



# LAMILUX Composites

High-tech materials for the refrigeration and food industry



## LAMILUX Composites – High-tech materials for the markets of the future – Made in Germany

Carbon- and fibreglass-reinforced composites are state-of-the-art construction materials with the highest degree of innovation potential at a global level. LAMILUX Composites are true innovators when it comes to pioneering product solutions in several dynamically growing markets.

### Unparalleled benefits for versatile use in the refrigeration and food industry

- Good thermal insulation values and low heating expansion – particularly important in the refrigeration sector
- Sealed, pore-free and easy-to-clean surfaces – for the highest degree of hygiene
- Food safe – substantiated by test certificates
- Extremely lightweight, yet highly stable – an important factor in the area of transport



#### The LAMILUX CI Philosophy

Customer value is the reason for our existence and is the focus of our activities. This requires harmony, identity and a balance between customer value and company strategy.

These guiding ideas for our company's actions and our day-to-day relationship with our customers are described in LAMILUX's company philosophy:

**Customized intelligence – serving the customer is our priority.**

This requires outstanding performance and leadership in all areas relevant to customers, particularly in the role of:

- A leader in quality - optimum benefit for customers
- A leader in innovation - at the cutting edge of technology
- A leader in service - fast, uncomplicated, reliable and friendly
- A leader in expertise - optimum sales and technical advisory services
- A leader in solving problems - individual, tailored solutions



» Inspiring customers around the world with innovative and creative product solutions is the driving force of our company. At LAMILUX, we live this motto every day by orienting our actions toward the needs and requirements of our discerning customers. They assume a central position in our corporate philosophy. «

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

### LAMILUX - Europe's leading producer of fibre-reinforced composites

LAMILUX produces fibre-reinforced composites on four production lines using an industrial flat sheet process. The high degree of quality which has been certified on numerous occasions and the material properties that ideally cater to the respective applications have aided in maintaining the company's leading position in the international market for fibre-reinforced composites.

The high-tech materials are employed around the world as highly stable and ultra-light construction materials: Lightweight construction in the automotive and transport sector, food industry, portable room systems, façade design and temporary buildings.



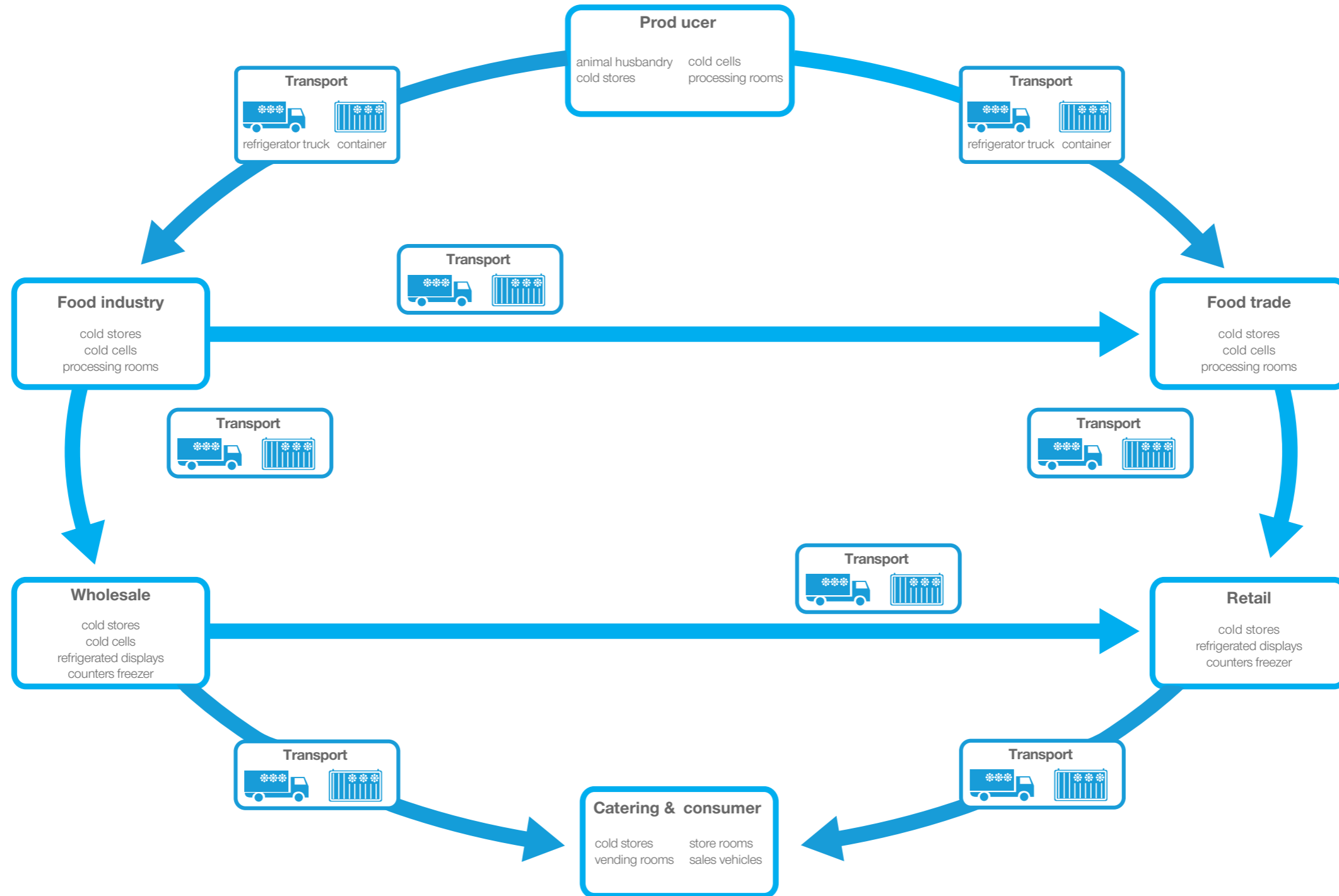
TÜV SÜD certified quality

### TÜV SÜD certified quality

LAMILUX is the world's first manufacturer of fibre-reinforced composites to have voluntarily submitted a major portion of its laboratory and testing facilities to testing by TÜV Süd Deutschland and to have successfully obtained certification. With this, LAMILUX has submitted itself to the very highest quality requirements.

# Processing, storage, transport -

LAMILUX Composites protect food



From production and processing to transport and sales: A comprehensive, temperature-controlled system is required to protect fresh as well as frozen food from spoiling.

LAMILUX Composites is put to use throughout all phases of the processing and cold chain, e.g. in face sheets of walls in processing and storage rooms as well as in refrigerated truck bodies and cold cells.



## Processing and storage rooms

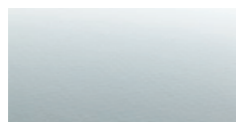
Cleanliness and hygiene – usually dictated by very strict national and international regulations – have the very highest priority in the food-processing industry.

Known to be easy to clean (optional: food safe) wall coatings, fibre-reinforced composites are employed in processing and storage rooms.

### ADVANTAGES

- Easy, residue-free cleaning for the very highest degree of hygiene
- Pore-free, sealed surface
- No corrosion
- Good chemical resistance against a number of cleaning agents
- Reduced formation of condensate compared with steel surfaces
- Very durable and low-maintenance

### MATERIAL RECOMMENDATIONS



**LAMILUX Woven Roving Gelcoat** - highly robust and stable construction  
(very high stability, low coefficient of linear expansion, surface with woven fabric structure)



**LAMILUX Anti Slip** - for anti-slip floor coatings  
(intensively worked-in grain finish, very high durability and long service life)



## Refrigerated warehouses and cold cells

The highest degree of sensitivity with regard to fresh and frozen goods is also required in refrigerated warehouses and cold cells. LAMILUX Composites form the interior and the exterior top layers of the wall elements. In this foam-filled sandwich construction, the fibre-reinforced composites display their insulating properties: A nearly 60-millimetre thick wall element has the same insulating properties as a 400 mm thick wall made of timber frames.

### ADVANTAGES

- Low tendency to deform and no dents in the event of impact
- Easy, residue-free cleaning
- Food safe
- No corrosion
- Available for delivery in large 3.20 metre wide containers
- Single one-piece, wall-height production possible

### MATERIAL RECOMMENDATIONS



**LAMILUX High Gloss 4000** - for high-gloss and smooth surfaces  
(very high quality material, Gelcoat sealing for high optical demands)



**LAMILUX Super Plus Gelcoat** - low-weight and durable, attractive surface finish  
(for interior and exterior use, Gelcoat-sealed surface, highly UV and weather resistant)



## Refrigerated truck bodies and semi-trailers

For the temperature-controlled transportation of refrigerated food products, fibre-reinforced composites stand out with their low heat conductivity. As a face sheet on side walls and roofs, they provide for the exceptional insulating properties of refrigerated truck bodies and semi-trailers. Plus the side walls are also ideal backgrounds for company and product advertisement. This turns refrigerated vehicles into moving advertisements.

A further outstanding feature is also the low weight of LAMILUX Composites, which is decisively lower than aluminum or sheet steel. This enables lighter truck bodies and consequentially, also fuel savings and less damage to the environment. Plus, UV and weather resistance, and the longer service life that this entails, are just some of the major benefits of fibre-reinforced composites.

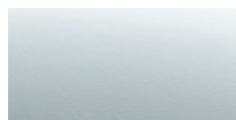
### ADVANTAGES

- Simple application of company and product advertisements thanks to the clean and smooth surface
- Low weight with highest stability
- Reduced fuel consumption thanks to the lightweight construction of the truck bodies
- No corrosion
- East cleaning and repair
- Very durable and resistant against sunlight and weather
- Strength to withstand mechanical stress

### MATERIAL RECOMMENDATIONS



**LAMILUX High Impact** - for extreme impact resistance and tensile strength in the interior  
(very good resistance to sunlight, weather and corrosion, extremely stable and low-weight)



**LAMILUX Woven Roving Gelcoat** - highly robust and stable exterior construction  
(very high stability, low coefficient of linear expansion, surface with woven fabric structure)

## Refrigerated containers

Refrigerated containers are subjected to very high mechanical stress during loading and transport. In addition, they must maintain low temperatures using as little energy as possible over very long periods of time. LAMILUX Composites ensure the safe and energy-efficient transport of food in refrigerated containers.

Cooling container interiors are equipped with wall paneling made of highly impact resistant fibre-reinforced composites, their stiffening effect lending high stability to the entire container construction. Further outstanding features are their thermal insulation properties and the low heat expansion of the material due to its high fibre content.

### ADVANTAGES

- High impact resistance and robustness
- High loads thanks to the lightweight design
- Easy to clean and no corrosion
- Very durable and resistant against sunlight and weather
- Avoidance of thermal bridges with reinforced materials

### MATERIAL RECOMMENDATIONS



**LAMILUX High Strength X-treme** - for high strength and durability  
(exceptional tensile and bending strength, low linear expansion coefficient, temperature resistant)



## Refrigerated and freezer display cases

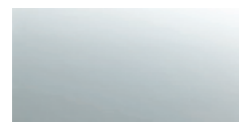
Cleanliness and hygiene directly at the PoS: The pore-free surface of LAMILUX Composites is an outstanding feature in refrigerated and freezer display cases that is directly visible to the consumers. The benefits of fibre-reinforced composites used in the refrigeration of food products in sales rooms: easy and residue-free cleaning, the clean appearance and the insulation properties in sandwich design.

The food safety of materials that come into contact with food is a very important aspect in refrigerated and freezer display cases. The food safety of several material qualities has been tested. This means that even in direct contact with food, these materials do not emit any chemical substances.

### ADVANTAGES

- Easy cleaning without any residues
- Antibacterial
- Available in food-safe material variants
- Highly resistant against moisture and no corrosion
- Very durable and resistant against pressure loads
- No formation of mould

### MATERIAL RECOMMENDATIONS



**LAMILUX Super Plus Gelcoat** - low-weight and durable, attractive surface finish  
(interior and exterior use, Gelcoat-sealed surface, highly UV and weather resistant)



## Animal housing

Periodical cleaning to ensure cleanliness and sterility is a decisive means against bacteria in stalls. Only this way can businesses involved in animal husbandry comply with the increasing requirements pertaining to disease control.

Fibre-reinforced composites by LAMILUX with their pore-free and therefore easy-to-clean and residue free surfaces greatly contribute in providing sustainably improved hygiene.

### ADVANTAGES

- Easy to clean
- No corrosion
- Resistance against mould formation
- Easy to handle in daily production
- Good chemical resistance against a number of cleaning agents
- Low tendency to deform and no dents in the event of impact

### MATERIAL RECOMMENDATIONS



**LAMILUX Super Plus Gelcoat** - low-weight and durable attractive surface finish  
(for interior and exterior use, Gelcoat-sealed surface, highly UV and weather resistant)



**LAMILUX Embossed** - for structured and easy-to-clean surfaces  
(exceptionally suited for interior use, wall paneling with minimum joints)

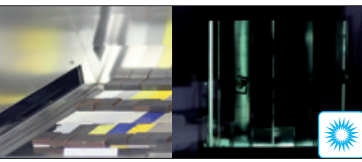
# LAMILUX Quality: Tests and TÜV-certified inspections

LAMILUX is the world's first manufacturer of fibre-reinforced composites to have voluntarily submitted a major portion of its laboratory and testing facilities to testing by TÜV Süd Deutschland and to have successfully obtained certification. With this, LAMILUX has submitted itself to the very highest quality requirements. This is thanks to our research and development department that provides extensive input throughout all stages of

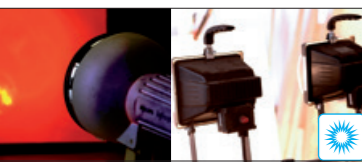
LAMILUX Composites materials' development, production and life cycle. Extensive substance tests and analyses form the basis in reliably examining the properties of our composites and in securing their durability and service life - to provide you with constant 100% quality at all times. For this purpose, we make use of our state-of-the-art laboratory technology and simulation environments.

All tests certified in compliance with TÜV Süd quality


All tests certified in compliance with TÜV Süd quality




Sun-/Xenotest




Infrared/halogen radiation



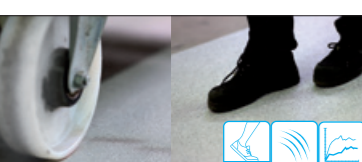
Outdoor weathering




Thermography test




Noise prevention acc. to PIEK




Abrasion/slip resistance




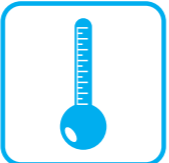
Adhesion/delamination test




Gas chromatography




TÜV SÜD certified quality


Temperature changes




Rain



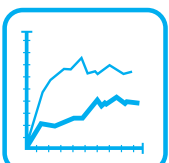
Hail




UV radiation




Frost




Mechanical load




Scratching resistance




Noise




Abrasion



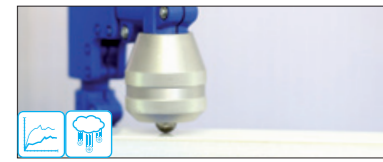
Chemical load



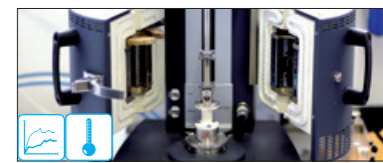
Solvent welding



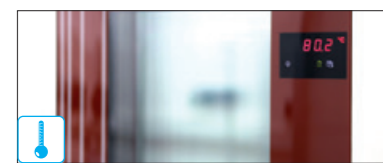
Adhesion



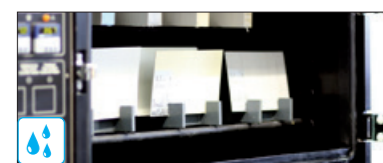
Impact test




DMA measurement




Temperature change test




Condensation water test




Tensile/bending strength




Torsion test



Barcol hardness



Impact resistance acc. to Charpy

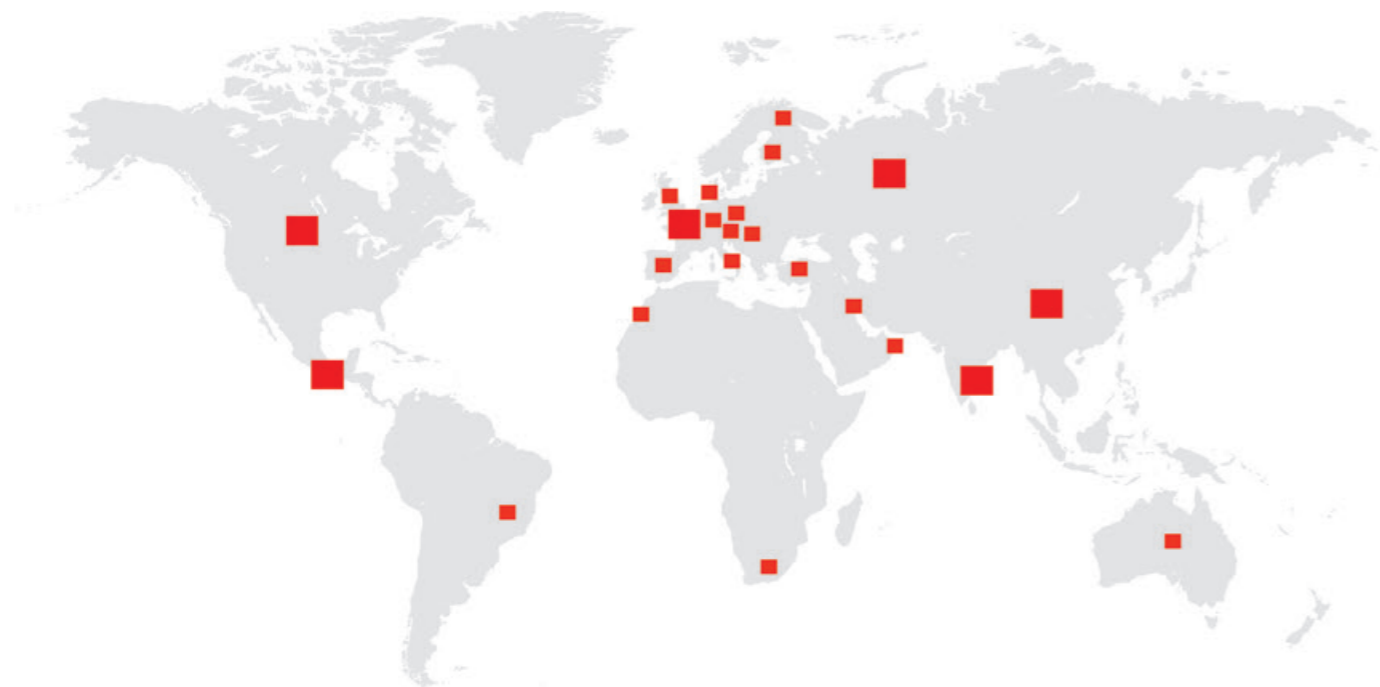


TÜV SÜD certified quality



## With LAMILUX you save time and money

- With our **international local offices** we are available to you **in the respective time zones**.
- Our **warehouses in several countries and regions** ensure the quick delivery of your materials around the world.
- We transfer our knowledge and offer you **on-site engineering support** for further processing of composites and on any application-specific questions you may have.
- With our **flexible manufacturing technology**, we can start the production of your individual material following short **machine changeover times**.
- Our highly automated, continuous manufacturing processes always create **reproducible material variants in the very highest, unvarying quality**.



## With LAMILUX you gain safety - Made in Germany

- An excellently trained maintenance and repair team ensures **the smooth and error-free operation of our four production lines**.
- Our **decades of logistical expertise** enable **cost-efficient, worldwide shipment of materials**.
- Our **continuous manufacturing processes monitored by highly qualified experts** ensure that you get **constant and highest quality, at all times**.
- **We create your unique selling points** Our engineers and technicians work in close collaboration with you to produce customised and industry-specific **product solutions**.
- As Europe's market leader, we have extensive **production capacities** which guarantee **supply reliability**.
- Prior to each composite production, we conduct **comprehensive controls of the delivered raw materials**. Our supplier selection is performed on the basis of the very highest quality criteria.
- **During and after production**, we subject your material to extensive controls and **laboratory inspections**.
- **We examine the mechanical, chemical and physical properties** of the completed composite in **real application environments** and tests its behaviour in combination with other materials.
- **We continue to develop your individual materials** and optimize material properties for the respective areas of applications.





Bus industry



Commercial vehicle industry



Construction industry



Recreational vehicle industry

The information on this data sheet is based on our current knowledge and experience. It does not represent a guarantee for technical characteristics in the form of specifications. Due to the wide range of use parameters, users themselves are responsible for testing to ensure that the product is suitable for the required use. Changes and errors excepted.



LAMILUX Composites GmbH

Zehstraße 2 · Postfach 1540 · 95111 Rehau, Germany Tel +49 (0) 92 83 / 5 95-0 · Fax +49 (0) 92 83 / 5 95-290

Email: [information@lamilux.de](mailto:information@lamilux.de) · [www.lamilux.com](http://www.lamilux.com)

