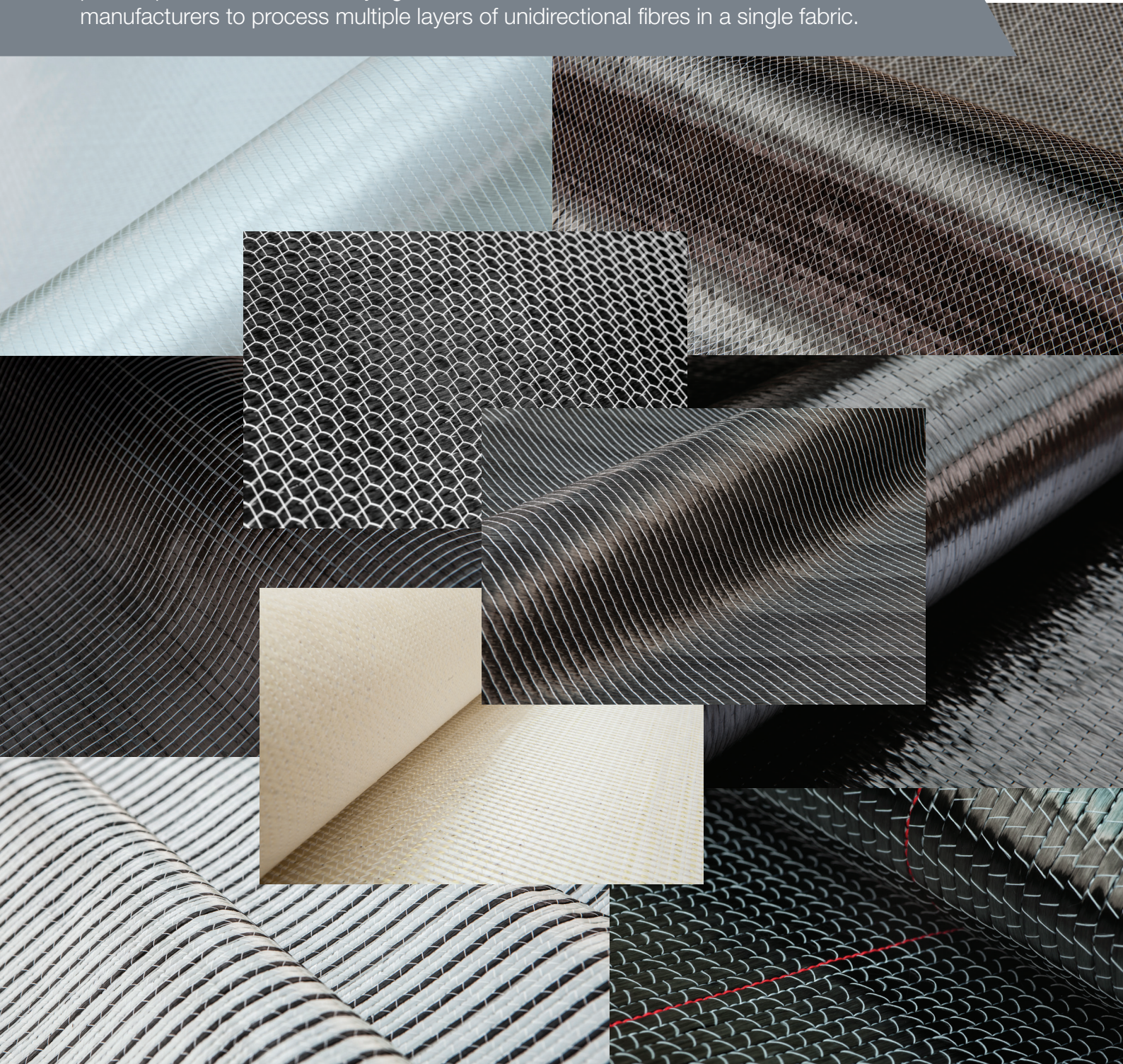




# HiMax<sup>®</sup>

## Multiaxial Reinforcements

HiMax<sup>®</sup> multiaxial reinforcements, or non-crimp fabrics (NCF), are made up of multiple plies of parallel fibres, each laying in a different orientation or axis which allows manufacturers to process multiple layers of unidirectional fibres in a single fabric.







# HiMax<sup>®</sup>

## Engineered Composite Reinforcements

Hexcel Reinforcements UK Ltd (formerly Formax) is a world leader in the supply of composite reinforcements, specializing in the production of ultra lightweight carbon fiber multiaxials and highly engineered glass fibres for the Automotive, Wind, Marine, Sports and Industrial markets.

Our goal is to deliver materials of the highest quality, specifically tailored for each unique application and customer requirement. Through continuous investment in product development and research technology, HiMax<sup>®</sup> fabrics are lighter, stronger and cost effective.

### Our Customers

Hexcel acquired the Formax multiaxials business in 2016. Our heritage lies in the Marine industry and we have designed carbon fabrics for many America's Cup campaigns, luxury super yachts and military vessels. This experience of working with high performance structures, coupled with our ability to produce an array of bespoke reinforcements, means our products have evolved rapidly and today we supply to a huge variety of end-use applications across multiple sectors.

**Automotive:** Carbon composites are playing an increasingly important part in the manufacture of automotive components. Hexcel's ability to spread heavy tow carbon into low ply weights allows us to offer truly high performance multiaxial fabrics, making us an attractive partner in this competitive market.

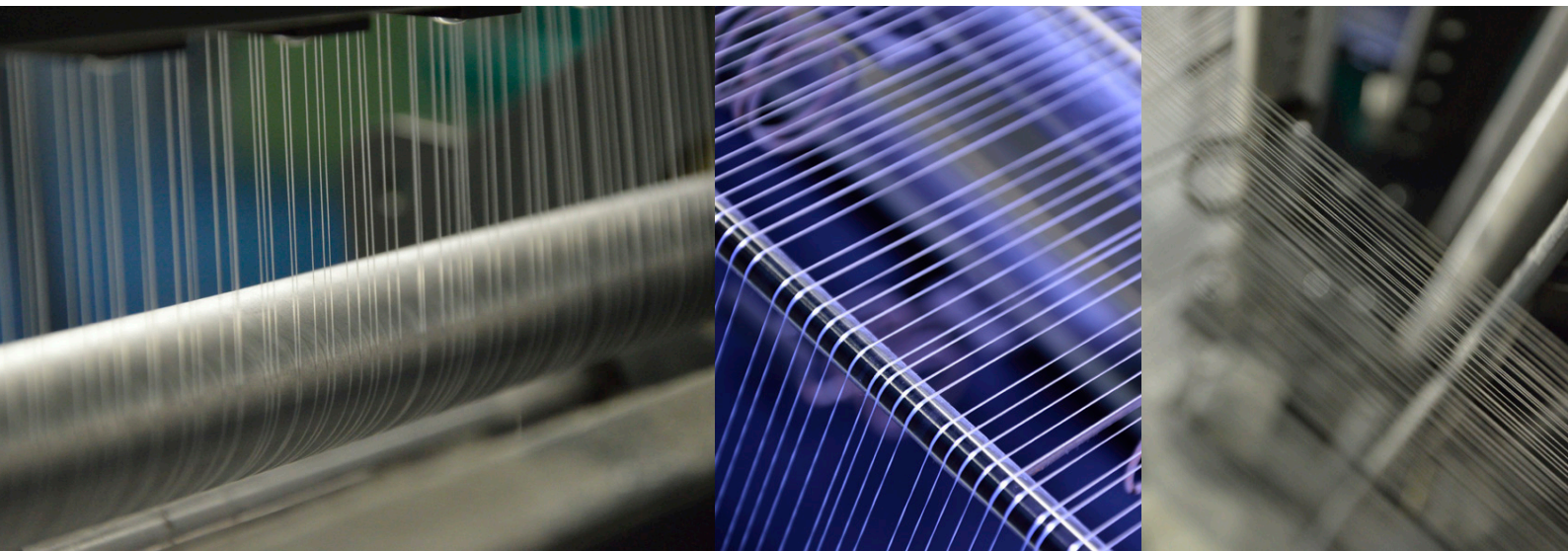
We enjoy excellent supplier relations with many of the world's major automotive OEMs and help our customers engineer fabrics that can be processed with ease and speed at a cost that the automotive market demands.

**Wind Energy:** Wind blade manufacturers are seeking fully optimised fabrics to ensure superior mechanical performance in their structures.

Our highly specialized range of unidirectional, biaxial and triaxial reinforcements, available in both glass and carbon, have been engineered specifically for blade construction. We work in partnership with a number of key wind energy companies to develop the next generation of turbines.







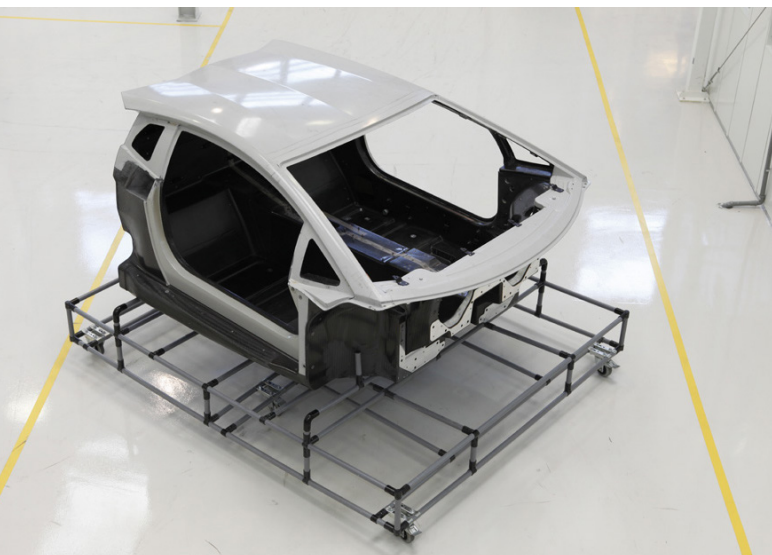
### **Dedicated Service**

Individual Business Sector teams for Automotive, Marine and Industrial applications coordinate our client accounts to ensure customers receive a highly specialised service with dedicated support from market specific engineers, research technicians and sales staff.

### **Trusted technology**

All Hexcel Reinforcements UK manufacturing processes adhere to ISO 9001 standards and our entire range of carbon multiaxial fabrics have been accredited with the renowned DNV qualification.

Our customers can be assured they are purchasing the highest quality reinforcements available.



### **Production Capabilities**

Hexcel has an impressive range of specialist equipment and processing capabilities at its Leicester, U.K. manufacturing plant. Climate controlled production areas accommodate our machines that run glass and carbon lines 24/7 to support our customers' ever expanding supply schedules.

Our highly specialized machines are capable of variable widths from 1000mm to 1600mm, allowing us to offer

unique new fabric constructions such as lightweight 0/90 fabrics, ply orientations from +/-22 and balanced biaxial fabrics (+/-/+) from 200gsm that ensure truly symmetrical fabrics.

Lamination lines are also available for manufacturers wishing to create surface veils on existing fabrics. This is a popular production process for our automotive customers where a Class A finish on all components is essential.

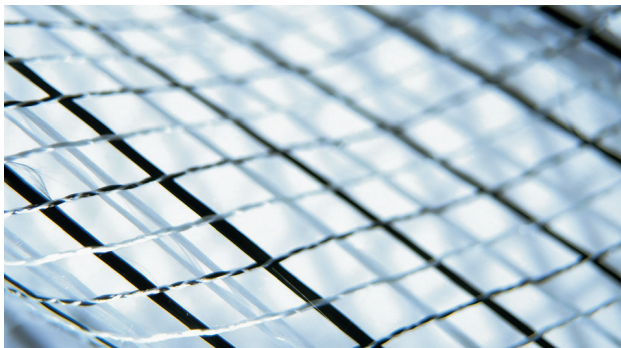
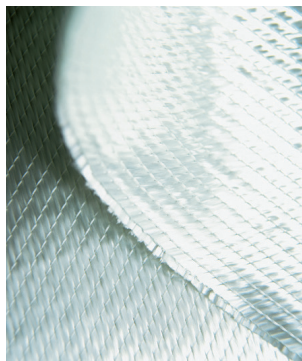


# Products

## Carbon Fiber Multiaxials

Available in a range of fiber types from 3k to 50k including PAN and Pitch fibers. Fabric weights from 50gsm up to 1600gsm can be produced with fabric widths from 25mm through to 1600mm.

- Unidirectionals, (Stitched, Heat Set Woven, Infusion and Bonded)
- +/- 22 Biaxials, (Standard and Lightweight)
- +/- 60 lightweight carbon multiaxials in 75gsm
- +/- 45 Biaxials, (Standard, Ultra lightweight, High Drape and Hybrid)
- 0/90 Biaxials, Triaxials, and Quadraxials. (Standard, Unbalanced, Heavyweight, Warp, Weft and Hybrid)



## Glass Multiaxials

Available in a range of fabric weights from as low as 250gsm to 6000gsm and a variety of different fabric widths from 25mm to 2540mm.

- Unidirectionals (Stitched, Heat Set Woven and Infusion)
- +/-45 Biaxials (Standard, Combination, High-drape and Hybrid)
- 0/90 Biaxials (Standard, Combination, High-drape and Hybrid)
- Triaxials (Warp, Weft, Hybrid)
- Quadraxials (Standard and Mesh)

## Aramid Multiaxials

Available in a range of fabric weights from as low as 160gsm to 600gsm and a variety of widths from 250mm to 2540mm.

- Standard +/- 45
- Hybrid +/- 45
- Hybrid 0/90

## Hybrid Fabrics / Natural Fibers

A range of Carbon / Glass, Aramid / Glass hybrid fabrics can be supplied, as well as natural fibers such as Flax.

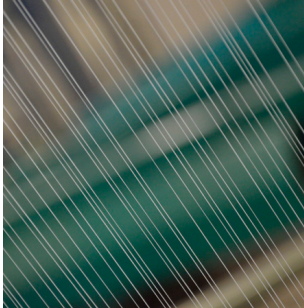
## Fabrics For Infusion

Our Infusion fabrics have been specially developed to ensure rapid and consistent infusion rates during production. Additional features include:

- Infusion fabrics that incorporate a core manufactured from polypropylene, polyester, natural fibre and glass fabrics
- Multi-stack fabrics ideal for infusing large monolithic structures in fewer layers

## Recycled Fabrics

- reForm Fabric



## Sustainability In Manufacturing

For all manufacturers, there is a percentage of waste inherent in the production of multi-axial fabrics. At our U.K. production facility, this waste amounts to under 7% of its total output. While this percentage is low, recycling remains high on our agenda. We promote sustainable manufacturing methods wherever possible from a position of environmental responsibility and also in commercial terms.

The creation of our Recycling Division has allowed us to devote considerable resource into optimizing products for these processes and the installation of bespoke reprocessing machines means we are able to recycle the majority of our glass and carbon fibre waste. These materials are suitable for a variety of non-structural and structural applications across a range of industries.

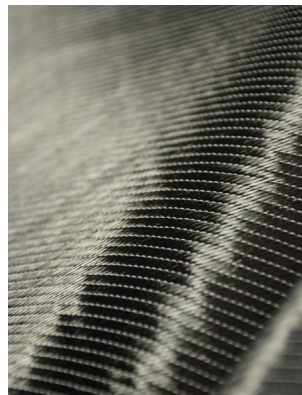
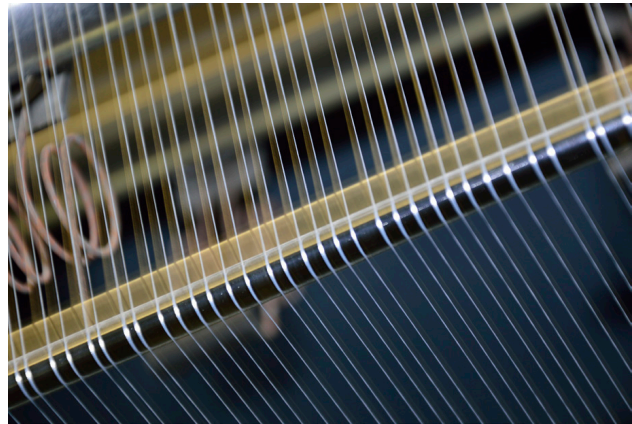
## Innovations

Product development is integral to us. At the Hexcel Reinforcements UK Innovation Centre, our team of technicians are constantly striving to produce the next generation of reinforcement fabrics.

Working in partnership with organisations such as the internationally acclaimed Polymer Composites Group and the Imperial College London, we are confident our technologies will be utilised by some of the world's most prestigious manufacturers in years to come.

## Drape Simulation Software

Hexcel has the capability to support customers with Drape Simulation Technology to improve quality prediction and the production speed of components. This specialist software enables the optimization of fabric design by predicting how a material will perform during any given manufacturing process. For example, how successfully a fabric will drape or identify creasing and permeability issues.





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