

Elyfoam® PP Steel composite panel

Technical datasheet

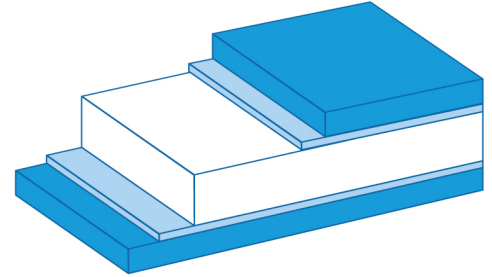
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Description

The Elyfoam® PP Steel composite panels are composed of two carbon steel skins combined with polypropylene foam (PP), joined together by adhesive bonding.

The Elyfoam® PP Steel composite panels are designed to meet the highest mechanical performance characteristics, especially bending stiffness, shear stiffness and compression strength.



The Elyfoam® PP Steel composite panels are particularly suited for any heavy duty industrial application where a combination of lower weight, extremely high mechanical performance, durability and cost efficiency is required. Typical applications are flooring systems, partitioning systems, doors, as well as temporary installations.

Product range

Standard panels

Composition

- Polypropylene (PP) foam with a density of 450 kg/m³.
- Two galvanized skins in several thicknesses: 0.25 mm, 0.4 mm and 0.6 mm, with several zinc coating thicknesses: Z100 (standard) and Z275 for an increased corrosion protection.
- Joined together by a high performance adhesion system.

Dimensions

PP Steel	Core	Skins	950 x 2400 mm	950 x 2750 mm
10.5 mm	PP 450 kg/m ³ 10 mm	Galva Z100 0.25 mm	•	•
20.5 mm	PP 450 kg/m ³ 20 mm	Galva Z100 0.25 mm	•	•

PP Steel	Core	Skins	1200 x 2400 mm	1200 x 2750 mm
10.8 mm	PP 450 kg/m ³ 10 mm	Galva Z275 0.4 mm	•	•
20.8 mm	PP 450 kg/m ³ 20 mm	Galva Z275 0.4 mm	•	•

PP Steel	Core	Skins	1200 x 2400 mm	1200 x 2750 mm
11.2 mm	PP 450 kg/m ³ 10 mm	Galva Z275 0.6 mm	•	•
21.2 mm	PP 450 kg/m ³ 20 mm	Galva Z275 0.6 mm	•	•

On request

Other compositions are available on request.

Composition	Different skin thickness
	Different core thickness and/or density (350 kg/m ³)
	Different steel grades

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Dimensions	<i>Minimum</i>	<i>maximum</i>	<i>tolerances</i>
<i>Length (**)</i>	400 mm	3000 mm	+/- 2 mm
<i>Width</i>	400 mm	1300 mm	+/- 2 mm
<i>Thickness</i>	10 mm	30 mm	+/- 0.4 mm

(*) Certain combinations might not be available

(**) A maximum length of up to 6000 mm is available upon special request

Surfaces	Protective foil
	Different colors (organic coating)
	Different zinc coating thicknesses

Technical characteristics

Weight, stiffness, compression & shear strength

The Elyfoam® PP Steel composite panels have an extremely high stiffness / weight ratio and outperform most competitive materials. The panels are also very resistant against compression.

Weight (kg/m²)	<i>0.25 mm</i>	<i>0.4 mm</i>	<i>0.6 mm</i>
<i>10.5 mm</i>	8.63		
<i>10.8 mm</i>		11.00	
<i>11.2 mm</i>			14.16
<i>20.5 mm</i>	13.13		
<i>20.8 mm</i>		15.50	
<i>21.2 mm</i>			18.66

Bending stiffness E*I (Nm²/m)	<i>0.25 mm</i>	<i>0.4 mm</i>	<i>0.6 mm</i>
<i>10.5 mm</i>	2764		
<i>10.8 mm</i>		4551	
<i>11.2 mm</i>			7092
<i>20.5 mm</i>	6125		
<i>20.8 mm</i>		9983	
<i>21.2 mm</i>			15359

Core Compression strength (MPa)	<i>Elyfoam® PP Steel</i>
<i>PP 450 kg/m³</i>	> 7

Core Shear strength (MPa)	<i>Elyfoam® PP Steel</i>
<i>PP 450 kg/m³</i>	..

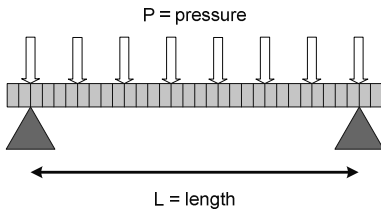
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Deflection



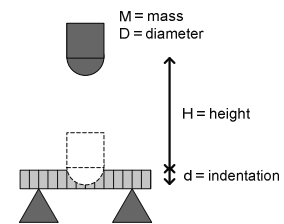
Deflection (mm) (*)	L = 1000 mm, W = 1000 mm,		
	0.25 mm, P = 1000 N/m ² (M _{tot} = 100 kg)	0.4 mm, P = 2500 N/m ² (M _{tot} = 250 kg)	0.6 mm, P = 5000 N/m ² (M _{tot} = 500 kg)
10.5 mm	4.8		
10.8 mm		7.4	
11.2 mm			9.7
20.5 mm	1.3		
20.8 mm		2.0	
21.2 mm			2.7

(*) calculated values including bending and shear stiffness.

Impact resistance

The steel skins have a very high resistance to impact and outperform most other light weight metal based composite panels.

Impact resistance (mm)	M = 2 kg, H = 1000 mm, diameter = 20 mm
Galva Z100 0.25 mm	6,6
Galva Z275 0.4 mm	5,4
Galva Z275 0.6 mm	4,1
1 mm aluminum (ref)	6,6



Damping and acoustic properties

The Elyfoam® PP Steel composite panels demonstrate excellent vibration damping properties in regard to other monolithic and composite materials. These properties are an important asset in the reduction of structural vibrations.

The Elyfoam® PP Steel composite panels also demonstrate good noise insulation properties.

Fire behavior

The complete panels reach an M1/F1 performance level in accordance with NF F16-101.

Weather resistance

- The Elyfoam® PP Steel composite panels are stable within a temperature range from -40 °C to +80 °C.
- The Elyfoam® PP Steel composite panels are resistant to salt water, oil, fats and most other agents. Please contact Elytra for specific corrosion protection requirements.
- Water absorption of the panels is minimal.

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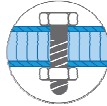

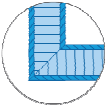
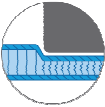

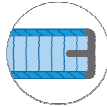
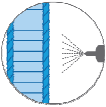
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Processing guidelines

Please refer to Elytra's 'Processing Guidelines for Steel Composite Panels' for following panel processing topics:

 <i>Cutting</i>	 <i>Milling</i>	 <i>Drilling</i>	 <i>Fastening</i>	 <i>Adhesive bonding</i>
 <i>Bending</i>	 <i>Pressing</i>	 <i>Joining</i>	 <i>Edge finishing</i>	 <i>Surface finishing</i>

Or contact Elytra for any further information.

Storage

Elytra advises to protect the panels from rain, penetration of moisture and condensation during storage. Elyfoam® PP Steel composite panels can be stacked up to a height of 2 m.

These datasheet represent the current state of our technical knowledge. Its purpose it to inform our customers about the Elyfoam® PP Steel composite panels and their applications. The datasheets do not guarantee particular properties or suitability for a specific application. We reserve the right to make changes in accordance with technological advancements and other developments.

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