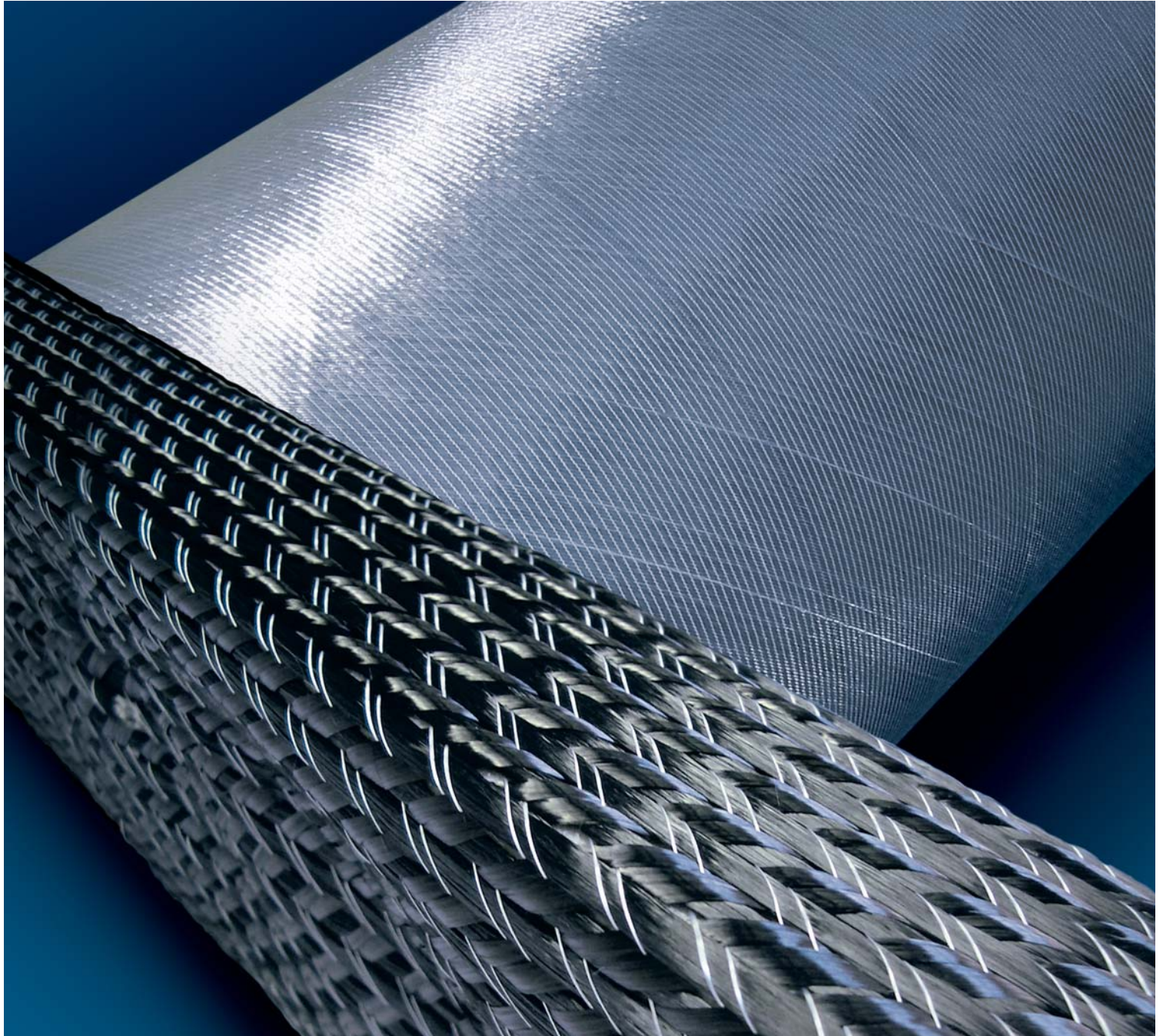


# **Multiaxial Fabrics and Braidings**

Made from Glass, Carbon and Aramid Fibers



**THE PREFORM SPECIALISTS**

**SGL KÜMPERS**

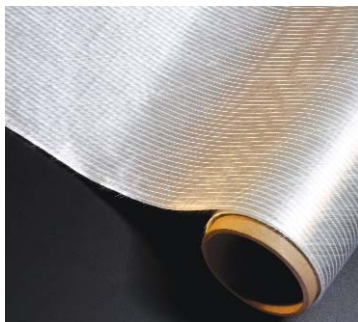
# SGL Kumpers GmbH & Co.KG

## Member of SGL Group

In early 2007, SGL Group and Kumpers GmbH & Co.KG founded the "SGL Kumpers GmbH & Co.KG" joint venture for the production of high-performance materials from carbon, glass and aramid fibers for the composites industry.

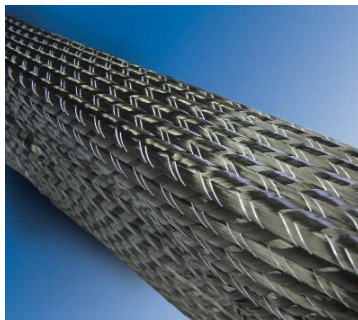
SGL Kumpers combines the advanced processing technologies of the Kumpers company in multiaxial fabric and 2-D or 3-D braiding manufacture with SGL Group's long-standing materials' know-how and production experience in the field of carbon fiber-based pre-pregs, woven fabrics and composites. SGL Kumpers is industry's fully qualified supplier of innovative solutions.

## High-Performance Textiles by SGL Kumpers



### **Multiaxial fabrics and complex structures**

- ▶ Wide range of design options
  - load-conforming alignment ( $0^\circ$ ,  $90^\circ$ ,  $\pm 45^\circ$ )
  - optional multilayer design
  - combination with fiber mats or cut fibers
  - adjustable drape properties
- ▶ Better mechanical properties due to elongated reinforcement fibers
- ▶ Exactly parallel reinforcement fibers



### **2-D Braidings**

- ▶ Preforming in a single process step:
  - Spherical preform producible by braiding rovings directly onto a shaped mandrel
- ▶ Process sequence reproducible for curved structures as well
- ▶ Textile structure avoiding thread displacement
- ▶ Concave geometries feasible
- ▶ Elongated  $0^\circ$  rovings on the inner and outer surfaces of curved structures



### **3-D Braidings**

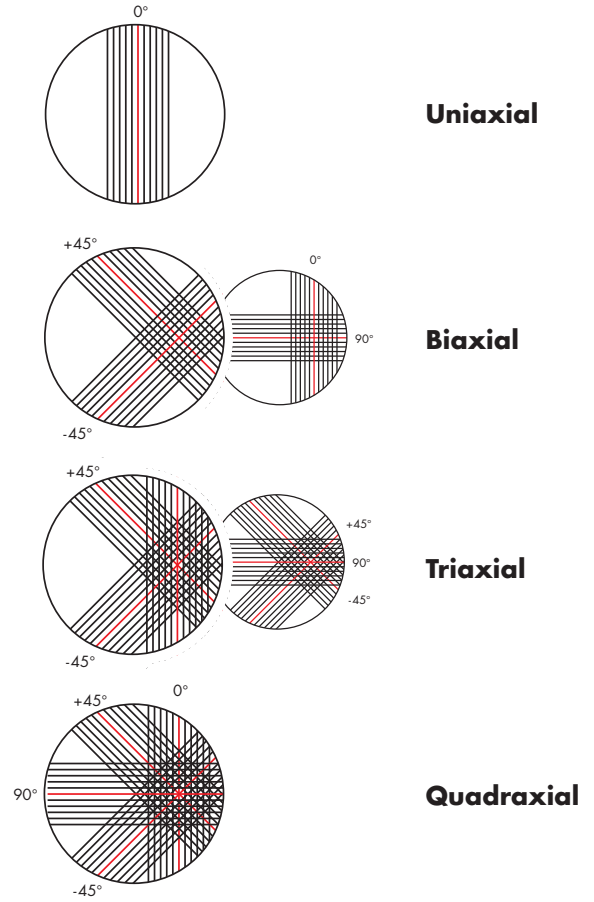
- ▶ Endless profiled semi-finished textile materials
- ▶ Different geometries of cross-sections and connecting surfaces over the length of the fabric
- ▶ Individual load-conforming fiber alignment over the fabric cross-section
- ▶ Individual angles of inclination

# Fiber Alignment

We combine the excellent properties of greatly differing high-performance textiles in carbon, glass and aramid fibers with the benefits of an **optimized multiaxial alignment** perfectly matched to the individual requirement profile.

All fabrics can likewise be combined with

- ▶ Nonwovens
- ▶ Binder-free cut-to-size mats
- ▶ Binder-containing cut-to-size mats



# Typical Applications



Multi-axial fabrics, partly combined with cut-to-size fiber mats for yacht and boat building



Braided carbon fabrics for CFRP components used in the automotive industry, e.g. CFRP bumper supports



Multi-axial fabrics, partly combined with cut-to-size fiber mats for rotor blade construction



Multi-axial fabrics – nonwoven structures for high-performance sports equipment

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