
| <p><b>FREEZE-THAW RESISTANCE</b></p> <p>test according to EN 12091:2013 using the wet test specimens from having done the water diffusion test in accordance with EN 12088</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>FTCD1<br/>(<math>W_v \leq 1,0 \text{ Vol. \%}</math>)<br/><math>\leq 10\%</math></p>   |
| <p><b>WATER VAPOUR DIFFUSION RESISTANCE FACTOR</b></p>   | <p>No performance assessed</p>  |
| <p><b>GEOMETRICAL PROPERTIES</b></p> <p>Thickness test according to EN 823:2013 (clause 7.2, figure 2, measuring set-up 3)</p> <p>Length&amp;width test according to EN 822:2013</p> <p>Squareness in direction of length and width; in direction of thickness, test according to EN 824:2013</p> <p>Flatness in direction of length and width, test according to EN 825:2013</p>                              | <p>tolerance</p> <p><math>\pm 1,5 \text{ mm (T2)}</math></p> <p><math>\pm 8 \text{ mm}</math></p> <p>5 mm/m</p> <p>0,5 mm</p>   |
| <p><b>DEFORMATION UNDER SPECIFIED COMPRESSIVE LOAD AND TEMPERATURE CONDITIONS</b></p> <p>Test according to EN 1605:2013</p>  | <p>load: 40 kPa; temperature: <math>(70 \pm 1) \text{ }^\circ\text{C}</math>;<br/>time: <math>(168 \pm 1) \text{ h}</math></p> <p>DLT(2)5<br/><math>\leq 2 \%</math></p>  |
| <p><b>DIMENSIONAL STABILITY UNDER SPECIFIED CONDITIONS</b></p> <p>Test according to EN 1604:2013</p>   | <p>temperature: <math>70 \text{ }^\circ\text{C}</math> and 90 % R.H.</p> <p>DS(70,90)<br/>(<math>\Delta\epsilon_l \leq 5 \%</math>, <math>\Delta\epsilon_b \leq 5 \%</math>, <math>\Delta\epsilon_d \leq 5 \%</math>)</p> |
| <p><b>TENSILE STRENGTH PERPENDICULAR TO FACES</b></p>  | <p>No performance assessed</p>  |
| <p><b>VOLUME PERCENTAGE OF CLOSED CELLS</b></p> <p>Test according to EN ISO 4590:2016 (method 1 with correction)</p>   | <p><math>\geq 95 \%</math></p>  |

#### 4 Assessment and verification of constancy of performance (AVCP)

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

The systems to be applied are:

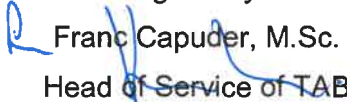
- **System 1** for Essential characteristics concerning Mechanical resistance and stability (BWR 1)
- **System 3** all other Essential characteristics

#### 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 Chapter 3 of EAD 040620-00-1201.

Issued in Ljubljana on 08. 08. 2023

Signed by:

  
Franc Capuder, M.Sc.  
Head of Service of TAB