MITSUBISHI CHEMICAL GROUP

Are you ready to innovate with sustainable composite materials?

Get from design to market lighter, stronger, and longer-lasting

Mitsubishi Chemical
Advanced Materials AG

Contents

Achieve your goals with advanced composites

Do you have a product that could be improved by replacing an aging or obsolete part with something lighter, stronger and longer-lasting? Are you looking to reduce your carbon footprint in the process? Sustainable composites could be the answer.

Discover a scalable, cost-effective, and future-ready solution to your design challenges with Mitsubishi Chemical Group's (MCG) ever-expanding portfolio of advanced composite materials. You'll get the advantage of collaborative support to help you identify exactly the right composite and processes for your needs, and ensure scalable, consistent quality on an ongoing basis with our global supply chain. Finally, you'll be able to reduce your carbon footprint with our recycled carbon fiber and achieve circularity with our waste and scrap take-back program.

How can MCG's advanced composite materials help you overcome your design challenges and accelerate innovation?

composites.mcam@mcgc.com

Your growth partner on your journey to carbon neutral

Helping you find the right answer to a complex design or manufacturing challenge is our goal, and we will partner with you to ensure you find the exact solution for your specific needs, with services and support that extend beyond our portfolio of composites including:

Collaboration, consultation & advice

Your design and manufacturing needs are unique. So, we bring our best thinking to help you identify the right materials, map a successful process, and provide ongoing consultation to ensure the solution meets your current and future requirements.

Industry expertise

Your market is forever changing. Which is where our industry expertise gives you an advantage. Our knowledge of industries, materials and trends enables us to help you navigate uncertainties underlying new product engineering and development, and create new materials to match your evolving product landscape.

Global scale & support

When your manufacturing operations span continents, you need a partner who can supply materials where and when you need them. Our global, vertically integrated supply chain helps ensure scalable, cost-efficient availability even for large organizations with the most complex applications.

Recycled carbon composites

Most of our carbon composites can be made with recycled fiber, which has a much smaller carbon footprint than virgin carbon fiber. Our carboNXT® products meet all the demands of your high-end applications while being truly sustainable and offering 20–40% cost savings over virgin material.

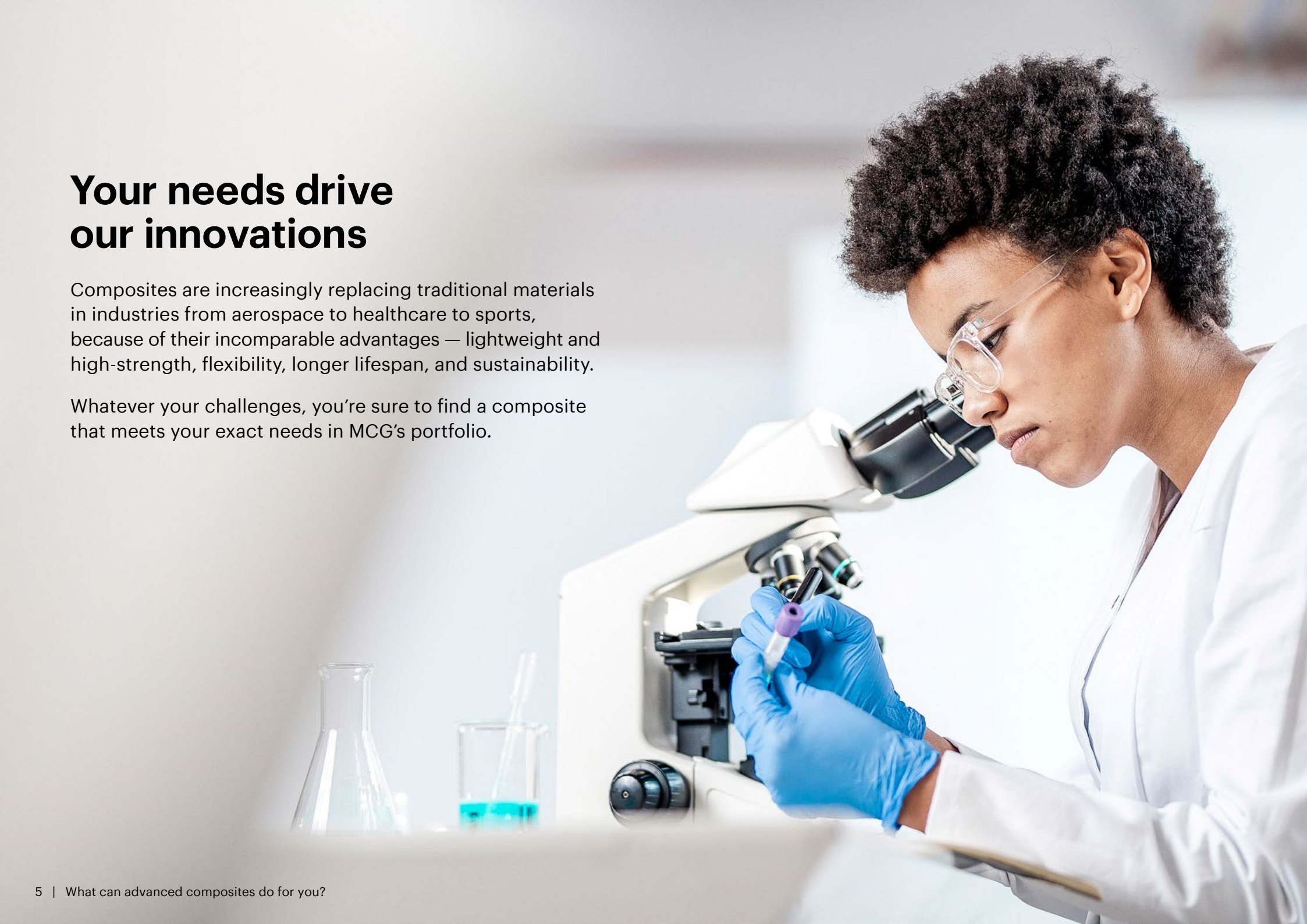
Closing the loop — circularity

You can further achieve your sustainability goals through our extensive waste and scrap collection program. We'll help you reduce your carbon footprint while also enabling a continuous supply of recycled carbon composite materials — promoting a circular economy.

Your needs drive our innovations

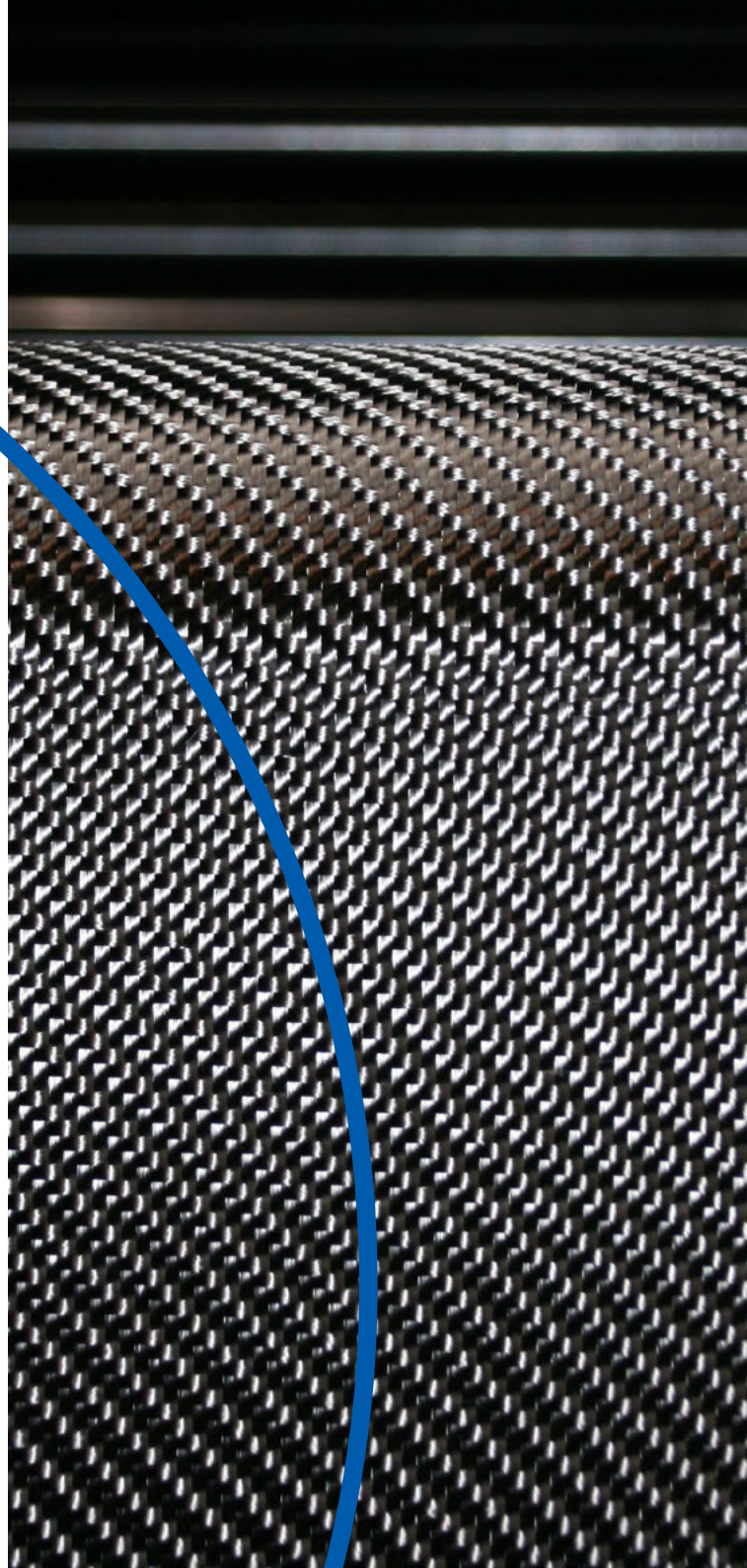
Composites are increasingly replacing traditional materials in industries from aerospace to healthcare to sports, because of their incomparable advantages — lightweight and high-strength, flexibility, longer lifespan, and sustainability.

Whatever your challenges, you're sure to find a composite that meets your exact needs in MCG's portfolio.



Autoclave and Prepreg compression molding (PCM)

Composite materials for lightweight and high-strength composite parts with a reduced carbon footprint.



Prepreg for Autoclave and PCM

When your application demands a high degree of customizability with a superior finish quality.

Prepreg offers you a lightweight, customizable material that has the flexibility to fit into your existing production model while using recycled fiber helps reduce the carbon footprint of your designs.

Material advantages

- Lighter than aluminum and up to 3x stiffer
- Performance PCM parts with a high-quality surface out of the mold
- Superior surface quality vs. Resin Transfer Molding (RTM) parts
- Quick-curing Prepreg can be combined with Forged Molding Compound™ (FMC) for hybrid molded composite parts, to integrate functions like metal inserts or ribs, for increased mechanical properties
- Constant quality and a process which can be automated for volume composite part production

Properties

- Epoxy & bio-based resins with non-woven, woven (multi-axial) & UD (uni-directional) synthetic fibers
- Reinforcement: glass fiber, aramid fiber natural fibers, carbon fiber (virgin and recycled)
- Aerospace and Automotive approved
- Up to 2m width

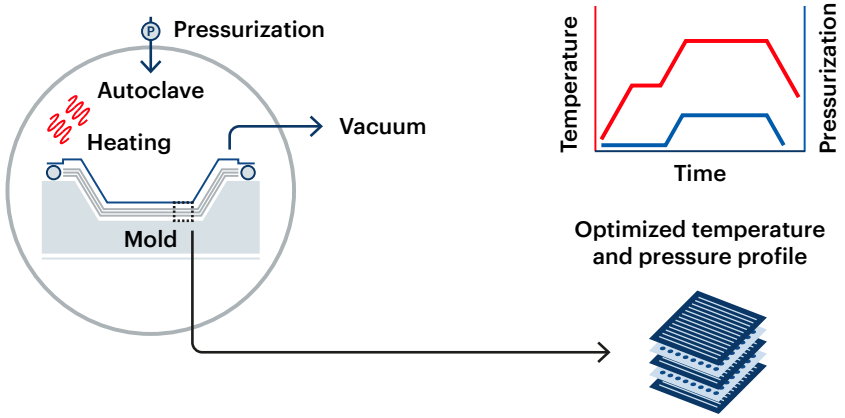
Processing

- High temperature resistance resins in combination with UD Fibers; developed for online painting process at OEM (avoid fiber print through)
- Prepreg Compression Molding (PCM) with quick-cure resins for volume composite part production
- Out of Autoclave

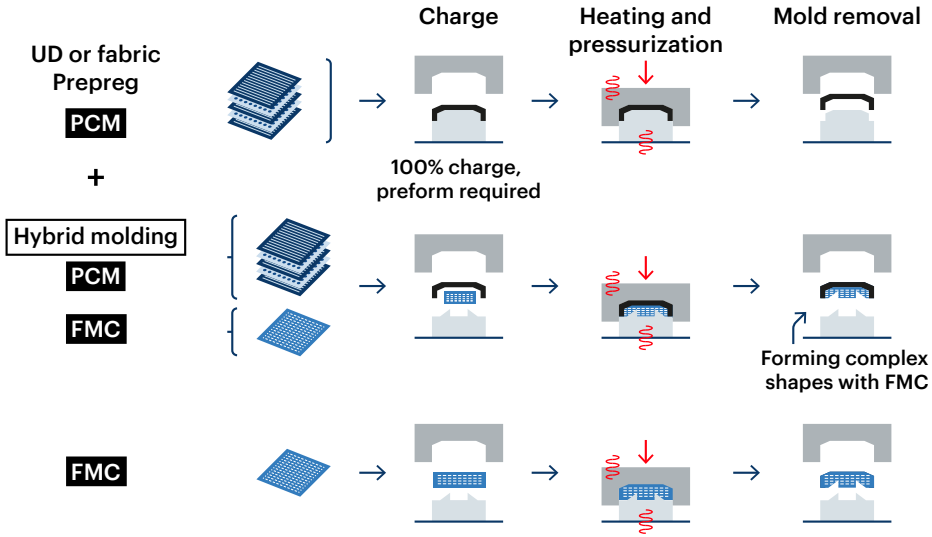
Ideal for applications in:

Aerospace & Defense, Automotive, Urban Mobility, Medical, Sports & Leisure, Industrial, Marine

Production of composite parts using Autoclave



Production of composite parts using Prepreg compression molding



BIOpreg PFA

A more sustainable alternative to traditional phenolic panels.

Developed to help aerospace OEMs reach their carbon-neutral targets, BIOpreg PFA reduces reliance on fossil fuel-based resins, is compatible with existing processing equipment, and meets all lightweighting requirements.

Created by Mitsubishi Chemical Group, BIOpreg PFA is a bio-based intermediate prepreg material offering a more sustainable alternative to the phenolic systems commonly used to build structural panels in commercial aircrafts.

Material advantages

- **Resin derived from sugar cane waste** - Where phenolic resin systems are derived from fossil fuels, BIOpreg PFA uses bio-based Furan – a formaldehyde-free furfural resin derived from by-product of sugar cane processing
- **No change to conversion methods** - Switching to BIOpreg PFA requires no retooling, as the material can be processed into components on the same equipment and cycle times as phenolic-based parts
- **Design flexibility** - The material can be impregnated with a range of reinforcement fibers, including 7781 glass fabric, recycled carbon fiber, or 2x2 twill carbon fabrics
- **Sustainability meets performance** - BIOpreg PFA is virtually equivalent to phenolic panels in terms of processing, performance specifications, and pricing
- **FST Compliant** - BIOpreg PFA meets all FST requirements for use in commercial aircraft interiors

Customer success spotlight

Automotive body panels

A leading automotive OEM was looking for ways to manufacture body panels of their vehicles to reduce CO_2 emissions – beginning with material sourcing through to production and finally on the road.

Solution

Tailored Prepreg material with specific thermal properties

Products

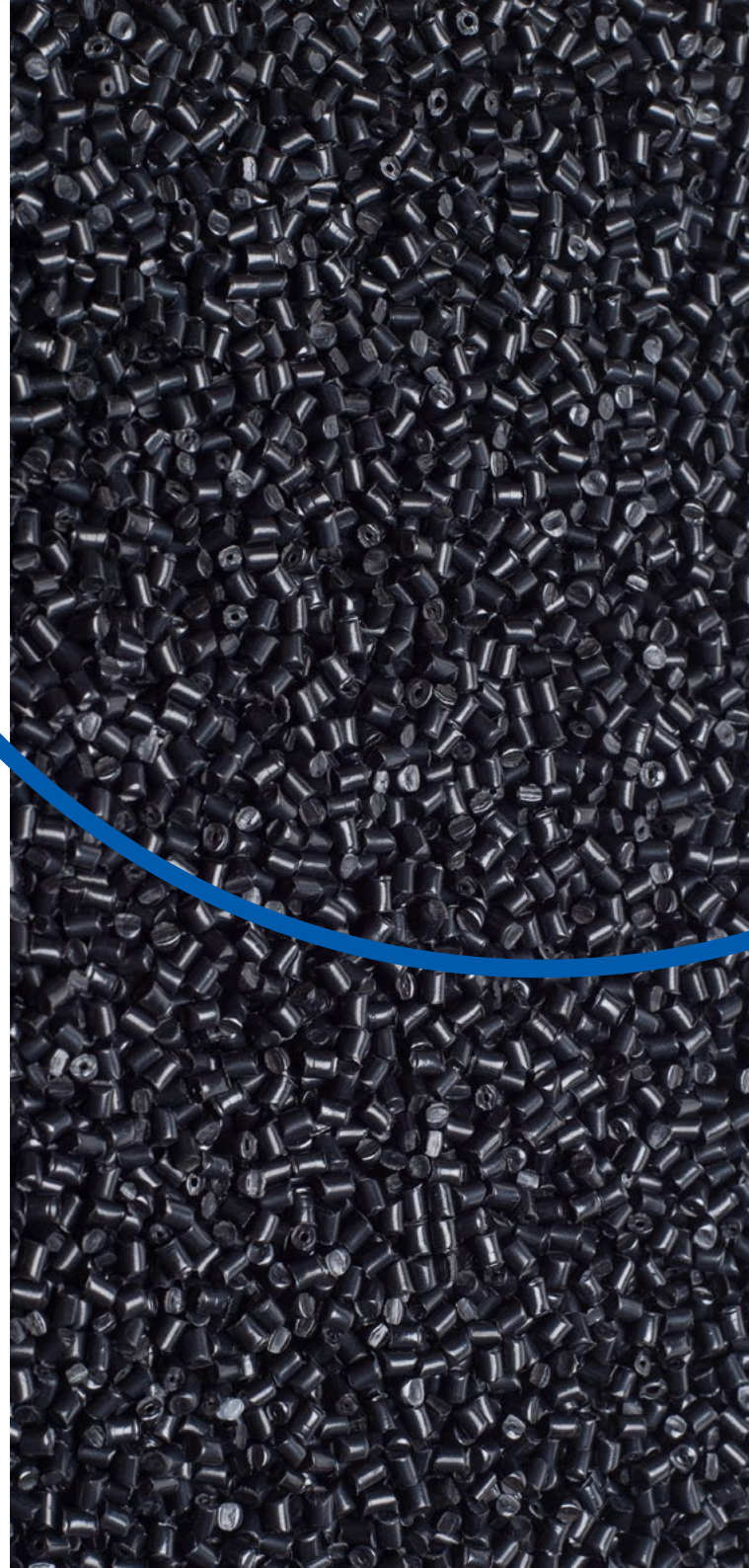
Autoclavable and compression-moldable Prepreg carbon fiber

Results

High-performance Prepreg eliminated additional painting steps and produced scalable, more lightweight car body panels

Injection molding

High-strength, lightweight injection moldable carbon fiber composites.



KyronMAX®

If you're looking for a reliable lightweight alternative to metal that utilizes proprietary simulation technology for increased predictability of the final product.

KyronMAX® offers high performance carbon fiber reinforced injection moldable compounds to help you meet and exceed your goals. A unique combination of specialty carbon fibers integrated with engineered plastic resin technology, world-class FEA simulation, KyronMAX® was developed to replace various metal and long fiber reinforced compounds.

Material advantages

- Up to 40% weight reduction vs. aluminum (forged or die-casted)
- Cost-efficient lightweighting of high-volume, high-performance parts
- Low CO_2 footprint material and parts possible when using recycled polymer and/or rCF
- Predictable part performance: Design and simulation support
- Low production cycle times (min)

Properties

- Family of high-strength injection moldable compounds for high-volume production
- Short fiber-reinforced thermoplastic compounds based on virgin and recycled carbon fiber (rCF)
- Thermoplastic polymers: PP, PA, PPA, PPS, PEI, PEEK, TPU etc.
- Reinforcement: carbon fiber (CF, HMF or rCF), glass fiber (GF), additives
- Customizable formulations for specific application requirements
- Vertically integrated value chain

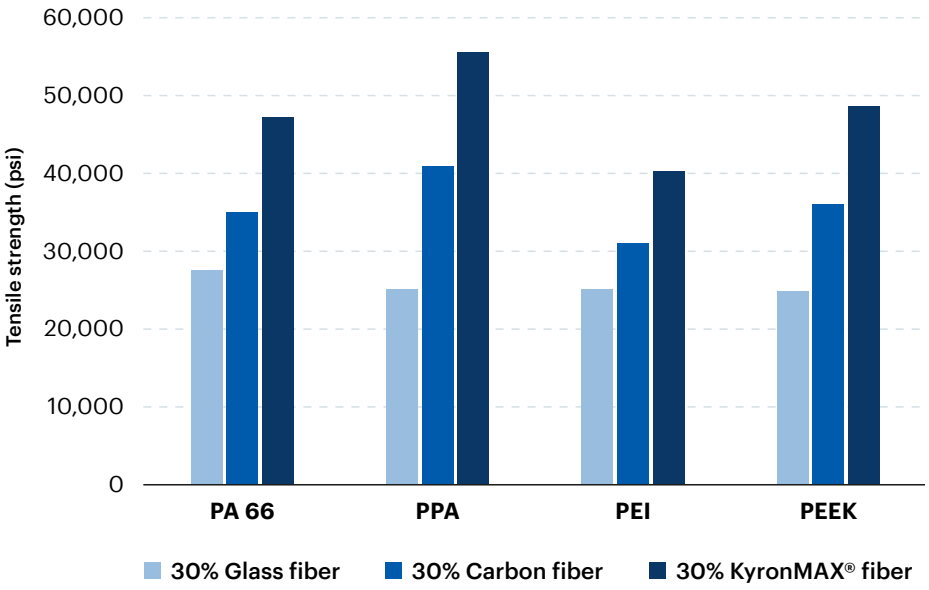
Processing

- Processable using conventional injection molding equipment (process optimization support available)
- Rapid prototyping using 3D-printed tools for injection molding

Ideal for applications in:

Automotive, Sports & Leisure, Industrial

Tensile strength comparison using the same fiber loading



Value chain – From fiber to composite parts

Customer success spotlight

Bicycle suspension

A leading bicycle manufacturer wanted to convert an existing molding tool to allow for the molding of composite materials to create a stronger, lighter suspension on their bikes.

Solution

Utilizing MCG Advanced Materials mold-flow software with KyronMAX® material files to develop process and gate design validations and test a final composite structure

Products

A range of KyronMAX® composite materials

Results

Rapid testing and prototyping of designs and materials that led to a successful final product

Compression molding

High volume, constant quality, complex carbon composites parts production.

Forged Molding Compound™ (FMC)

Offering you a lightweight, high-strength option with low molding cycle times.

When you need to produce complex shapes in a high volume, FMC is an intermediate material that is easily automated and perfect for volume production.

FMC or carbon fiber forged molding compound is an intermediate material made of pieces of randomly dispersed carbon fiber impregnated in a thermoset resin. The product contains approx. 50–60 wt % of carbon fiber. The material is a form mass for a Prepreg Compression Molding, however with the difference that FMC due to the short fiber length is more flexible than a Prepreg. The short fiber ensures fluidity and makes it possible to mold complex shapes in 3 dimensions with ribs and bosses, whereas the random arrangement brings about isotropic material properties.

Carbon Fiber FMC is available in various levels of mechanical performance by the use of different fiber types and fiber content. Furthermore, there are multiple resin systems available, based on epoxy and vinyl ester resins. The choice of the resin system depends on the requirements for e.g. thermal resistance, surface properties, cycling time in the molding process, etc. and needs to be selected in accordance with the application.

Material advantages

- Over 30% weight reduction vs. aluminum with higher strength and specific modulus. FMC is especially suitable for structural composite parts
- Possibility of co-molding with Prepregs and other carbon fiber materials for reinforcement or to increase mechanical properties
- Predictable and reproducible performance. For this reason, the performance of parts can be simulated during the design phase
- Reduction of process steps by in-molding of inserts, connectors, etc.
- Freedom of design due to high flexibility of shapes

Properties

- Thermoset matrix resin selection from epoxy, vinyl ester (VE) and styrene-free VE-Systems
- Quasi-isotropic properties

Processing

- Compression molding

Ideal for applications in:

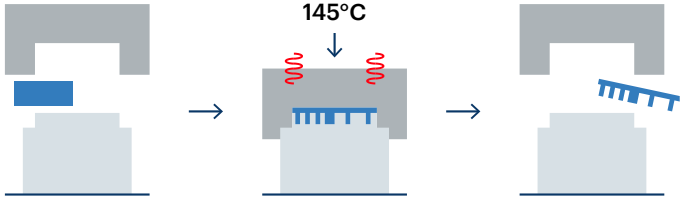
Mobility (Automotive, Aerospace), Industrial, Marine, Sports & Leisure

Mechanical performance

Items		Unit	Product family	
			Standard regular tow	Conventional small tow
CF tow count		-	15K	3K
Tensile property	Strength	MPa	185	320
	Modulus	GPa	34	39
Product readiness			Commercially available	Commercially available

Production of CF-FMC composite parts

The FMC compound can be molded to complex CFRP parts with pressure and temperature. Functions like ribs, metal inserts and hybrid molding together with Prepreg materials generates a variety field of applications.



Molding conditions

- Temperatures: 130°C–150°C | Mold coverage > 85% | Low-flow molding
- Molding pressure: 5–10 MPA
- Cure time 2–5 min at 145°C | 1 min/mm

Customer success spotlight

Ship propellers

In the past, ship propellers were made primarily from copper alloys — expensive, heavy and prone to wear and elemental damage. Our customer was looking for a more affordable, better performing alternative.

Solution

A forged molding compound propeller blade that was lighter and more durable

Products

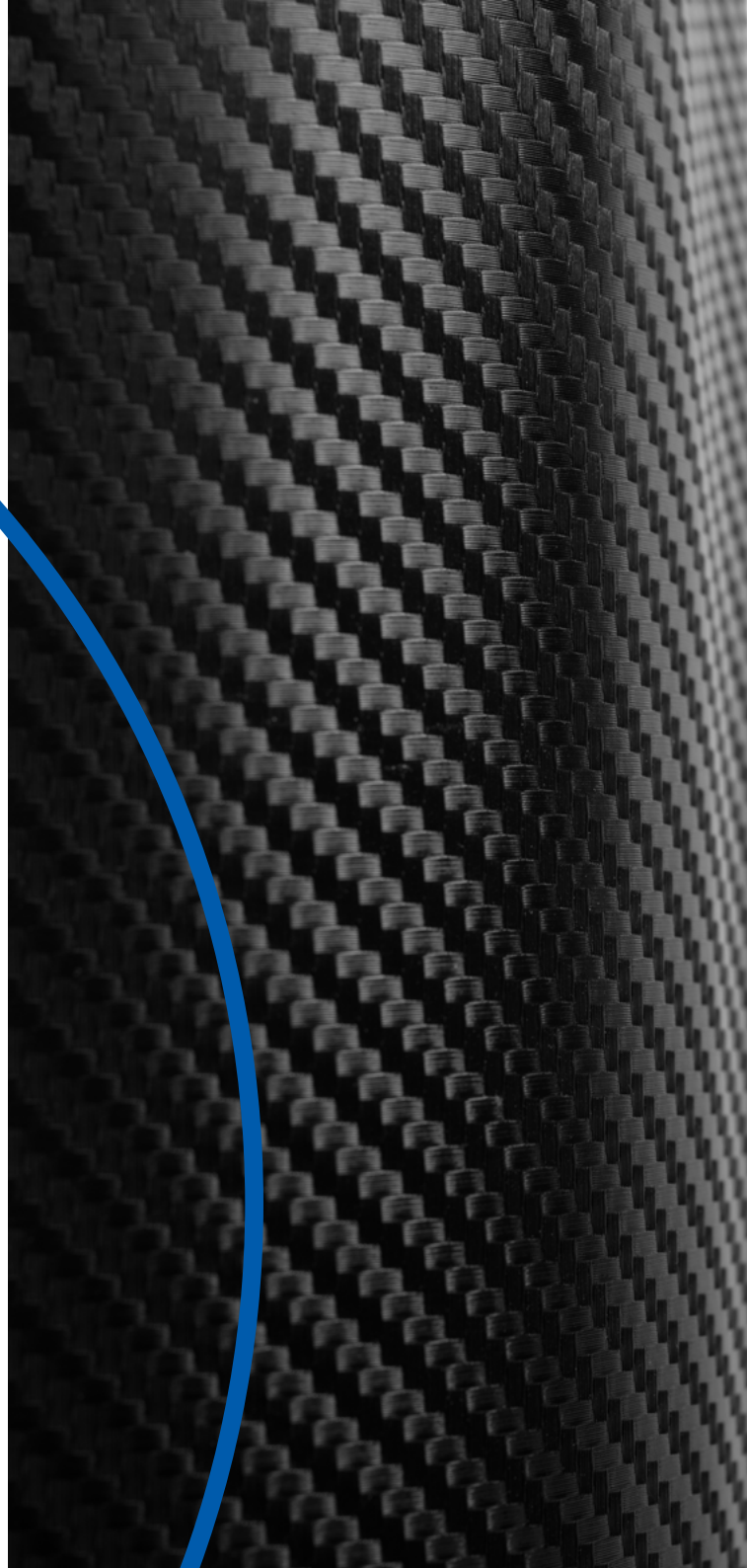
Carbon fiber reinforced plastics (CFRP)

Results

Improved propulsion performance for large vessels with a 4% reduction in fuel consumption

Carbon fiber

High-performance continuous and chopped Polyacrylonitrile (PAN) and pitch-based carbon fibers for a large variety of applications.



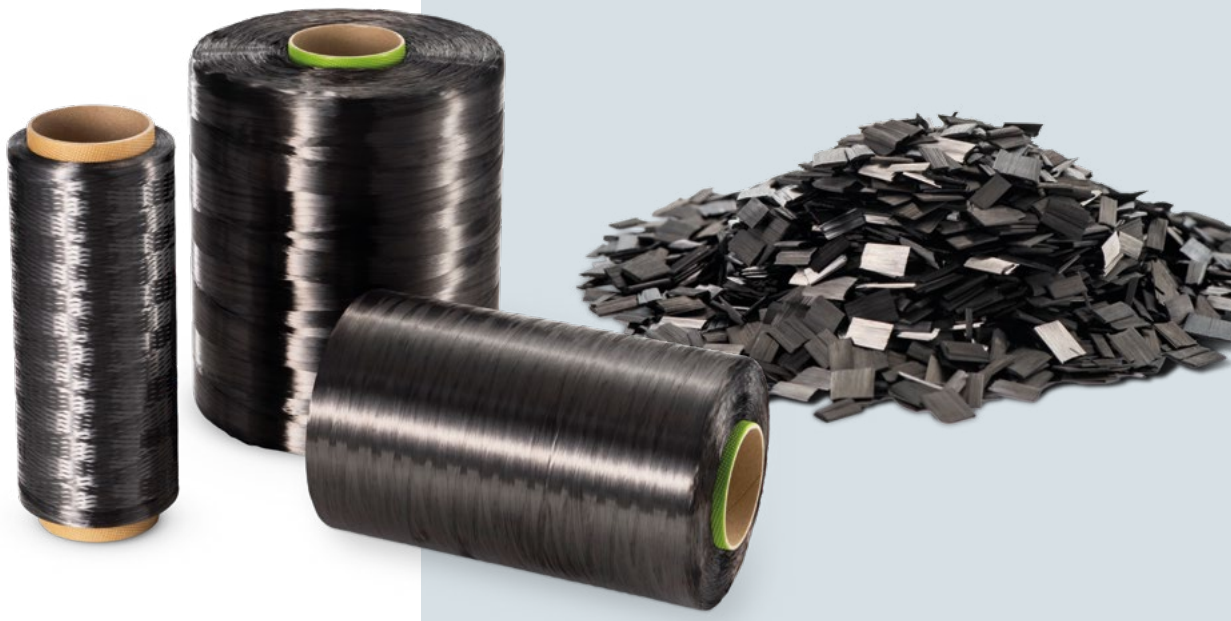
Carbon fiber

Find exactly the carbon fiber to match your product and manufacturing needs, from continuous to chopped or milled, virgin to recycled.

As a virtually integrated market leader in quality and product line-up we offer the right fiber for your application. Available in continuous, chopped or milled formats with a multitude of sizing or unsized options for complete versatility in engineering.

Material advantages

- Small coefficient of friction and good wear resistance
- Minimal deformation due to thermal stability
- Excellent electrical and heat conductivity
- Light, strong and high rigidity
- Chemical resistance to corrosion
- Excellent vibration damping
- High x-ray permeability
- Excellent heat resistance
- High fatigue strength



Properties

Under 3 Brands we offer various grades with combinations of strength and modulus to match your design capabilities

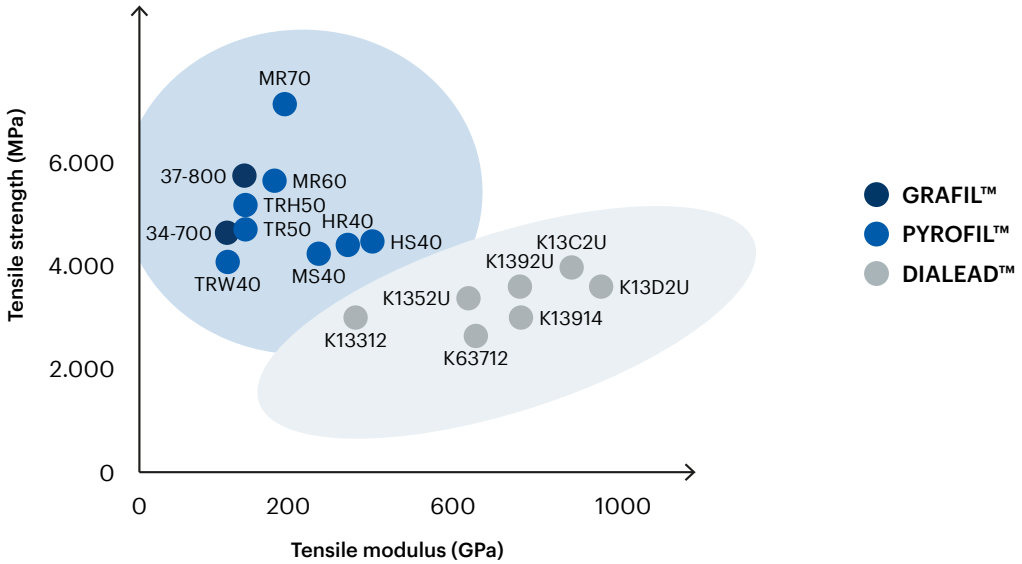
Processing

- Weaving
- Braiding
- Prepregging
- Pultrusion
- Filament winding
- Compounding
- Chopping or milling

Ideal for applications in:

Aerospace, Space, Automotive, General Industrial, Sports & Leisure, Energy, Construction

A range of strength and modulus to suit your designs



GRAFIL™
PYROFIL™

- Excels in strength and stiffness
- 3K–60K, sizing variants and product formats
- Large scale production in USA/Japan

DIALEAD®

- High modulus > Stiffness
- High thermal conductivity
- Low electrical resistivity

Customer success spotlight

Pressurized vessels for CNG or hydrogen

By transitioning from traditional materials to applying carbon fiber, tank manufacturers have succeeded in dramatically bringing down weight and expanding the lifespan of pressure vessels, whilst ensuring that safety standards can still be met.

Solution

High-strength fibers available in 3 formats, from multiple lines. Ideal for filament winding of this demanding application

Products

PYROFIL™ & GRAFIL™

Results

Weight reduction allowing for longer distance; improved safety through better reliability and resistance to corrosion; longer lifespan of tanks due to improved fatigue and pressure capability

Mechanical properties

Type		PYROFIL™ TRH50 18M	PYROFIL™ TRH50 30M	GRAFIL™ 37-800
Filament count		18.000	30.000	30.000
Filament diameter	µm	6	6.2	6
Yield	mg/m	1.000	1.670	1.675
Tensile strength	GPa	5,30	5,60	5,52
	KSI	770	810	800
Tensile modulus	GPa	250	255	255
	MSI	36	37	37
Elongation	%	2,12	2,15	2,16
Density	g/m3	1,82	1,82	1,81

Thermoplastic intermediates for compression molding

Lightweight meets durability with fiber-reinforced thermoplastic intermediates.

KyronTEX®

Looking for an option for your high-speed, high-volume production of thermoplastic Prepregs for parts with complex geometries?

If your applications demand a high degree of design flexibility combined with a lighter weight, stronger and sustainable product, our KyronTEX® sustainable thermoplastic composite material might be the answer you've been looking for.

Material advantages

- Constant quality for specifying purposes from recycled carbon fibers
- Combining high specific strength and stiffness with impact resistance
- Part integration and enabling alternative connecting technologies such as welding
- Ability to skip preform production for improved productivity, time and costs savings
- Ability to fabricate lofted composite systems with variable thicknesses for higher structural stiffness at a density
- Fast production cycle time vs. thermoset-based alternatives
- Freedom of part design due to high drapability
- Weight savings due to low densities

KyronTEX® continued

Properties

- Thermoplastic organofleeces from random long fibers and fiber fabrics
- Innovative sandwich panels and multiple density parts from same lay-ups
- Reinforcement: CF, GF, rCF, combinations of NCF, GF & rCF
- Potential for multi-material & functional integrations
- Polymers: PP, PA, PC, PPS, PEI, PEEK, PEKK, etc.
- Densities from 0.3 to 1.8 g/cm3

Processing

- Form pressing and hybrid molding for high production volumes
- Elimination of pre-consolidation step

Ideal for applications in:

Sports & Leisure, Industrial, Mobility (Aerospace, Automotive)

KyronTEX® rC44/R/500 PEI
Development no: SLCF18 (rCF)

KyronTEX® C45/R/500 PEI is a PEI-CF fleece (mat) produced with recycled CF. This product provides good formability, and high mechanical properties.

Table key

1) Measured in longitudinal direction (MD: Machine direction)
2) Measured in transverse direction (CD: Cross direction)
***** Properties determined on laminate
****** Properties determined on flat molded sheets

	Standard	SI unit	Value
Physical properties			
Thickness of one layer*	Internal	mm	0.34
Area weight of one layer*	Internal	g/m²	500
Fiber content (weight%)	ISO 1172	%	44
Fiber content (volume%)	TBD	%	35.47
Density*	ISO 1183	g/cm³	1.475
Mechanical properties			
Tensile strength MD 1)	ISO 527 / EN 13677	MPa	178
Tensile strength CD 2)	ISO 527 / EN 13677	MPa	TBD
Tensile strength 45°	ISO 527 / EN 13677	MPa	TBD
Tensile modulus MD	ISO 527 / EN 13677	MPa	16'400
Tensile modulus CD	ISO 527 / EN 13677	MPa	TBD
Tensile modulus 45°	ISO 527 / EN 13677	MPa	TBD
Elongation at break MD	ISO 527 / EN 13677	%	1.08
Elongation at break CD	ISO 527 / EN 13677	%	TBD
Flexural strength MD	ISO 178	MPa	384
Flexural strength CD	ISO 178	MPa	351
Flexural strength 45°	ISO 178	MPa	TBD
Flexural modulus MD	ISO 178	MPa	23176
Flexural modulus CD	ISO 178	MPa	23759
Flexural modulus 45°	ISO 178	MPa	TBD
Max. force (at thickness 1.75mm)	DIN ISO 6603-2/C	N	1322
Energy at max. force	DIN ISO 6603-2/C	J	2.28
Impact force (at thickness 1.75mm)	DIN ISO 6603-2/C	N	661
Impact energy	DIN ISO 6603-2/C	J	2.65

KyronTEX® C55/1/440 T7 PEI
Development no: Q91

KyronTEX® C55/1/440 T7 PEI is a CF-fabric reinforced thermoplastic composite with PEI-matrix. CF Fabric type: TR35AI M 2x2 twill, with 3k CF, 240 GSM. This material is especially developed for structural applications produced in thermoform pressing.

Table key

1) Measured in longitudinal direction (MD: Machine direction)
2) Measured in transverse direction (CD: Cross direction)
***** Properties determined on laminate
****** Properties determined on flat molded sheets

	Standard	SI unit	Value
Physical properties			
Thickness of one layer*	Internal	mm	0.29
Area weight of one layer*	Internal	g/m²	440
Fiber content (weight%)	ISO 1172	%	54.5
Fiber content (volume%)	TBD	%	45.6
Density*	ISO 1183	g/cm³	1.51
Mechanical properties			
Tensile strength MD [1)]	ISO 527 / EN 13677	MPa	700
Tensile strength CD [2)]	ISO 527 / EN 13677	MPa	720
Tensile strength 45°	ISO 527 / EN 13677	MPa	TBD
Tensile modulus MD	ISO 527 / EN 13677	MPa	58'000
Tensile modulus CD	ISO 527 / EN 13677	MPa	58'300
Tensile modulus 45°	ISO 527 / EN 13677	MPa	TBD
Elongation at break MD	ISO 527 / EN 13677	%	TBD
Elongation at break CD	ISO 527 / EN 13677	%	TBD
Flexural strength MD	ISO 178	MPa	900
Flexural strength CD	ISO 178	MPa	900
Flexural strength 45°	ISO 178	MPa	TBD
Flexural modulus MD	ISO 178	MPa	44'800
Flexural modulus CD	ISO 178	MPa	44'800
Flexural modulus 45°	ISO 178	MPa	TBD
Max. force (at thickness 2mm)	DIN ISO 6603-2/C	N	3900
Energy at max. force	DIN ISO 6603-2/C	J	11
Impact force (at thickness 2mm)	DIN ISO 6603-2/C	N	1950
Impact energy	DIN ISO 6603-2/C	J	19

Customer success spotlight

Motorcycle helmet

One of our manufacturing partners was looking for a way to improve the performance and design of a motorcycle helmet. They were also hoping for a more streamlined manufacturing process.

Solution

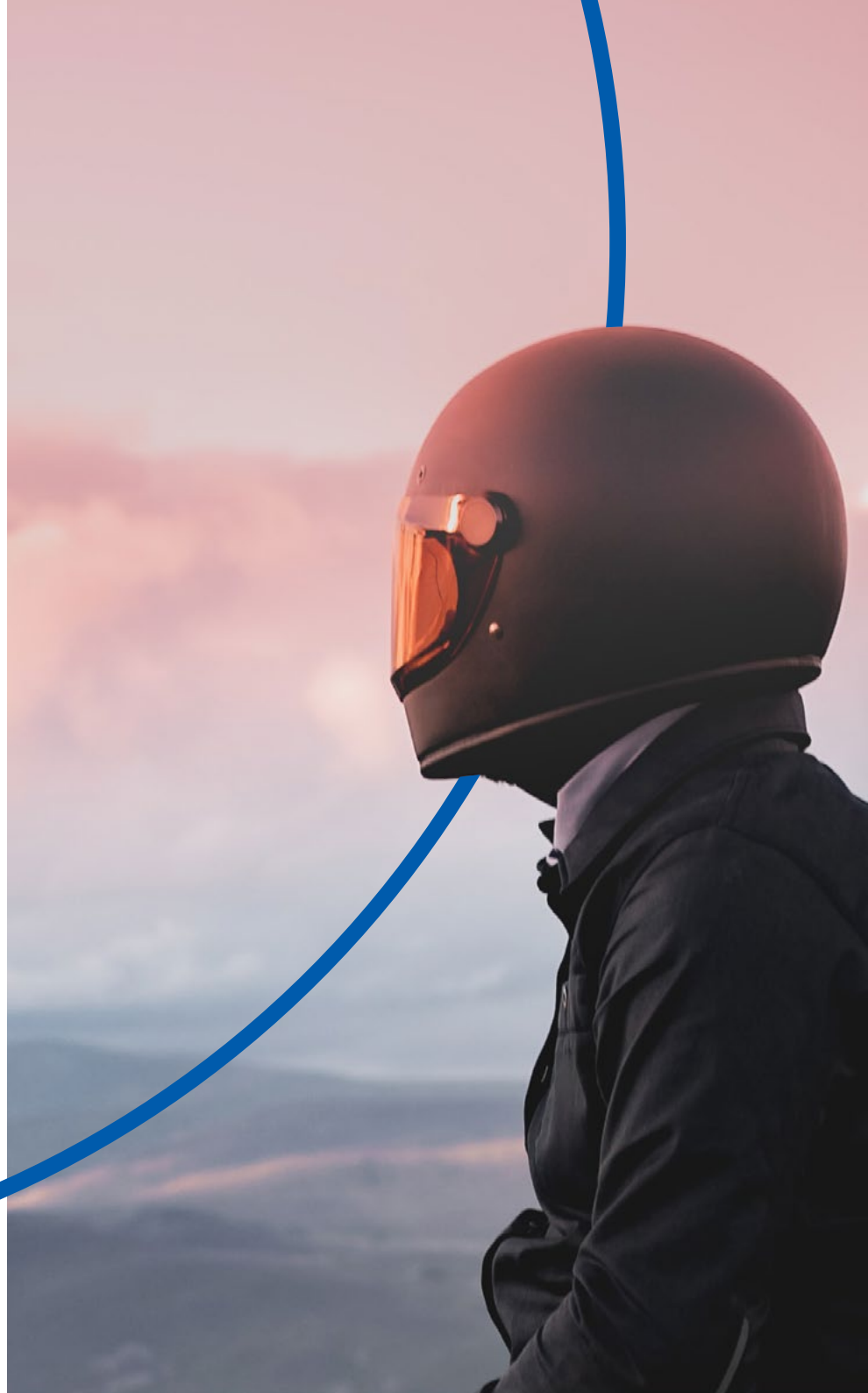
The unique drapability and flexibility of KyronTEX® improved the final product and eliminated the need for secondary hydro dipping

Products

KyronTEX®

Results

Reduced production costs, faster and easier manufacturing, and a better-quality finished product



SymaLITE®

Addressing your need for a durable low-pressure molding for noise-insulation and decorative applications.

Does your application require a low-weight reinforced thermoplastic (LWRT) that is both moldable and exhibits low thermal expansion? SymaLITE® achieves all this and more in a unique material that is suitable for a variety of applications.

Material advantages

- Cost-efficient production of three-dimensional components
- Low thermal expansion as well as excellent mechanical and physical properties
- Available in both textile and panel formats
- Ultra-light and freely shapeable
- Sound absorbing

SymaLITE® continued

Properties

- Lightweight glass- and Polypropylene (PP) fiber reinforced material
- Adjustable mechanical/ acoustical properties
- Glass Fiber content: 30%–50%
- Functional layers applied inline
- Area weights between 700 to 2200 g/m^2
- High stiffness due to lofting behavior
- Sound absorbing
- Chemically resistant
- Oleo-/Hydrophobic
- Flame retardant
- Impact resistant

Processing

- Low pressure molding

One material, multiple applications

SymaLITE® is a durable, noise-insulating material for car undershields and engine covers, as well as being appropriate as a carrier material for decorative automotive applications (i.e. car headliners). It works as a substitute for wood-based materials and rigid foams in sandwich construction for the caravan and commercial vehicle industries. Strong and non-weathering, it can be used for outdoor applications such as construction.

Ideal for applications in:

Automotive, Leisure Vehicles, Construction

GMT

Discover strong and lightweight materials ideal for a wide variety of needs.

In the market for a lightweight material with excellent impact resistance and an extremely high energy absorption profile? Developed as a strong, light substitute for aluminum, steel and plywood, our glass-mat-reinforced thermoplastics (GMT) check those boxes and more.

Material advantages

- No additional trimming after forming of the semi-finished parts due to flow press process
- Tool filling also in critical areas (ribs, corrugations) with reinforced material
- Forming of complex shapes with different wall thicknesses in one step by compression molding
- Outstanding impact resistance coupled with benign crash behavior
- Functional integration in one process step (local reinforcements, domes, inserts, etc.)
- Hybrid combinations of GMT, GMTex®, SymaLITE®, QTex, Steel are possible
- Resistance to moisture and chemicals
- Excellent hardness and rigidity, even at low temperatures
- Can be pressed into complex 3D structural components
- Competitive cycle times
- Ease of recycling
- Durability

GMT continued

Properties

- Very good impact resistance; excellent resistance to corrosion
- Available in various thicknesses between 2.5mm to 4.8mm
- Flame and UV resistant functions available
- Resistant to moisture and chemicals
- Ease of recycling
- Durable

Processing

- Long fibers and/or endless glass fiber mats manufactured in a proprietary process are impregnated with polymers in a second step
- Compression molding

Ideal for applications in:

Automotive

Customer success spotlight

Lightweight EV Battery Enclosure

A unique multi-material solution to accelerate transition to sustainable and safe mobility. The battery system can replace components typically made from metals, while also meeting critical safety and performance requirements like lightweighting, thermal, structural, and sustainability.

Solution

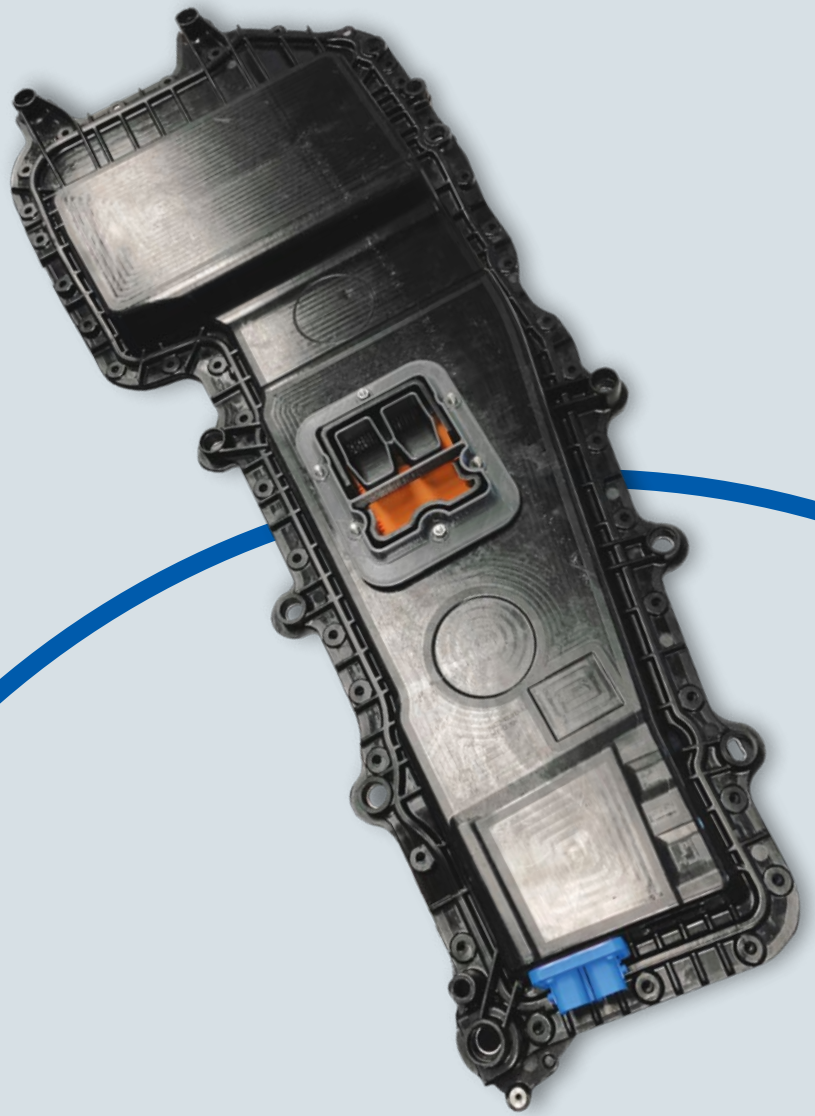
An EV Battery Enclosure using various materials from the Mitsubishi Chemical Group's portfolio. The top cover is made from flame-retardant KyronTEX® and is resistant to thermal runaway. The structural bottom tray is made from our thermoset carbon fiber Forged Molding CompoundTM (FMC) and carbon/glass fiber PREPREG.

Products

KyronTEX®, Forged Molding CompoundTM (FMC) and carbon/glass fiber PREPREG

Results

. 40% weight savings vs. comparable metal battery enclosures
. Use of thermoplastics for ease of recyclability
. 30%, higher stiffness than metal cases and molded-in features to improve structural integrity
. 60% part count reduction – better manufacturing efficiency and faster assembly
. Fully tested concept: Torch test and Thermal propagationon



Sustainable innovation

Make the move to sustainable carbon composites without compromising quality, performance or cost.

carboNXT®

100% customized, 100% pure, 100% recycled — and 100% quality and performance.

Looking to transition to truly sustainable manufacturing practices, but concerned about cost and compromising on quality or performance? carboNXT® offers a complete closed-loop option that pairs sustainability with high quality and peak performance.

Material advantages

- The market's broadest portfolio of customizable, recycled carbon fiber intermediates & semi-finished products
- Significant reduction in carbon footprint vs. virgin material
- Up to 50% cost savings over virgin carbon fiber
- Supply security of carbon fiber materials
- Lightweight and high performance

carboNXT®

carboNXT® continued

Properties

- Milled, chopped, fiberball, fibertube, rCF compound, non-woven, veil, rCF smc/rCF bmc materials
- 100% customized, pure and recycled for various processes like injection molding or composite processes like RTM, wet-pressing or CF-SMC

Processing

- A complete recycling process, closing the loop from end of life (composite scrap collection) to high-purity fiber creation for use in new, high-end applications

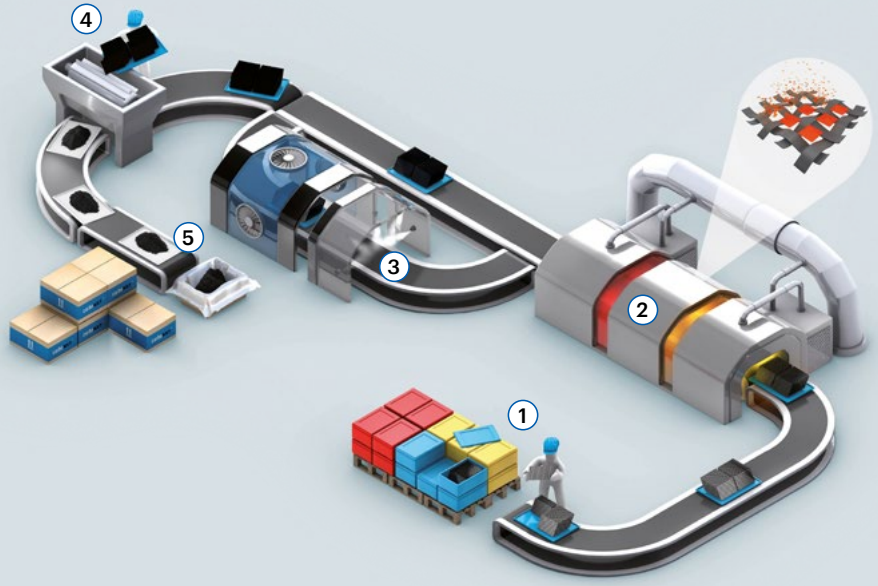
Ideal for applications in:

Mobility (Aerospace, Automotive), Sports & Leisure, Industrial (Electronics)

The pyrolysis process

Our unique pyrolysis process results in recycled carbon fibers that offer a remarkable array of advantages: high strength, high stiffness, conductive to electricity, antistatic, heat resistant, lightweight and better adhesion.

The thermic treatment excludes oxygen, enabling pure carbon fiber to be recycled. By the post-combustion of pyrolysis gases CO_2 emissions will be reduced, in that energy from the scrap materials actually fuels the process.



1. Pre-sorting
From waste to added value:
Shredding and sorting of the material according to its processing state and type of fiber: dry carbon scraps, Prepreg material or end-of-life parts

2. The pyrolysis process
Three steps towards purity:
Thermic treatment excluding oxygen in order to completely recycle pure carbon fiber. We take our understanding of sustainability seriously: the process is carried out by means of thermic post-combustion of pyrolysis gases with reduced CO_2 emission

3. Refinement
Carbon fiber in a new light:
Customized resizing of the fiber surface

4. Cutting
Giving waste a new purpose:
Processing of the carbon fibers into ‘chopped’ or ‘milled’ products – exactly cut to the desired fiber length corresponding to the customers’ specifications

5. Final product
A customized product off the assembly line:
With a variety of forms and customization available upon request the applications are virtually limitless

Customer success spotlight

carboNXT® for hydrokinetic power system

CRIMSON, a project funded by the European Commission, developing a hydrokinetic power system to produce clean, cost effective and reliable energy.

Solution

The CRIMSON project aims to take a circular economy approach and manufacture the hydrofoils using more eco-friendly recycled carbon fiber while providing the same quality standards as virgin carbon fibers

Products

carboNXT® recycled fiber and KyronTEX® made from rCF

Results

Our cutting-edge carbon fiber recycling solution is revolutionizing renewable energy by adding circular economy making it even more sustainable

KAITEKI

We define it as the sustainable wellbeing of people, society and our planet Earth.

KAITEKI is the guiding principle that drives everything we do as a company, partner, and industry leader. We lead with innovative solutions to achieve KAITEKI, the well-being of people and the planet.

How does that translate to you, our customers? We are not only committed to taking decisive actions regarding our own sustainability as a company, but we are also committed to providing you with materials and services that help you make your own advances towards sustainability. KAITEKI is all about balance between the environment, society, technology, and business needs — ours and yours alike.

One example that benefits both you and us is our efforts to establish a circular business model for our manufacturing and materials. Our high-performance, lightweight materials are already contributing to reduced manufacturing footprints, improved fuel economy and energy efficiency, and greater part longevity in applications from aviation to robotics. But we make a further contribution to sustainability by collecting and processing scrap and waste from our customers and processing it for immediate reuse. That, in turn, provides us with a continuous stream of recycled raw materials that we can turn back into advanced, high-value composites. This closes the loop, promoting reliable availability of recycled products for customers like you.

You can learn more about KAITEKI, circularity and all of our sustainability initiatives online at mcam.com/en/sustainability. We're honored to have you along for the ride.

MITSUBISHI CHEMICAL GROUP

Ready to talk about composites?

If you have additional questions or have identified a carbon composites solution that you think might be right for your design and manufacturing needs, we're ready to help you get started. Connect via the email address below, let us know which materials or technologies specifically you are interested in, and we'll have the right specialist get back to you with answers to all your questions.

We look forward to helping you get on the road to lighter, stronger, longer-lasting and sustainable carbon composite solutions to your challenges today!

composites.mcam@mcgc.com