

## Product Data Sheet

# Polyurethane Roof Slate Panel S. PU 4.12

Factory made self supporting double skin metal faced insulating polyurethane core panels.

### Advantages:

- Good reaction to fire (PIR)
- Excellent thermal insulation
- Very good carrying capacity
- Not contain hazardous substances

Cover width:  
**1000mm**

Nominal panel thickness:  
**40, 50, 60, 80, 100, 120 [mm]**

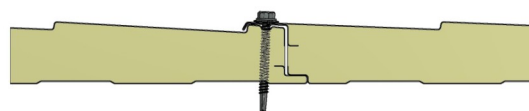
Available panel length:  
**From 2 m to 14 m**

Use in all building types:

- For slope roof cover
- For external and internal wall cover

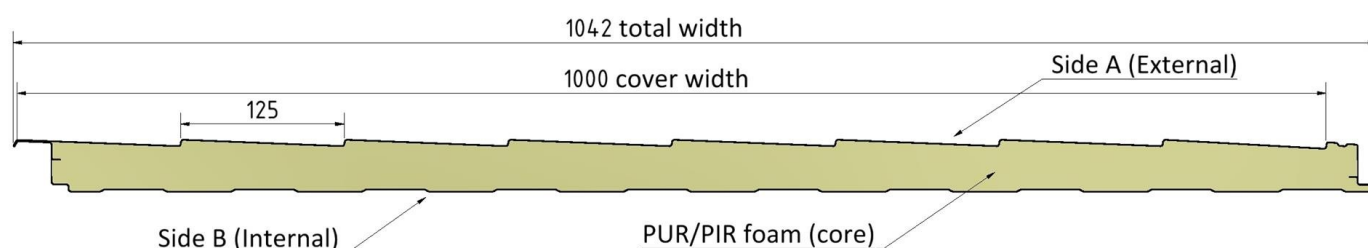
The innovating new design of the panel profile delivers excellent aesthetic results without compromising the characteristic properties of the panel. The panels can be used either for wall or roof covering.

- When the panels are used for wall covering it is recommended to install the panels horizontally and cover the vertical joints with flashings.
- When the panels used for roof covering is also recommended to install the panels horizontally. The slate panels should not installed with overlap.
- The minimum slope of the roof should not be less than 30%. The use of sealants at vertical and horizontal joints is necessary.



The polyurethane slate profiled panels are fixed to the structural element by the standard method of visible anchoring.

Slate effect design with element dimension 200x125mm



**Polyurethane Roof Slate Panel / S . PU 4.12****Dimensional Tolerances** (according to EN 14509)

Panel thickness	$\pm 2 \text{ mm}$	$D \leq 100 \text{ mm}$
	$\pm 2 \%$	$D > 100 \text{ mm}$
Deviation from flatness	$\leq 0,6 \text{ mm}$	$Li = 200 \text{ mm}$
	$\leq 1,0 \text{ mm}$	$Li = 400 \text{ mm}$
	$\leq 1,5 \text{ mm}$	$Li = 700 \text{ mm}$
Depth of light profile	$\pm 30 \%$	$ds \leq 1 \text{ mm}$
	$\pm 0,3 \text{ mm}$	$1 \leq ds < 3 \text{ mm}$
	$\pm 10 \%$	$3 \leq ds < 5 \text{ mm}$
Panel length	$\pm 5 \text{ mm}$	$L \leq 3000 \text{ mm}$
	$\pm 10 \text{ mm}$	$L > 3000 \text{ mm}$
Panel cover width	$\pm 2 \text{ mm}$	$W = 1000 \text{ mm}$
Deviation from squareness	$\leq 6 \text{ mm}$	$W = 1000 \text{ mm}$
Deviation from straightness	$\leq 1 \text{ mm/m}$	$\leq 5 \text{ mm}$
Bowing (Length)	$\leq 2 \text{ mm/m}$	$\leq 20 \text{ mm}$
Bowing (Width)	$\leq 8,5 \text{ mm/m}$	$h \leq 10 \text{ mm}$
	$\leq 10 \text{ mm/m}$	$h > 10 \text{ mm}$
Pitch of profile	$\pm 2 \text{ mm}$	$h \leq 50 \text{ mm}$
	$\pm 3 \text{ mm}$	$h > 50 \text{ mm}$
Ribs width	$\pm 1 \text{ mm}$	For b1 value
Valleys width	$\pm 2 \text{ mm}$	For b2 value

Metal sheet thickness  $> 0,5 \text{ mm}$ **Metal sheet options**

Steel prepainted and galvanized sheets, produced according to EN 10204-2.2

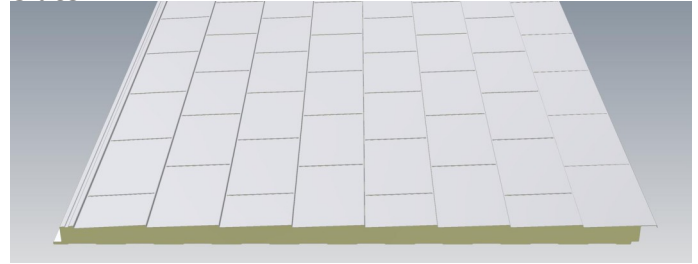
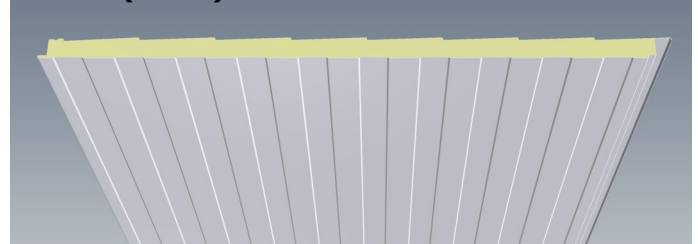
- Metal grade DX51D, S220, S250, S280, according to EN 10346 and EN 10143
- Hot-dip zinc coating, Z70 to Z275  $\text{gr/m}^2$
- AluZinc protection, az70 to az265  $\text{gr/m}^2$
- Nominal thickness from 0,35 mm **up to 1,0mm**
- Polyester, Plastisol or PVDF color coating

Aluminum uncoated with aluzinc protection or prepainted, produced according to EN 10204-3.1, EN 508-2

- Aluminum alloy of series 1xxx, 3xxx  $\dot{r}$  5xxx
- Hardness degree H14, H24  $\dot{r}$  H44
- AluZinc protection from az70  $\text{gr/m}^2$
- Nominal thickness from 0,35 mm to 1,0mm
- Polyester color coating with min 20 $\mu\text{m}$  thickness

Stainless Steel, produced according to EN 10088-1

- Metal grade AISI 304 2B  $\dot{r}$  AISI 316 L
- Nominal thickness from 0,35 mm to 1,0mm
- Mat or gloss color coating

**Metal Face profile options****Slate****Box 100(50-50)****Flat****Embossed****External face profiles:**

- Corrugation of Slate effect, smooth or embossed

**Internal face profiles:**

- Box 100(50-50)
- Flat
- Embossed

There is an option to produce panels where the internal metal sheet can be replaced with a flat polyester sheet of thickness up to 1mm, wherever the environment is extremely corrosive.

**Polyurethane Roof Slate Panel / S . PU 4.12****Color Coating Options**Typical Polyester coating

Polyester paints are the most common and the most economical coatings. They are suitable for both external and internal surfaces.

With a nominal thickness  $> 20\mu\text{m}$ , it has a very good resistance to external environmental conditions.

Durable Plastisol coating

Plastisol coating is very durable to external environmental conditions. It is suitable for outdoor applications where the durable requirements are high.

The nominal coating thickness is up to  $200\mu\text{m}$ .

High req PVDF coating

PVDF coating is suitable for buildings of architectural applications where the texture and color conservation are important. Also its reaction to fire is excellent because it has limited production of smoke, **class S1**. The nominal thickness is  $>50\text{mm}$ .

**Insulated polyurethane core PUR / PIR**

The **PUR** polyurethane foam core of high density  $40 \text{ kg/m}^3$  has excellent resistance to heat transfer. It is proven that is the best thermal insulation material in the construction sector.

It does not contain harmful substances, it is odorless and safe for health and the environment. It does not contain CFC & HCFC, ozone depleting substances. It is recyclable and can be used for production of secondary products.

Its closed cell structure is chemically neutral and this makes it resistant to moisture and mold. It is durable and its properties remain unchanged over time

In addition, PIR foam panels are difficult to ignite, suitable for buildings with structural fire resistance requirements. **PIR** polyurethane foam panels classified as **B-s1-d0** according to standard EN 13501-1, meaning they do not transmit fire, are difficult to ignite, have no/hardly any smoke production and do not produce flaming or non-flaming particles.

**Polyurethane core PIR  
Essential Characteristics**  
(according to EN 13165)

- Density,  $\rho \leq 40 \pm 2 \text{ kg/m}^3$
- Thermal conductivity,  $\lambda \leq 0.023 \pm 0.001 \text{ W/mK}$
- Adhesion,  $\text{adh} \leq 120 \text{ kPa}$
- Compression,  $\text{comp} \leq 150 \text{ kPa}$
- Stability,  $\text{dim} \leq 1.0\%$  at  $-20^\circ \text{C}$
- Stability,  $\text{dim} \leq 1.0\%$  at  $+70^\circ \text{C}$
- Structure, 90% closed cell
- Absorption  $\leq 3\%$  of mass
- **Reaction to fire (PIR), Bs1d0**

**Characteristic properties**

Panel nominal thickness	Panel Weight (W 1000mm)	Thermal transmittance (use in roofs)
[mm]	[kg/m <sup>2</sup> ]	U [W/m <sup>2</sup> .K]
40	10,0	0,57
50	10,4	0,45
60	10,8	0,37
80	11,6	0,29
100	12,4	0,23
120	13,2	0,19

**Panel weight**

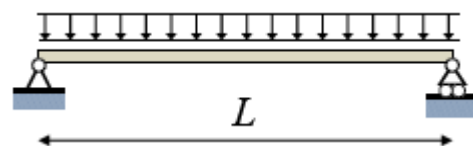
Panel weight was calculated including the following parameters:

- Core density of  $40 \text{ kg/m}^3$
- Metal sheets thicknesses 0,50 / 0,50 mm, (typical metal faces)

**Thermal transmittance U**

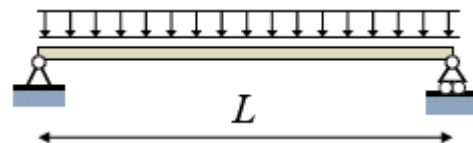
Panel thermal transmittance was calculated according to EN 14509 & EN 10211-2 including the following parameters:

- Core density of  $40 \text{ kg/m}^3$ ,
- Core thermal conductivity  $0,023 \text{ W/m.K}$ ,
- Metal sheets thicknesses 0,50 / 0,50 mm, Polyester coating (typical metal faces)
- Calculations based on the nominal thickness.

**Polyurethane Roof Slate Panel / S . PU 4.12****Maximum load in span - Load bearing capacity ( $\text{kg/m}^2$ )****Single span load table 0,5 / 0,5 mm**

Panel nominal thickness	Maximum span L [m]														
	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	4,25	4,50	4,75	5,00
<b>40</b>	170	130	105	80	65	50									
<b>50</b>	215	170	135	110	90	70	60	50							
<b>60</b>	265	210	175	140	115	95	85	70	55						
<b>80</b>	340	275	230	190	135	115	100	85	70	60	55	50			
<b>100</b>	410	340	280	235	205	175	150	130	115	100	90	75	70	60	55
<b>120</b>	465	385	325	280	240	205	185	160	140	130	110	100	90	80	70

- \* Calculations are made according to EN 14509, the values indicate the ultimate limit state or the serviceability limit state ( $l/200$ ).
- \* Steel sheet face thickness: external 0,50mm / internal 0,50 mm.
- \* Support width 100mm. Anchoring should be able to withstand the panel loads.

**Maximum load in span - Load bearing capacity ( $\text{kg/m}^2$ )****Single span load table 0,60 / 0,50 mm**

Panel nominal thickness	Maximum L [m]														
	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	4,25	4,50	4,75	5,00
<b>40</b>	175	135	110	85	70	55									
<b>50</b>	220	175	140	115	95	75	65	55							
<b>60</b>	270	215	180	145	120	100	90	75	60	55					
<b>80</b>	345	280	235	195	140	120	105	90	75	65	60	55			
<b>100</b>	415	345	285	240	210	180	155	135	120	105	95	80	75	65	60
<b>120</b>	470	390	330	285	245	210	190	165	145	135	115	105	95	85	75

- \* Calculations are made according to EN 14509, the values indicate the ultimate limit state or the serviceability limit state ( $l/200$ ).
- \* Steel sheet face thickness: external 0,60mm / internal 0,50 mm.
- \* Support width 100mm. Anchoring should be able to withstand the panel loads.

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