

EXEL TUBES



Exel Composites is the biggest manufacturer of lightweight and durable composite tubes with thin walls and the widest product range.

Tubes are manufactured utilizing various production technologies, always offering the best performance with optimized structures.

The EXEL EXELENSTTM high quality glassfibre tubes

The EXEL EXELENSTTM name stands for high quality glassfibre tubes with very good surface finish, manufactured by pullwinding process.

The Exelens nonwoven surface, whilst providing excellent finish and deep colours, also improves other properties such as UV- and chemical resistance.

Further increased chemical resistance is obtained by utilizing a vinylester instead of a polyester resin. FDA compliant resin system can be used also.

The EXEL EXELITETM HYBRID tubes combining high performance and economy

The EXEL EXELITETM HYBRID is a range of tubes made by pullwinding process where both glass fibres and carbon fibres are utilized. EXEL EXELITETM HYBRID tubes are made with a vinylester resin, but also various epoxy based hybrid resins can be used. Hybrid structure targets for both high performance and economical solution that can

be reached by optimizing the structure and fibre types.

EXEL EXELITETM HYBRID tubes re used in applications where high stiffness, low weight and competitive costs are requirements.

The EXEL EXELITETM for high stiffness and strength

The EXEL EXELITETM is a range of carbon fibre tubes made by pullwinding technology. The tubes are made with a vinylester resin, but can also be supplied with an epoxy resin which gives higher impact resistance. EXEL EXELITETM tubes are used in applications with extreme demands on the stiffness, strength and weight. In these tubes different carbon fibre reinforcements are used to increase the stiffness. HS, IM and HM-fibres can be combined in the structure, yielding stiffness values of 90-180 GPa.

The EXEL ULTRALITETM tubes for high compression strength demands

The EXEL ULTRALITETM is a range of glass and/or carbon fibre tubes manufactured by pultrusion process. The tubes are made with a vinylester resin, but can also be supplied with various epoxy based hybrid resins. By using these hybrid structure the optimum ratio performance is reach with the most economical impact. EXEL ULTRALITETM tubes are used in applications where replacing aluminium on the stiffness, economical and weight focus.

The structure of EXEL ULTRALITETM tubes with fabric surface is an optimum solution when high compression strength is required, tubes having more than 2 times better transverse compression strength than EXELITE tube. EXEL ULTRALITETM tubes come with very thin wall, starting from 0,9 mm

The EXEL CrossliteTM tubes for requirements of high crosswise strength and hightech appearance

The EXEL CROSSLITETM is a range of carbon fibre tubes manufactured by pullwinding process. The tubes are made with a vinylester resin, but can also be supplied with various epoxy based hybrid resins. By using these hybrid resins higher impact resistance is achieved.

In EXEL CROSSLITETM tubes the crosswise fibres are used at the surface as well as in the structure to achieve a high crosswise strength. These tubes are ideal in applications with very high demands for stiffness, strength, light weight and high-tech appearance. In these tubes various carbon fibre reinforcements are used to reach the stiffness requirements.

HS, IM and HM-fibres can be combined in the structure, yielding stiffness values of 100-200 GPa.



PRODUCT SPECIFICATION

THE EXEL CROSSLITE™ tubes for requirements of high crosswise strength and hightech appearance

Typical minimum production quantity for EXEL CROSSLITE™ tubes is 500 meters.

The EXEL EXELENSTM high quality glassfibre tubes

Typical minimum production quantity for EXEL EXELENSTM tubes is 1000 meters

THE EXEL EXELITESTM HYBRID tubes combining high performance and economy

Typical minimum production quantity for EXEL EXELITESTM HYBRID tubes is 500 meters

The EXEL EXELITESTM for high stiffness and strength

Typical minimum production quantity for EXEL EXELITESTM tubes is 500 meters

THE EXEL ULTRALITESTM tubes for high compression strength demands

Typical minimum production quantity for EXEL ULTRALITESTM tubes is 500 meters

MANUFACTURING METHOD	Pullwinding		Pullwinding	Pullwinding	Pullwinding	Pultrusion	
STRUCTURE	UCUCC or UCCUCC Reinforcement structure: U = unidirectional fibers C = crosswise fibers		UCUV or UCUCUV Reinforcement structure: UCUV (75 ± 3 w-%) U = unidirectional fibers C = crosswinded fibers V = surface finish: Nonwoven veil (Exelens)	UCUV or UCUCUV Reinforcement structure: U = unidirectional fibers C = crosswinded fibers V = exelens nonwoven veil	UCU or UCUCU Reinforcement structure: U = unidirectional fibers C = crosswinded fibers	FUF or UCUFV Reinforcement structure: U = unidirectional fibers F = fabric C = cross fibers V = veil	
MATERIAL	Carbon fibre, vinylester resin (Epoxy also available)		Glass fibre, polyester resin	Carbon and glass fibre, vinylester resin (Epoxy also available)	Carbon fibre, vinylester resin (Epoxy also available)		Glass or hybrid fibre, vinylester resin (Epoxy also available)
DIAMETER RANGE O.D.	10–60 mm		4–250 mm	4–250 mm	4–60 mm		25–250 mm
WALL THICKNESS	1,00–4,00 mm**		1,50–4,00 mm**	1,00–4,00 mm**	1,00–4,00 mm**		0,90–4,00 mm**
COLOURS	Black		RAL Code	RAL Code	Black		RAL Code or Black when Carbon is used
FIBRE VOLUME CONTENT	65 v-%		58 v-%	58 v-%	58 v-%		56 v-%
FIBRE WEIGHT CONTENT	75 w-%		75 w-%	75 w-%	70 w-%		70 w-%
SURFACE FINISH	Crosslite™		Exelens™	Exelens™	Plain*		Fabric
WATER ABSORPTION	< 1,0w-%		< 2 w-%	< 2,0w-%	< 1,5w-%		< 1,5w-%
FIBER TYPE	HS Carbon	HM Carbon	Glass fibre	Glass and Carbon Fibre	HS Carbon	HM Carbon	Glass Fibre Carbon fibre
STIFFNESS GPa	100–120 GPa	120–195 GPa	35 GPa	70 GPa	90–100 GPa	120–180 GPa	25–35 GPa 70–90 GPa
BENDING STRENGTH MPa	600 MPa	600 MPa	> 450 MPa	> 500 MPa	> 600 MPa	> 500 MPa	> 350 Mpa > 400 Mpa
TENSILE STRENGTH MPa	800 MPa	800 MPa	> 500 MPa	> 600 MPa	> 650 MPa	> 550 MPa	> 400 Mpa > 450 Mpa
DENSITY g/cm3	1.65g/cm ³	1.65g/cm ³	1,9g/cm ³	1,8g/cm ³	1,65g/cm ³	1,65g/cm ³	1,9g/cm ³ 1,8g/cm ³

*) Exelens nonwoven surface is also available
**) Thicker wall thickness on request