LAMILUX

LAMILUX X-treme

THE MATERIAL WITH A CONFIDENCE GUARANTEE!

Customized
Intelligence
Dem Kunden dienen als Programm

TO INSPIRE AND ADVISE: OUR PROMISE TO YOU!

“Inspiring customers around the world with innovative and creative product solutions are the driving force behind LAMILUX. Every day we re-orientate our actions on the wishes and requirements of our exacting clients. This is the focus of our entrepreneurial mindset.”

Dr. Heinrich Strunz, third-generation managing director of LAMILUX Heinrich Strunz GmbH

FLEXIBILITY AND STABILITY: THE STRONGEST CONNECTION!

LAMILUX stands for flexibility and stability at the same time – in terms of both materials and cooperation with customers and partners.

What benefits does our product offer our customers? This question is at the heart of our actions – it defines our corporate governance and material development in the same measure! LAMILUX stands for premium performance: Consistent quality ensures maximum benefits for customers. Thanks to continuous development, we are the technology leaders. For us, service means quick, easy, reliable and friendly advice – including individual, tailor-made solutions!

BEST-IN-CLASS SERVICE

HIGHEST COMPETENCE

GUARANTEED QUALITY

POWERFUL INNOVATIONS

CAREFULLY CONSIDERED SOLUTIONS

CUSTOMER SATISFACTION

SUSTAINABILITY

VALUE ORIENTATION

Brilliant versatility and high performance potential: This makes next generation fibre-reinforced plastics the key material for the future! Many industries benefit from innovative solutions which are impossible to achieve with traditional materials. The X-treme product species see LAMILUX extend the limits of what is technically feasible and leverage all the performance potential of fibre-reinforced plastics.

MATERIALS WITH FAST LANE GUARANTEE ...

... MAKE YOU THE TOP PERFORMER!

Maximum reinforcement, minimum weight: With a maximum reinforcement fibre content of more than 50 vol.% and the extremely tough elastic epoxy matrix resin system, LAMILUX X-treme is the best performing composite material in the industry. Its strength and stiffness values exceed the values of most composite materials many times over. This allows for reduced use of materials, weight savings and better functionality!

The benefits of LAMILUX X-treme at a glance:

STIFFNESS
Thanks to the maximum possible volume of reinforcing fibres of around 50 vol.% and their application specific orientation, Lamilux X-treme materials achieve maximum stiffness.

IMPACT STRENGTH
Amazing impact strength thanks to visco-plastic elastic epoxy resin matrix and excellent embedding of the reinforcing fibres. This helps to prevent material damage in many cases, and significantly increases the service life.

LIGHTWEIGHT DESIGN
Thanks to the extremely high strength the material thickness can be reduced and weight saved without impacting the stability.

THERMAL EXPANSION
The reinforcement fibres deployed here exhibit virtually no expansion under the influence of temperature compared to matrix resins; this means that the thermal expansion can be reduced to the level of steel. Damage, such as blistering or material faults can thus be avoided.

HEAT STABILITY
The special, highly temperature-stable epoxy resin system and the extremely heat-resistant fibres, minimise material softening under temperature influence. Lamilux X-treme materials thus remain stable at high temperatures at which other fibre-reinforced plastics have long lost their stiffness.

TENSILE STRENGTH
Because very large quantities of reinforcing fibres exist, and especially because they are “infinitely” embedded in the visco-plastic elastic epoxy resin matrix, an enormous tensile strength of more than twice that of steels can be achieved – and with a significantly lower weight.

INSPIRED BY NATURE: INNOVATIONS THAT IMPRESS!

Fibre reinforcement based on natural models. For example, wood: All the fibres are orientated exactly in the main force flow direction. This guarantees an optimal reinforcement effect – little material, maximum load capacity!

LAMILUX X-treme

Continuous reinforcement fibre orientation in the direction of the force flow

Technical innovations are inspired by natural structures and compounds.

Load-bearing reinforcements through fibres are widespread in nature. We have followed these models and created materials, that combine the latest technology with a natural structure.

This ensures maximum efficiency in the use of materials: as much as necessary, as little as possible!

Fibre-reinforced composite material

New: The percentage of reinforcing fibres is maximised, and the epoxy resin matrix reduced to an optimum. The result: a strong high-performance material with low weight!

D BY NATURE:
TIONS THAT IMPRESS!

Reinforcement fibres made of glass or carbon are incorporated in the epoxy resin matrix as woven rovings or non-crimped fabrics. Depending on the application, the fibres uni-axially, bi-axially, or multi-axially orientated to suit the load requirements. The result: enormous tensile strength (more than twice as strong as steel) and minimal weight!

LAMILUX X-treme
WITH GLASS FIBRE REINFORCEMENT

- Up to 900 MPa tensile strength
- Up to 45 GPa tensile modulus of elasticity
- Low thermal expansion
- Exceptional impact resistance and damage tolerance

LAMILUX X-treme Carbon
WITH CARBON FIBRE REINFORCEMENT

- Up to 1300 MPa tensile strength
- Up to 100 GPa tensile modulus of elasticity
- Lowest thermal expansion
- Maximum lightweight design potential
- Impressive carbon fibre surface finish possible

“IT’S ALL ABOUT THE RIGHT MIXTURE: THAT’S THE ONLY WAY TO ENSURE EFFICIENCY!”

Whether team or material, it’s all in the mix: TTT The Team Composite AG, a flagship team of highly innovative engineers, who impress an XXXL advantage in terms of commercial vehicle technologies and carbon fibre applications!

“After designing a cooling semi trailer series previously our last-mile cooling vehicle with a weight of 3.5 tonnes is the second lightweight design project that we were able to implement with carbon fibre reinforced plastics by LAMILUX. In particular, the ultra lightweight design and the robustness of the body unit played a major role here.
We were able to save 56 kg of the superstructure and bottom plate weight through the use of LAMILUX materials – while still keeping maximum strength and stiffness. The carbon fibre-reinforced plastic also offers great advantages thanks to its outstanding thermal deformation resistance and low thermal expansion; after all, the box superstructures of refrigerated vehicles are especially exposed to extreme indoor and outdoor temperature changes.”

Ria Kaiser
CEO TTT Team Composites AG, Stade

MATERIAL IN USE:
LAMILUX X-treme Carbon GELCOAT
1.25 MM

“SAVING TIME IS GREAT. BEING AHEAD OF TIME IS BETTER!”

Always been ahead of its time. Safe transportation of persons – for generations this has been a tradition of the Portuguese Jonckheere family. As early as 1881, the great-grandfather of entrepreneur Patrick Jonckheere founded an automobile workshop! Still today, innovation and technical expertise are the writ large at Mercury Trading.

“We set ourselves the target of radically changing the traditional approach to building our bus side panels. In our search for a very stiff, impact-resistant and corrosion-free material LAMILUX was our first choice. This has now developed into a highly reliable development partnership. Thanks to the high fibre content, we can achieve very low thermal expansion, a precondition for direct adhesion bonding onto the steel without material faults occurring due to pronounced temperature fluctuations. In combination with extremely high stiffness and impact resistance, we have discovered a very durable and worry-free side panel material. Thanks to the unique panel design of the side panels, we can now skip several steps in our production. Painting has been eliminated completely; the installation is fast and easy. Our time and cost savings are huge!”

Patrick Jonckheere

Development partner “Bermuda Bus Project”, Mercury Trading

MATERIAL IN USE:
LAMILUX HIGH STRENGTH X-treme GELCOAT
2.5 MM

“TOP PERFORMANCE. AND GREAT LOOK: THEN EVERYTHING RUNS SMOOTHLY!”

The goal must be perfection: If you love winter sports, you will be familiar with Stöckli, the Swiss ski manufacturer from Malters. Toughest demands on the material – one of the main reasons for an international success story that has continued for decades!

“Our goal is always the best performance. For more turning compliance, we were looking to reduce the weight of our freeride skis, but without impacting the bending and torsional stiffness. We achieved this in the best possible way with the material LAMIsport X-treme Carbon, which also makes our product extremely impact- and thermal deformation resistant. This carbon laminate has helped us to combine lightweight design with exceptional handling and an attractive look – and thus to inspire our customers!”

Mathieu Fauve
Research and Development Ski, Stöckli Swiss Sports AG

MATERIAL IN USE:
LAMILUX LAMIsport X-treme Carbon 4 IN ONE
0.6 MM

Because perfection and premium belong together:
As a manufacturer of premium class motorhomes, Niesmann+Bischoff is one of Europe's leaders. Safety, service and customer satisfaction “for the best time in life” are particularly important to this subsidiary of the ERWIN-HYMER GROUP!

“REDUCED WEIGHT, OPTIMIZED DRIVING DYNAMICS. PERFECT FOR THE PREMIUM CLASS!”

“LAMILUX and Niesmann + Bischoff have maintained a partnership of trust for many years. Thanks to the use of the High Strength X-treme materials in the roofs of our motorhomes we have minimised hail damage, and achieved far higher resistance than with a traditional, thin sheet metal skin. As a positive secondary effect, we have saved weight at the most efficient point from dynamic driving viewpoint, the roof. This lowers the centre of gravity, which in turn significantly improves the handling characteristics of our motorhomes.”

Bastian Schwarz
Purchasing Manager Niesmann + Bischoff

MATERIAL IN USE:
LAMILUX HIGH STRENGTH X-treme GELCOAT
1.0 MM

HIGH-STRENGTH, ULTRA-LIGHT, EXTREMELY STABLE.

LAMILUX Composites is the leading European developer and manufacturer of fibre-reinforced plastics and has, for many years, held a leading position in the international composites market in the fields of transport, logistics, automotive and construction.

LAMILUX high-tech materials combine the latest technologies with expertise from 60 years of plastics production. We are experts for highly complex solutions for a variety of applications – with excellent quality and excellent service included on top!

LAMILUX is the world's first manufacturer of fibre-reinforced composites to have voluntarily submitted its laboratory and testing facilities to testing by TÜV Süd Deutschland and to have successfully obtained certification. The voluntary tests by the TÜV southern Germany ensure the highest quality standards. Our in-house Research and Development department uses cutting-edge, laboratory equipment and simulation environments to accompany our composites through all phases of their development, production, and life cycle.

Extensive material tests and analyses form the basis for reliably verifying the properties of LAMILUX composites and ensuring their resilience and durability. We are not satisfied until we can assure delivery quality to you with 100% reliability and without compromises.

TÜV SÜD geprüfte Qualität

STRUCTURE? VARIABLE. PERFECTION? GUARANTEED!

LAMILUX X-treme impresses: excellent design properties, extreme ruggedness, light weight – these are the convincing benefits of this high-tech-material!

The ultimate: load-orientated alignment of glass or carbon fibres! The reinforcing fibres are incorporated into the epoxy resin matrix with uni-axial, bi-axial or multi-axial orientation! This guarantees perfect adaptation to the respective requirements situation.

PERFORMANCE COMPARISON GRP vs. CRP vs. METAL

Strength-to-weight ratio

VARIANTS

UNIAXIAL [0°]

Uni-axial reinforcement for maximum performance in the longitudinal direction

Width:	max. 2.77 m (LAMILUX X-treme)
Front side:	optionally with gelcoat, lightly sanded or sanded
Reverse side:	lightly sanded or sanded

BIAXIAL [0 °/90 °]

Bi-axial reinforcement in longitudinal and transverse direction for balanced performance

Width:	max. 2.80 m (LAMILUX X-treme)
	and max. 2.45 m (LAMILUX X-treme Carbon)
Front side:	with gelcoat and lightly sanded
Reverse side:	lightly sanded or sanded

BIAXIAL [-45°/+45°]

Bi-axial reinforcement in both diagonal directions for good torsion performance

Width:	max. 2.50 m (LAMILUX X-treme and LAMILUX X-treme Carbon)
Front side:	with gelcoat and lightly sanded
Reverse side:	lightly sanded or sanded

STANDARD PRODUCT RANGE

		Thickness in mm	Surface weight in g/m²	Tensile strength in MPa in main direction of strengthening	E-module tension in MPa in main direction of strengthening	Fibre orientation
LAMILUX X-treme	#222	0,7	1.225	245	16.900	
	#315A	1	1.800	425	20.600	
	#134	1,25	2.225	400	23.000	
	#068	1,4	2.525	380	23.000	
	#345	1,85	3.450	440	22.600	
	#275	2,1	3.900	510	25.700	
	#234	2,5	4.375	390	22.600	
	#272	0,6	1.000	240	15.100	
	#325	0,9	1.550	260	18.500	
	#311A	1,1	1.950	350	20.500	
	#351	1,4	2.450	340	20.300	
	#113	1,4	2.800	995	44.700	
LAMILUX X-treme Carbon	#076/002	0,6	900	305	25.000	
	#076/023	1,1	1.500	530	30.300	
	#075/017	1,25	1.700	485	42.800	

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