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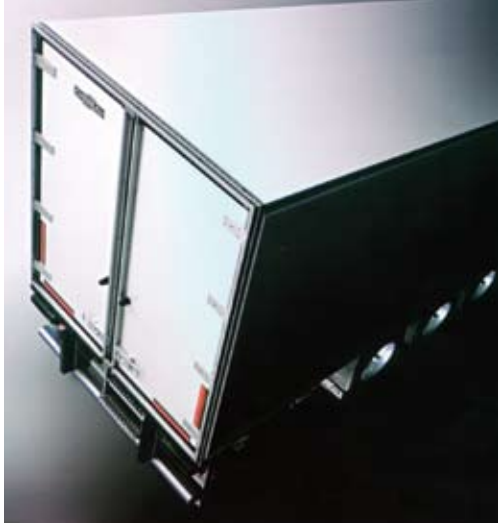
Exel Laminates

– Reinforcing Structures

Fibre Reinforced Laminates for
Industrial and Sport Applications

exel COMPOSITES



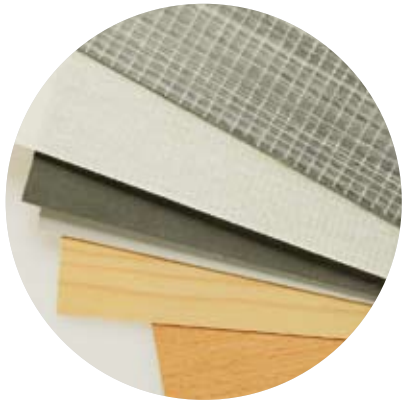
Reinforcing Structures

Exel laminates are typically utilized in structures where additional strength and stiffness is needed. With Exel laminate you can also create decorative surfaces and nice surface colours.

Versatile in many applications

Exel Composites designs and produces a wide range of special fibre reinforced laminates, which are used in both sporting goods and industrial applications. The laminates generally combine glass fibre rovings or fabrics, for high strength and stiffness, with a special epoxy resin system, which is used for maximum adhesion. The fibres can be in various directions depending on customer requirements: lengthwise or with additional 90° or +/- 45° for high torsional strength and stiffness. Carbon fibres can also be included to give improved strength and stiffness properties.

LAMINATE IN WOOD AND CHIPBOARD STRUCTURES INCREASE THE LOAD RESISTANCE



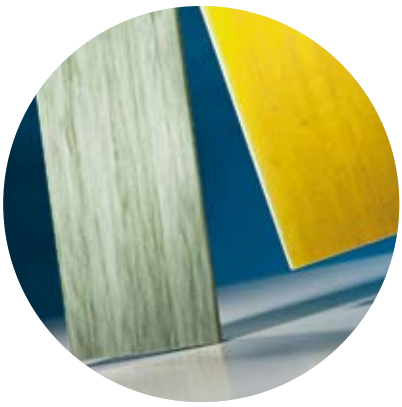
WITH THE LAMINATE YOU CAN INCREASE THE STRENGTH AND REDUCE THE WEIGHT OF THE STRUCTURE

Application areas

- Sport and leisure: skis, snowboards, wakeboards, archery, ice hockey, skate boards, other boards
- Transportation: ships, boats, trucks, trains
- Furniture: tables, chairs, shaped forms
- Building and construction: sandwich elements, walls, doors, reinforcing of structures
- Insulation products

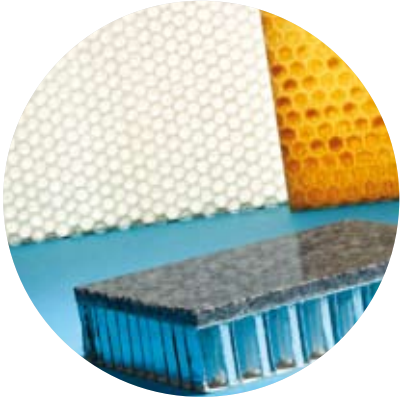
Tailored properties, your advantage:

- Excellent strength and stiffness properties
- Outstanding strength / weight ratio
- Excellent water and chemical resistance
- Special surface choices with printed papers (e.g. wood imitations), nonwovens or fabrics
- Good adhesion properties with commercial adhesives
- Glass laminates are electrical and thermal insulators
- Usage of composite laminates in wood construction minimize the effect of moisture absorption



GLASS LAMINATES ARE ELECTRICAL AND THERMAL INSULATORS

Laminates are always designed according to customer requirements. Fibre orientation, fibre types and thickness of the laminate ensure the optimized structure for each application.



EXEL LAMINATES ARE USED IN SANDWICH PANELS E.G. IN TRANSPORTATION INDUSTRY

STANDARD STRUCTURES

	Type	GlassUD [0°]	CarbonUD [0°]	GlassCW [90°]	Glass45 [±45°]	Thickness [mm]	E-mod. [Gpa]	Tens. strength [Mpa]	Density [kg/cm³]
Glass	U	100 %	-	-	-	0.35–1.1	42	900	2
	R	80–98 %	-	up to 20 %	-	0.5–1.1	25–40	500–850	2
	X	65–80 %	-	-	up to 20 %	0.6–1.1	21–28	400–600	2
Carbon/ Glass Hybrid	CU	80–98 %	up to 20 %	-	-	0.6–1.1	45–92	1 000	1.6–1.9
	CR	70 %	up to 20 %	up to 10 %	-	0.5–1.1	40–85	900	1.6–1.9

Carbon	Full carbon fibre laminates are available on request
Special	Special laminate lay-ups are available on request

Raw Materials
- Glass
- Carbon
- Carbon / glass hybrid structures
- Epoxy resin system

Structures
- Unidirectional
- 0/90° structures (UD/fabrics)
- 0/±45° structures (UD/fabrics)
- Special structures

Surface choices
- One side sanded
- Both sides sanded
- Decorative surface e.g. wood imitation paper, nonwoven, fabric
- Sanding grain size 36, 40, 100 or 150

Width
- 14–1,250 mm

Thickness
- Max. 1,1 mm

Length
- Cut to sheets or delivered in coils

Tolerances
- Width ± 0,5 mm
- Thickness ± 0,05 mm

LAMINATES ARE USED IN MANY SPORT AND LEISURE APPLICATIONS

ATTRACTIVE SURFACE COLOURS ARE IMPORTANT IN SPORTING APPLICATIONS

Exel Composites is a technology company which designs, manufactures and markets composite i.e. glass- or carbon fibre reinforced profiles, tubes and laminates for industrial applications. Exel was founded in 1960 and Exel's share is listed in the Small Cap segment of the NASDAQ OMX Helsinki Ltd. The core of the operations is based on own, internally developed continuous technologies. Continuous lamination enables the production of thin glass- and carbon laminates with very good mechanical properties. Pultrusion and Pullwinding technologies enable us to create optimised structures for each product according to customer requirements. Our long experience and continuous product development ensure always the most optimized solutions for our customers to be at the leading position in their field of business.

ISO 9001 BUREAU VERITAS Certification

2010

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