

Elylite® Steel composite panel

Technical datasheet

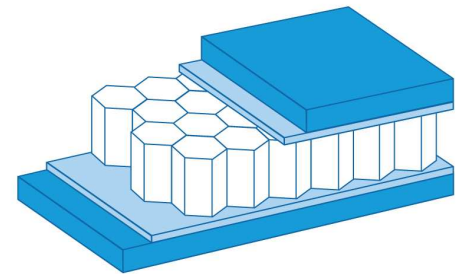
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Description

The Elylite® Steel panels are composed of two carbon steel skins combined with a honeycomb core (HC), joined together by adhesive bonding.

These panels are designed to meet the highest mechanical performance characteristics, especially stiffness, in relation to the lowest possible weight. The Elylite® Steel panels outperform similar panels with metal skins in terms of the performance / weight ratio and in terms of cost efficiency. Further, these panels are easily recyclable.



The Elylite® Steel panels are particularly suited for any industrial application where a combination of low weight, extremely high stiffness, durability and cost efficiency is required. Typical applications are construction, temporary installations, packaging, partitioning systems, floors, doors and furniture.

Product range

Standard panels

Composition

- Polypropylene Honeycomb Core with a density of 60 kg/m³ and 80 kg/m³.
- Two galvanized skins in several thicknesses: 0.25 mm, 0.4 mm and 0.6 mm, with several zinc coating thicknesses: Z100 (basis) and Z275 for an increased corrosion protection.
- Joined together by a high performance adhesion system.



Dimensions

HC Steel	Core	Skins	950 x 2400 mm	950 x 2750 mm
8.5 mm	HC 60 kg/m ³ 8 mm	Galva Z100 0.25 mm	●	●
12.5 mm	HC 80 kg/m ³ 12 mm	Galva Z100 0.25 mm	●	●
15.5 mm	HC 80 kg/m ³ 15 mm	Galva Z100 0.25 mm	●	●

HC Steel	Core	Skins	1200 x 2400 mm	1200 x 2750 mm
12.8 mm	HC 80 kg/m ³ 12 mm	Galva Z275 0.4 mm	●	●
15.8 mm	HC 80 kg/m ³ 15 mm	Galva Z275 0.4 mm	●	●
20.8 mm	HC 80 kg/m ³ 20 mm	Galva Z275 0.4 mm	●	●
24.8 mm	HC 80 kg/m ³ 24 mm	Galva Z275 0.4 mm	●	●

HC Steel	Core	Skins	1200 x 2400 mm	1200 x 2750 mm
16.2 mm	HC 80 kg/m ³ 15 mm	Galva Z275 0.6 mm	●	●
21.2 mm	HC 80 kg/m ³ 20 mm	Galva Z275 0.6 mm	●	●
25.2 mm	HC 80 kg/m ³ 24 mm	Galva Z275 0.6 mm	●	●

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On request

Other compositions are available on request.

Composition	Different skin thickness
	Different core thickness and/or density
	Different steel grade

Dimensions	<i>Minimum</i>	<i>maximum</i>	<i>tolerances</i>
<i>Length (**)</i>	400 mm	3000 mm	+/- 2 mm
<i>Width</i>	400 mm	1500 mm	+/- 2 mm
<i>Thickness</i>	8 mm	50 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 or aluzinc coating thicknesses

Technical characteristics

Weight, stiffness, compression & shear strength

The Elylite® Steel composite panels have an extremely high stiffness / weight ratio and outperform most competitive materials.

Weight (kg/m²)	<i>0.25 mm</i>	<i>0.4 mm</i>	<i>0.6 mm</i>
<i>8.5 mm</i>	4.62		
<i>12.5 mm</i>	5.10		
<i>12.8 mm</i>		7.47	
<i>15.5 mm</i>	5.34		
<i>15.8 mm</i>		7.71	
<i>16.2 mm</i>			10.87
<i>20.8 mm</i>		8.11	
<i>21.2 mm</i>			11.27
<i>24.8 mm</i>		8.43	
<i>25.2 mm</i>			11.59

Bending stiffness E*I (Nm²/m)	<i>0.25 mm</i>	<i>0.4 mm</i>	<i>0.6 mm</i>
<i>8.5 mm</i>	1789		
<i>12.5 mm</i>	3950		
<i>12.8 mm</i>		6470	
<i>15.5 mm</i>	6125		
<i>15.8 mm</i>		9983	
<i>16.2 mm</i>			15359
<i>20.8 mm</i>		17528	
<i>21.2 mm</i>			26789

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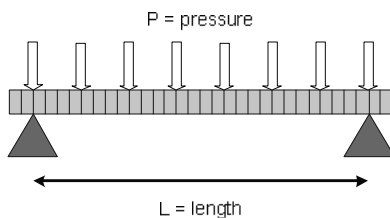
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24.8 mm		25088	
25.2 mm			38213

Core Compression strength (MPa)	<i>Elylite® Steel</i>		
HC 60 kg/m ³		0.7	
HC 80 kg/m ³		1.3	

Core Shear strength (MPa)	<i>Elylite® Steel</i>		
HC 60 kg/m ³		0.5	
HC 80 kg/m ³		0.5	

Deflection



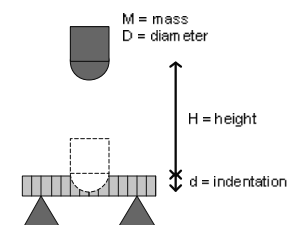
Deflection (mm) (*)	<i>L = 1000 mm, W = 1000 mm,</i>		
	<i>0.25 mm, P = 1000 N/m² (M_{tot} = 100 kg)</i>	<i>0.4 mm, P = 5000 N/m² (M_{tot} = 500 kg)</i>	<i>0.6 mm, P = 10000 N/m² (M_{tot} = 1000 kg)</i>
8.5 mm	8.5		
12.5 mm	4.2		
12.8 mm		14.3	
15.5 mm	2.8		
15.8 mm		9.9	
16.2 mm			15.2
20.8 mm		6.3	
21.2 mm			9.9
24.8 mm		4.7	
25.2 mm			7.6

(*) 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)	<i>M = 2 kg, H = 1000 mm, diameter = 20 mm</i>
Galva Z100 0.25 mm	6.6
Galva Z275 0.4 mm	5.1
Galva Z275 0.6 mm	4.1
1 mm aluminum (ref)	6.6



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Damping and acoustic properties

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

Fire behavior







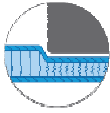

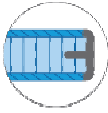
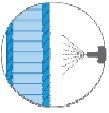
The complete panels reach an M1/F1 performance level in accordance with NF F16-101.

Weather resistance

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

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. Elylite® 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 Elylite® 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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