



# TAVAPET

A breath of fresh air  
for PVC windows

PATENT  
REGISTERED

**TAVAPAN**

SWISS MADE 



## ecologically...

TAVAPET is composed of extruded PET (polyethylene terephthalate), which is made of recycled beverage bottles. New technologies allowed to foam up liquid PET and to form it to board materials. The new material is characterized by its outstanding properties: A low weight, high mechanical strength combined with residual flexibility and a maximal functional durability, even under the influence of wetness and frost.



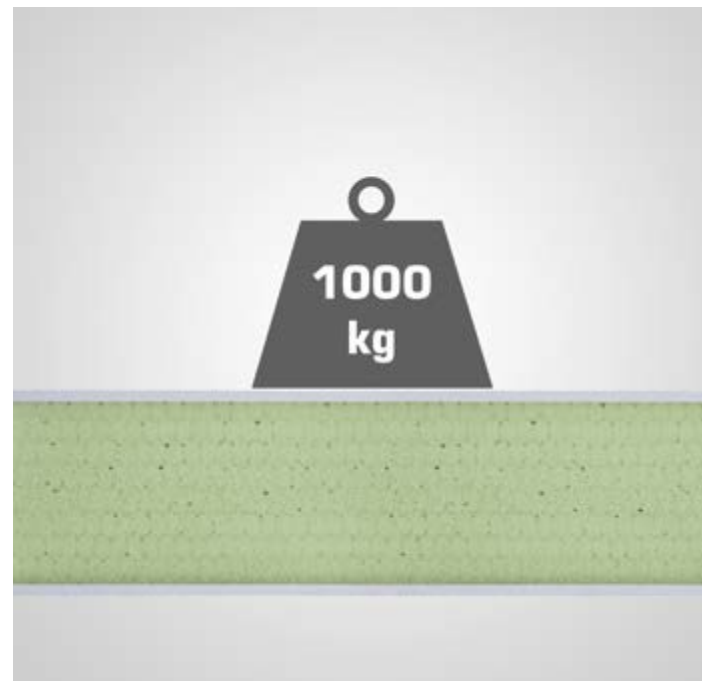
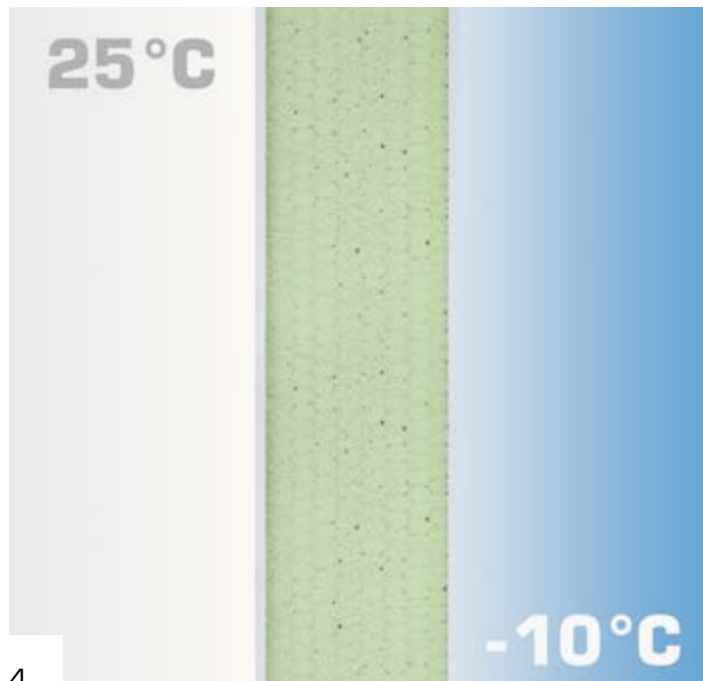
... produced

advantageous...



- Water & frost resistant (closed foam structure)
- Consistent against alkalies
- Outstanding fatigue strength
- Low density variance ( $\pm 5 \text{ kg/m}^3$ )
- High mechanical strength through high pressure resilience
- High stability and high resistance in shear stress
- Very good thermal insulation
- Environment-sparing,  $\text{CO}_2$  neutral production of the PET foam
- Recycling material, no additional environmental pollution
- Multiple usage because of a closed recycling loop
- no concealed edge bands, no bars

... in its properties







## innovative...

The PET foam has become a perfect core material for composites. It has already been successfully applied in wind power plants. Due to the excellent properties of the foam, Tavapan is able to use it for new fields of application. Tavapan's primary aim is to improve the thermal insulation properties of PET in its application as frame extension for plastic windows.



... in window installations





## technical facts...



### General

|             |   |
|-------------|---|
| Cover layer | PVC, polyvinyl chloride   |
| Core layer  | PET foam, polyethylene terephthalate in colors green, white and others  |
| Format      | Integral boards 5200 x 1020 mm (thicknesses 70 - 88 mm)<br>Integral boards 3010 x 1020 mm (thicknesses 28 - 40 mm)<br>Cut into stripes or tailored. |
| Processing  | Can be planed and sawn like common timber boards. Can be stuck together with the PVC frame. Can be screwed with window fixation screws.             |

### Specifications

|                         |      |       |       |       |       |                      |
|-------------------------|------|-------|-------|-------|-------|----------------------|
| Element thickness       | 36   | 70    | 70    | 84    | 84    | [mm]                 |
| Cover layer thickness   | 1.5  | 2.5   | 4     | 2.5   | 4     | [mm]                 |
| Core layer thickness    | 33   | 65    | 62    | 79    | 76    | [mm]                 |
| Sound insulation        | 27   | 28    | 34    | 28    | 34    | [dB]                 |
| Thermal insulation val. | 0.73 | 0.39  | 0.41  | 0.33  | 0.34  | [W/m <sup>2</sup> K] |
| Weight                  | 6.85 | 12.23 | 16.16 | 13.37 | 17.29 | [kg/m <sup>2</sup> ] |

< More thicknesses available on demand

### PET foam

|                      |                       |        |                      |
|----------------------|-----------------------|--------|----------------------|
| Density              | ISO 845               | ca. 80 | [kg/m <sup>3</sup> ] |
| Compressive strength | ASTM D 1621 b         | 1      | [MPa]                |
| Compression module   | ASTM D 1621 b ISO 844 | 75.6   | [MPa]                |
| Shear strength       | ISO 1922              | 0.6    | [MPa]                |
| E-module             | ISO 1922              | 20     | [MPa]                |
| Shear stress factor  | ISO 1922              | 35     | [%]                  |
| Tensile strength     | ASTM C 297            | 2.1    | [MPa]                |
| Tensile module       | ASTM C 297            | 75     | [MPa]                |
| Thermal conductivity | DIN EN ISO 12667      | 0.0276 | [W/mK]               |
| Fire resistance      | EN ISO 11925:2        | B2     | -                    |



... about the product

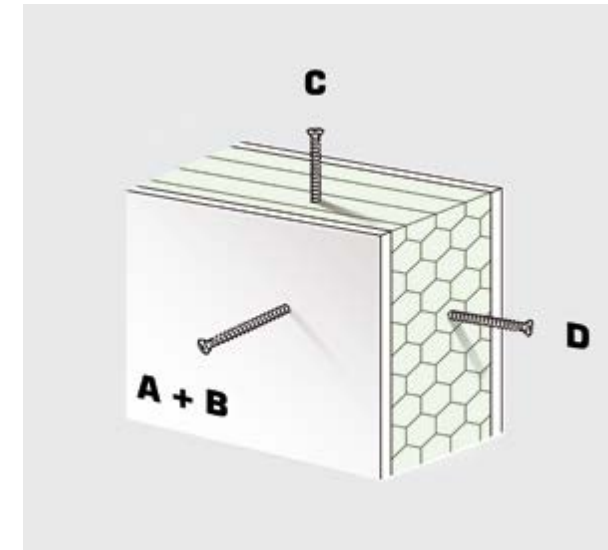




## approved...

With the increasing demands and requirements of a component, nothing should be left to chance. For this reason the products of TAVAPAN are constantly checked by qualified institutions.

TAVAPET was tested by the Swiss Federal Laboratories for Materials Testing and Research (EMPA) in Dübendorf. With the characteristic material values gained, stresses can be estimated in practice. We will be happy to advise you personally for your individual applications. Concentrate on the essentials, we will take care of the functionality of your composites.



### Resistance against axial withdrawal of screws

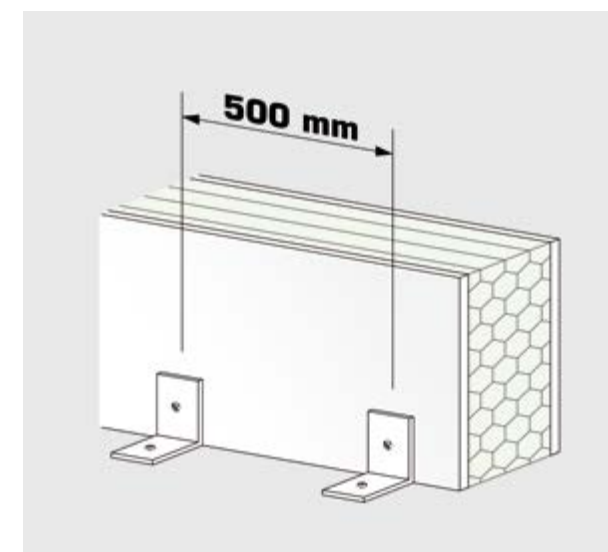
The axial withdrawal resistance was measured from four different screw positions.

$F_{ax}$  = Axial withdrawal force [N]

$h$  = Screw entrance depth [mm]

$f_{ax}$  = Axial withdrawal resistance [MPa = N/mm<sup>2</sup>]

| Screw position | Element structure [mm] | $F_{ax}$ [N] | $h$ [mm] | $f_{ax}$ [MPa] |
|----------------|------------------------|--------------|----------|----------------|
| A              | 2.5 / 65 / 2.5         | 780          | 40       | -              |
| B              | 4 / 62 / 4             | 1240         | 40       | -              |
| C              | -                      | 830          | 90       | 1.8            |
| D              | -                      | 740          | 90       | 1.6            |



### Bending strength

The axial distance of the supports was 500 mm in the bending test. The linear load was placed in the middle of this distance.

$f_m$  = Bending strength [MPa = N/mm<sup>2</sup>]

$E_m$  = Substitute bending stiffness [kNm<sup>2</sup>]

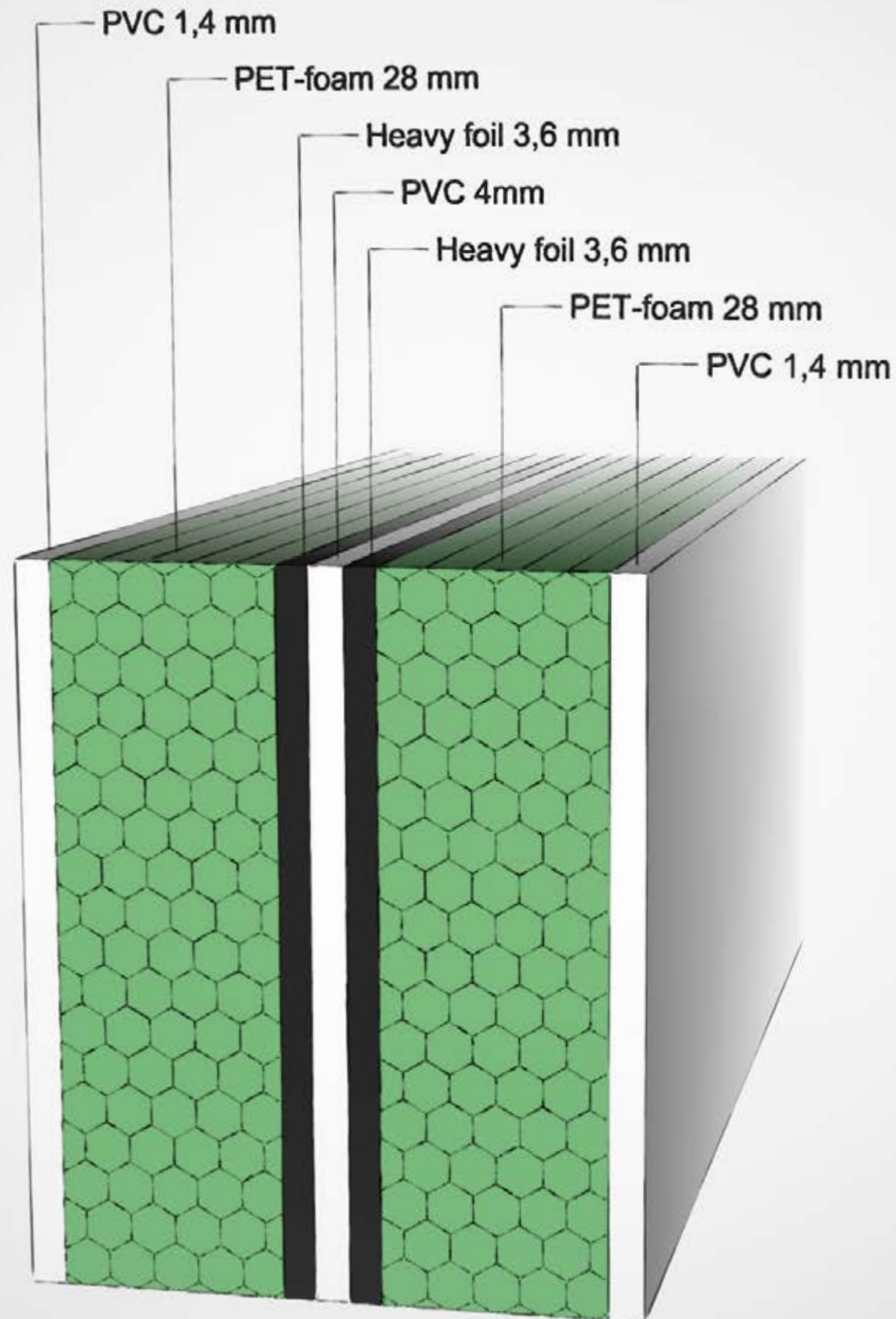
$F_{max}$  = Force at break [kN]

| Element structure [mm] | $f_m$ [MPa] | $E_m$ [kNm <sup>2</sup> ] | $F_{max}$ [kN] |
|------------------------|-------------|---------------------------|----------------|
| 2.5 / 65 / 2.5         | 3.15        | 1.34                      | 2.76           |
| 4 / 62 / 4             | 3.61        | 1.53                      | 3.18           |

... to be implemented in practice

## noise-absorbing...

For today's urban environment, it is necessary to improve sound insulation to guarantee the most comfortable living experience. TAVAPAN has for this matter developed a custom TAVAPET with advanced acoustic insulation for window head applications.



### Airborne sound insulation according to EN ISO 140-3

This high-end product is laboratory-confirmed in accordance with EN ISO Norm 140-3 and has outstanding sound insulation as well as spectrum adjustment values.

#### Weighted Apparent Sound Reduction Index

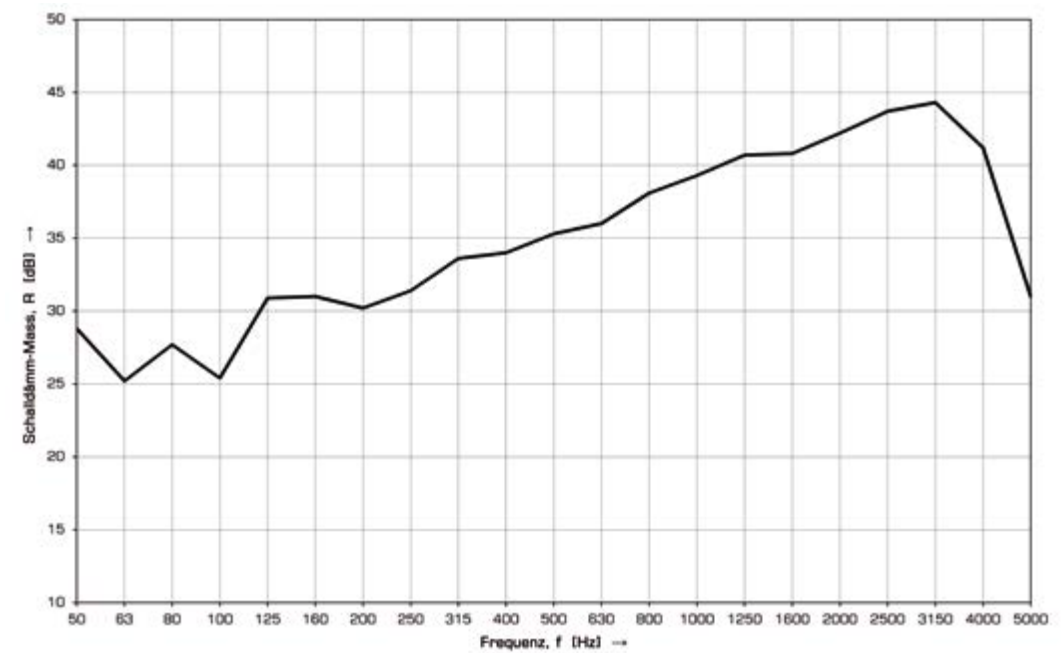
according to EN ISO 717-1

$R_w = 39 \text{ dB}$

#### Traffic A-weighted Spectrum

according to EN ISO 717-1

$C_{tr} = -3 \text{ dB}$







... in the  
processing

## practical...

A good material is not only characterized by its outstanding properties but also by good processability. TAVAPET can be processed like common wood boards. Sawing and planing are excellent examples that allow you to precisely equalize tolerances on the site. Its practical processability allows TAVAPET maximum flexibility in every area of application.

### Sticking with SikaFast®

The adhesive system SikaFast® offers a good combination of a relatively long workability on one hand and a fast strength development on the other hand. Only few minutes after the joining of the components already 80 % of the ultimate strength are reached.

### Screwing with window fixation screws

For the screwing, long and not self-drilling screws with a large diameter are recommended. Particularly suitable are the window fixation screws of the firm Ferronorm.

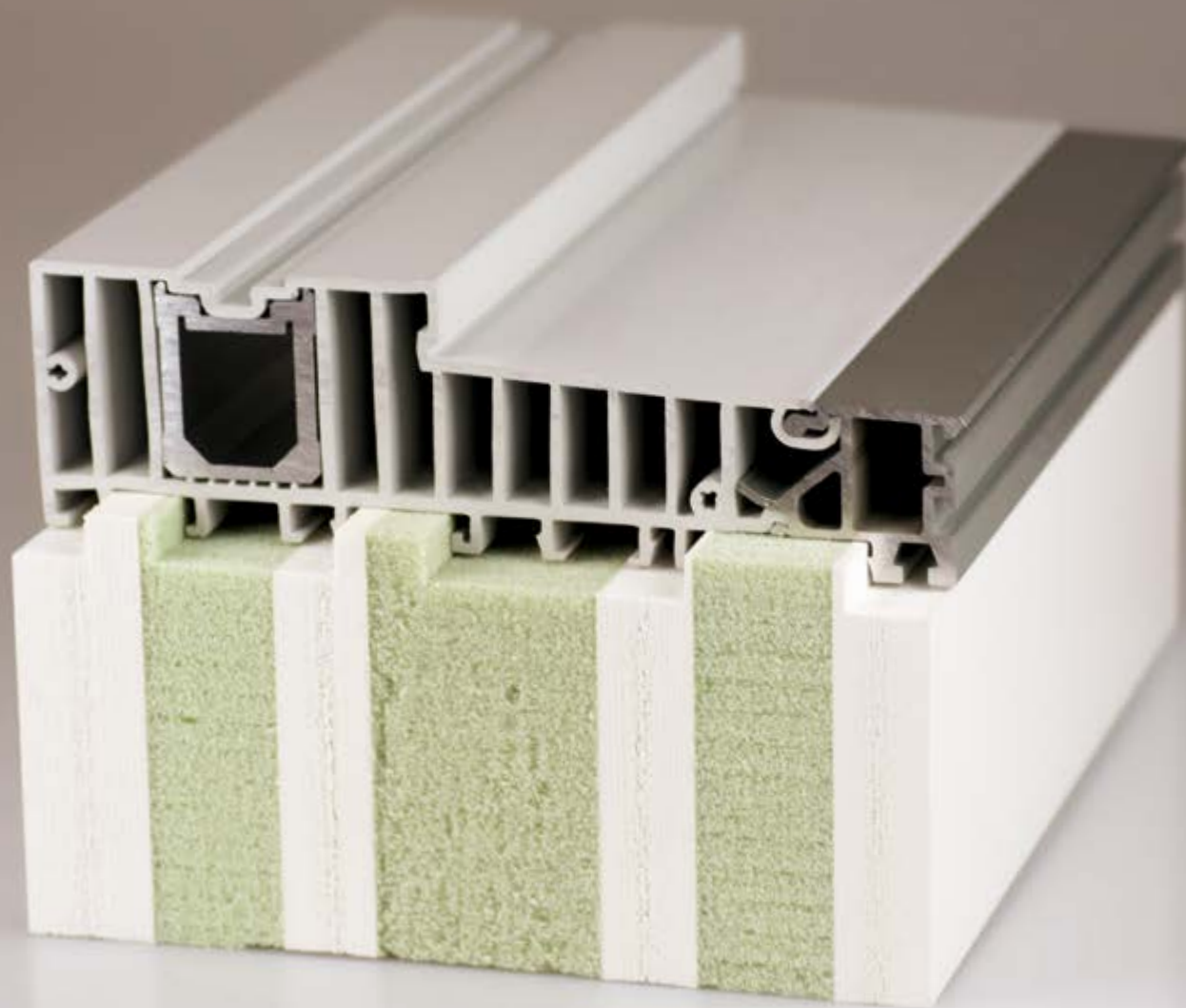




## elementary...

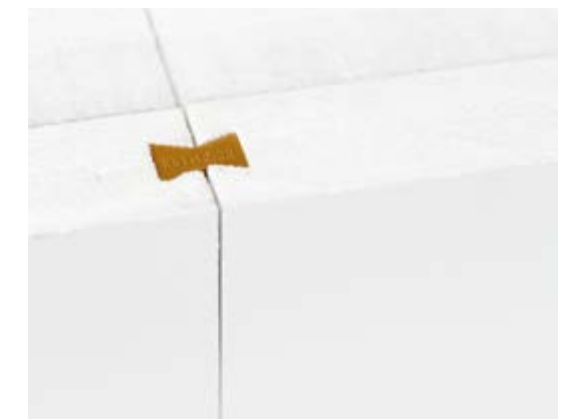
With TAVAPET, the water resistance in the base area of lift and slide doors reaches a new level. The compact and lightweight TAVAPET base element provides an ideal transition of the building envelope to the element profile. In addition to the good mechanical and climatic properties TAVAPET also offers good processing options.

|                                |   |
|--------------------------------|---|
| Standard construction (200 mm) | <ul style="list-style-type: none"> <li>■ 24 mm integral foam board</li> <li>■ 25 mm PET</li> <li>■ 16 mm integral foam board</li> <li>■ 60 mm PET</li> <li>■ 24 mm integral foam board</li> <li>■ 35 mm PET</li> <li>■ 16 mm integral foam board</li> </ul> <p>More constructions on request.</p>     |
| Standard length                | up to 5200 mm (also over 5200 mm possible)  |
| Thermal insulation value       | approximately 0.2 W/m <sup>2</sup> K  |
| Acoustic insulation value      | approximately 40 dB   |
| Weight                         | approximately 49 kg/m <sup>2</sup> (with standard construction)   |
| Advantages                     | <ul style="list-style-type: none"> <li>■ water resistant</li> <li>■ frost resistant</li> <li>■ consistent against alkalies</li> <li>■ compact and dimensionally stable element</li> <li>■ good processability (sawing, planing)</li> <li>■ can be screwed</li> <li>■ can be stuck together</li> </ul> |



### Lengths over 5200 mm

The connecting pin of the company Hoffmann is an optimum solution for lengths over 5200 mm.



... for lift and slide doors

open...

Some technical challenges require specific advice. The team of TAVAPAN will be glad to assist you to find the best solution possible. Be it is for a quotation or for information about our products, please do not hesitate to contact us.

Tavapan SA  
Rue de la Dout 10  
2710 Tavannes

Tel. +41 32 482 64 30  
Fax. +41 32 482 64 40

[tavapan@tavapan.ch](mailto:tavapan@tavapan.ch)

Further informations:  
[www.tavapan.ch](http://www.tavapan.ch)

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TAVAPAN SA  
Rue de la Dout 10  
2710 Tavannes BE

Tel. +41 32 482 64 30  
Fax +41 32 482 64 40  
[tavapan@tavapan.ch](mailto:tavapan@tavapan.ch)