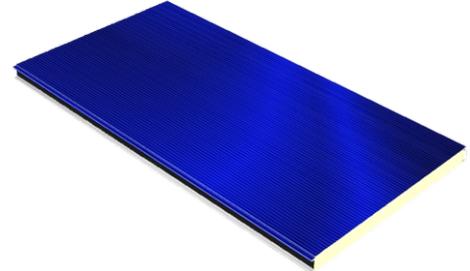


TECHNICAL CHART

Product : 60 mm PUR PV



'POLAR' thermal insulation wall panel, with a visible fastening system, with (upper and lower) sides made of (PES, PVDF..) galvanised steel sheets with galvanic protection, and with a 60 mm thick expanded polyurethane core.

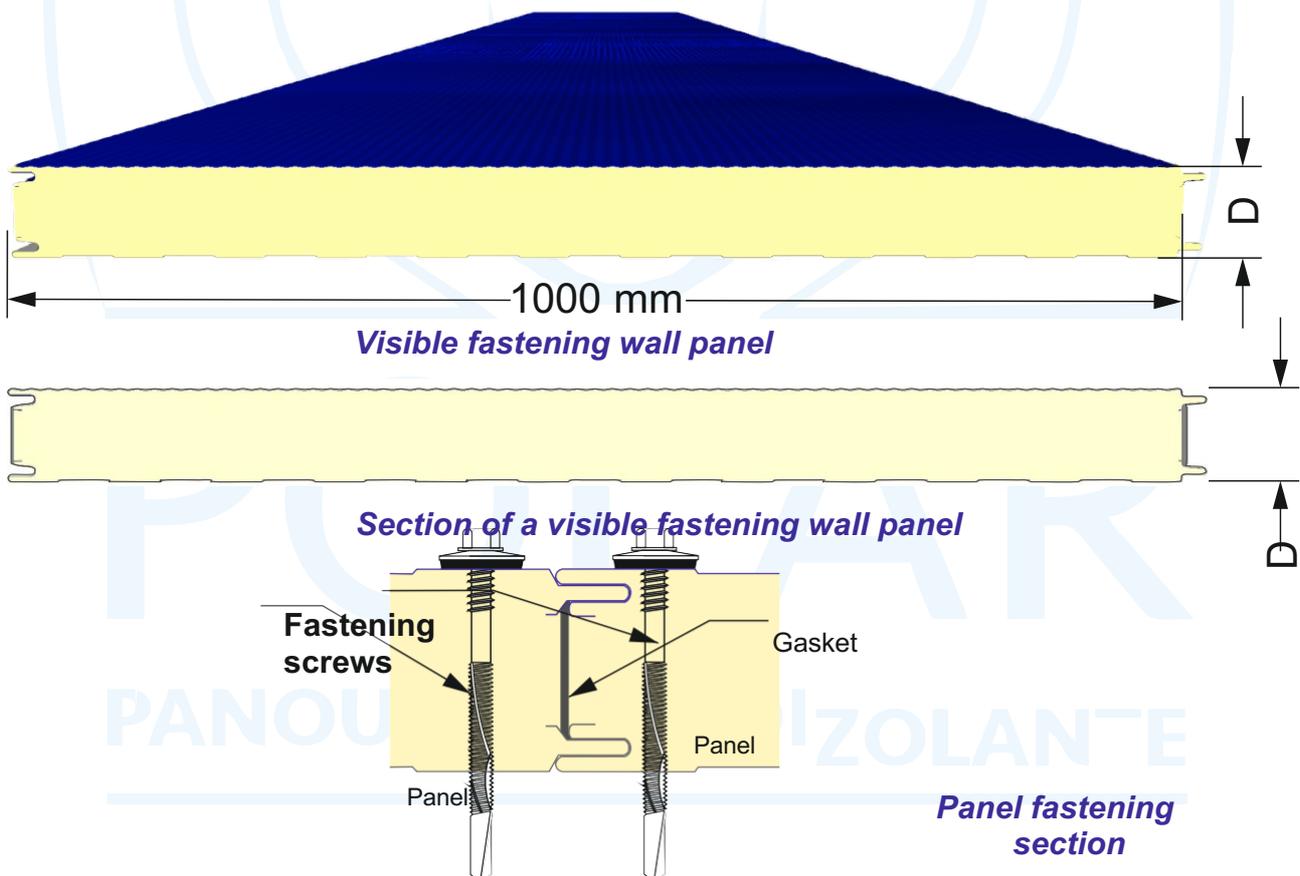
Sheet painting takes place by the coil-coating procedure, which provides both evenness to the thin layer of paint and its perfect adherence to the supporting layer.

The thickness for the two sheet sides takes into account the applications of the panel and includes all the layers of protection. The insulating core of PV 60 mm - PUR is of $\rho = 39.5 \text{ kg/m}^3$ minimum density polyurethane (PUR) (thermal transfer coefficient $\lambda = 0.021 \text{ W/m}^2\text{K}$).

Polyurethane is a rigid foam, ensued from the controlled mixture of 4 components (a polyol-polyester, flame retardant agent and stabiliser mixture + MDI (methylene diphenyl diisocyanate) isocyanate + reaction catalyst + expansion agent - pentane).

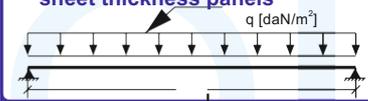
At least one side of the panels is protected by a 50 μm polyethylene film.

The 'POLAR' panels meet the requirements of the European standards and of the international agreements pertaining to the emissions of substances that damage the ozone layer, they do not contain CFC – HCFC and do not add to the global warming phenomenon.



| | | |
|-------------------------------|------------------------------------|--|
| General product data : | Usable width | 1000 mm |
| | Overall width | 1024 mm |
| | Thermal insulation thickness (mm) | 40 50 60 80 100 120 150 180 |
| | Rib height (micro-ribbed profiles) | 1.0 mm |
| | Rib height (standard profiles) | 15 mm |
| | Rib height (micro-cased profiles) | 2.0 mm |
| | Rib height (cased profiles) | 3.0 mm |
| | Rib pitch (micro-ribbed profiles) | 15 mm |
| | Rib pitch (standard profiles) | 87 mm |
| | Rib pitch (micro-cased profiles) | 100 mm |
| | Rib pitch (cased profiles) | 333.33 mm |
| | Available lengths | 2 m – 15 m |
| | Colours | RAL |
| | Panel length tolerance | For L ≤ 6m => ± 4 mm For 6 ≤ L ≤ 12m => ± 6 mm For L ≥ 12m => ± 8 mm |
| | Panel width tolerance | ± 3 mm |
| Panel thickness tolerance | ± 2 mm | |

| | | | | |
|------------------------------------|---|--------------------------|--------------------------|-------|
| Product performance items : | Weight | Kg/m ² | 11.08 | |
| | Shear strength (f _{cv}) | Mpa | 0.118 | |
| | Compression strength (δ ₁₀) | Mpa | 0.192 | |
| | Crosswise tensile strength on the panel (f _{ct}) | > 0,018 MPa | 0.125 | |
| | Bearing capacity upon flexure (Mu) | kNm/ m width | Upper side : | 6.247 |
| | | | Lower side : | 4.207 |
| | Bearing capacity upon flexure and bending stress over a central support | kNm/ m width | Descending load : | 3.657 |
| | | | Ascending load : | 2.967 |
| | Thermal transfer coefficient (K) | Kcal/m ² h °C | 0.292 | |
| | | W/m ² K | 0.340 | |
| | Thermal conductivity (λ ₁₀) | W/mK | 0.023 | |
| | Thermal resistance (R ₁₀) | m ² K/W | 2.94 | |
| | Water vapour permeability | - | 'Compliant' (waterproof) | |
| | Long-lastingness | - | 'Compliant' | |
| | Combustibility class / Reaction to fire | - | Unspecified | |
| Fire resistance | - | Unspecified | | |

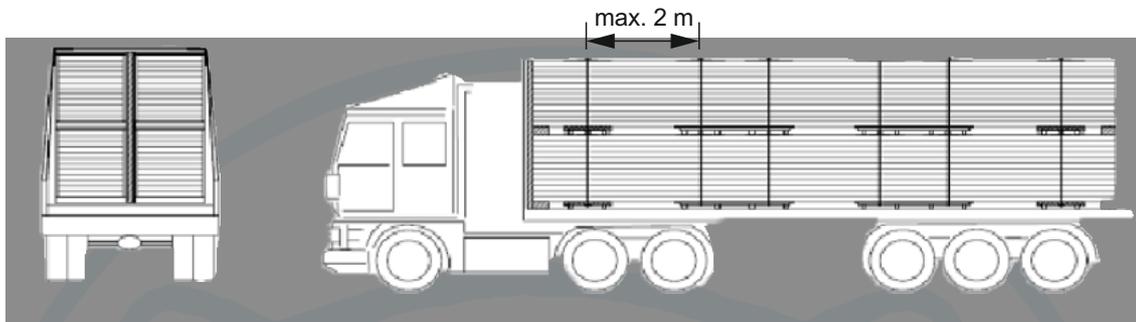
| Allowable loads table : | Allowable loads table It contains the allowable free sizes, in metres, corresponding to each evenly distributed load, insofar as to guarantee a maximum less than not greater than l/200 arrow, while taking into account a safety coefficient (at the bending stress) greater than or equal to 3 | Allowable openings (m) for (simple) upholding on 2 supports; applicable to panels with 0.5 mm / 0.5 mm int./ext. sheet thickness panels  | <table border="1"> <tr> <td colspan="2"></td> <th colspan="11">Load</th> </tr> <tr> <td>G</td> <td>60</td> <td>80</td> <td>100</td> <td>120</td> <td>140</td> <td>160</td> <td>180</td> <td>200</td> <td>220</td> <td>240</td> <td>250</td> <td></td> </tr> <tr> <td>mm</td> <td colspan="11">daN/m²</td> </tr> <tr> <td>60</td> <td>4,20</td> <td>3,75</td> <td>3,45</td> <td>3,25</td> <td>3,05</td> <td>2,90</td> <td>2,75</td> <td>2,65</td> <td>2,55</td> <td>2,45</td> <td>2,35</td> <td></td> </tr> </table> | | | Load | | | | | | | | | | | G | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 250 | | mm | daN/m ² | | | | | | | | | | | 60 | 4,20 | 3,75 | 3,45 | 3,25 | 3,05 | 2,90 | 2,75 | 2,65 | 2,55 | 2,45 | 2,35 | |
|--|--|--|--|------|------|------|------|------|------|------|------|-----|-----|--|---|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|----|--------------------|--|--|--|--|--|--|--|--|----|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| | | | | Load | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | G | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | mm | daN/m ² | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 4,20 | 3,75 | 3,45 | 3,25 | 3,05 | 2,90 | 2,75 | 2,65 | 2,55 | 2,45 | 2,35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Allowable openings (m) for (multiple) upholding on 3 or more supports; applicable to panels with 0.5 mm / 0.5 mm int./ext. sheet thickness panels  | <table border="1"> <tr> <td colspan="2"></td> <th colspan="11">Load</th> </tr> <tr> <td>G</td> <td>60</td> <td>80</td> <td>100</td> <td>120</td> <td>140</td> <td>160</td> <td>180</td> <td>200</td> <td>220</td> <td>240</td> <td>250</td> <td></td> </tr> <tr> <td>mm</td> <td colspan="11">daN/m²</td> </tr> <tr> <td>60</td> <td>5,45</td> <td>4,90</td> <td>4,45</td> <td>4,10</td> <td>3,90</td> <td>3,65</td> <td>3,45</td> <td>3,30</td> <td>3,15</td> <td>3,05</td> <td>2,95</td> <td></td> </tr> </table> | | | Load | | | | | | | | | | | G | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 250 | | mm | daN/m ² | | | | | | | | | | | 60 | 5,45 | 4,90 | 4,45 | 4,10 | 3,90 | 3,65 | 3,45 | 3,30 | 3,15 | 3,05 | 2,95 | | | |
| | | Load | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| mm | daN/m ² | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 5,45 | 4,90 | 4,45 | 4,10 | 3,90 | 3,65 | 3,45 | 3,30 | 3,15 | 3,05 | 2,95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

$$q \text{ [daN/m}^2\text{]} \rightarrow \begin{cases} S_d = Y_G G_k + Y_{Q1} Q_{k1} + \sum_{i>1} Y_{Qi} \psi_{Qi} Q_{ki} & (1) \\ S_d = \sum_{j \geq 1} G_{kj} + Q_{k1} + \sum_{i>1} \psi_{0i} Q_{ki} & (2) \\ S_d = \sum_{j \geq 1} G_{kj} + \psi_{11} Q_{k1} + \sum_{i>1} \psi_{0i} \psi_{1i} Q_{ki} & (3) \end{cases}$$

(1) design value at the ultimate limit state (U.L.S.)
 (2) design value at the serviceability limit state (S.L.S.) – specific combination (commonly used for irreversible limit states)
 (2) design value at the serviceability limit state (S.L.S.) – frequent combination (used for deflections)
 '+' means 'in combination with'
 'Σ' means 'the combined effect of'

**Manager,
 Dan Popescu, Eng.**

Upon transporting the panels, they must not remain within the bracket on the platform of the means of transport. The vehicle used for transporting the panels must be equipped with straps, for securing purposes ; their number depends on the length of the panels carried and they should be placed 2 m one from the other. Elbow pieces on both ends of the pallets must face every strap, in order to avoid crushing the edges of the panels located above. The metal accessories carried in the same means of transport as for the panels are recommended to be separately packed and tied up.



On the working site, the panels are to be stored on flat clean surfaces, at a certain distance one from the other.

The pallets are to be protected from bad weather and mechanical damages (impacts, scratching, deformations).

Loading, unloading, storing and handling shall take place carefully ; it is therefore forbidden to throw down or to drag the panels, so as not to deform them, to break their thermal insulation or to damage the metal sheet.

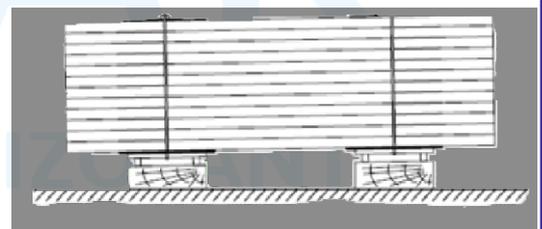
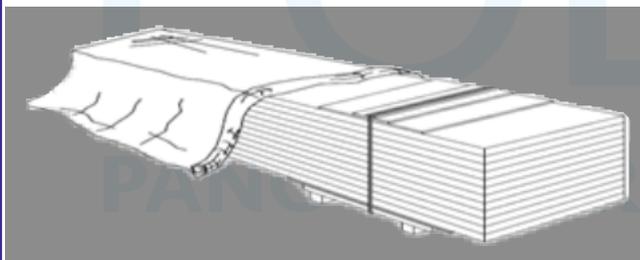
Packs loading & unloading and panels lifting at the level of the roof shall take place by crane, by means of adequate devices.

In order to unload smaller than 6 m pallets by forklift or crane, textile straps and spacers shall be used in the upper and lower parts of the pallets. The spacers should be 100 mm longer than the panels width.

Upon unloading more than 6 m long panels it is necessary to use a balancing beam alongside the textile straps. These ones shall be stretched, with the help of the spacers, in the upper and lower parts of the panels, as shown in the figure below. It is forbidden to use metal cables or chains for handling the panels.

As far as pallet stacking one above the other is concerned, a 30-day period should not be exceeded.

For protection against bad weather and UV rays, the pallets stored outside shall be covered with a tarpaulin and upon their placing on the ground, they shall be slightly inclined (3 % - 5 %), in order to enable the water to flow down.



Panels protection against bad weather

Panel positioning shall have a minimum 3 % - 5 % slope, for water flowing down purposes.

The panels should be mounted within maximum 1 month from their delivery. The protective film should be removed maximum 3 days after mounting.