

Automotive Functional Systems

Global Solution Provider



**Speciality materials
supporting our green
transformation**

Automotive Functional Solutions



With a long history of partnership and development with the top OEMs, automotive has been an integral industry for Mitsubishi Chemical Group. R&D and growth in high-performance materials and solutions for autonomous and electrified vehicles is at the core of our corporate strategy. Our focus is on partnering with our customers to develop and bringing to market lightweight, sustainable, high value, and functional solutions.

Mitsubishi Chemical Group offer an impressive portfolio ideal for demanding automotive applications such as carbon fiber, composites, high performance engineering plastics, films, and more. As a solution-driven partner, Mitsubishi Chemical brings together high performance materials, engineering processes and innovative design expertise to allow automotive engineers to develop highly innovative solutions with new levels of functional integration.

Partnership

From reimagining lightweighting structural applications that reduce fuel & energy consumption to redesigning parts to reduce components and processes, our customer-centric approach ensures mutual success. With a focus on decreasing the environmental impact, we partner with customers to develop solutions to their most challenging problems.

KAITEKI | Our Philosophy

At Mitsubishi Chemical Group, sustainability is more than a concept—it's a way of life. Through our focus on improving the health and well-being of people and the planet, we create innovative sustainable solutions globally. The sustainable well-being of people and our planet Earth—we call it KAITEKI.

We believe our role in the chemical industry is to be partners in innovation, developing material solutions that support a circular economy and sustainability of the earth and society. This overarching KAITEKI Philosophy is our guiding principle as we use LESS to have MORE.



LESS RESOURCES

Our technologies extend the loop, conserving resources by transitioning to bio-based and recycled raw materials.

LESS IMPACT

We decrease our impact on the environment through advanced resin innovation and developing lightweight materials.

MORE PRODUCT LIFE

Extending the material properties for extends the useful life of products.



Bio-Based



Recyclable



Recycled Materials



Light Weight



Process Elimination



Low VOC



Parts Consolidation

Functional Systems

Product	Description	Key Features
ADTEX™	Adhesive Polymer	High adhesive, durable
Hostaphan™	Opaque Film	Strong lap seal ensuring package formation and integrity
CF-FMC	Carbon Fiber Forged Molding Compound	Lightweight CF-reinforced composite with strength and ease of molding
Prepreg	For compression molding	Short cycle times, easy processing, variety of reinforcement fibers and resins available
Gelest™ PP2-TC01/2	Thermally Conductive Adhesive	High thermal conductivity and elongation
Gelest™ XG-3562, XG-3563, XG-3564	Dielectric Gels	Low viscosity, platinum addition cure
GMT™ eFR		Design flexibility with integrated parts
Hostaphan™	Casting Liner	Lightweight, High strength, High stiffness
KyronMAX™	Structural Thermoplastic Composites	World's strongest injection moldable thermoplastic
KyronTEX™	Thermoplastic Composite	Lightweight, High strength, High stiffness
MAFTEC™	Alumina Fiber	Excellent thermal management and fire retardant
MODIC™		Battery cooling lines and tubes
Novaduran™	PBT Resin	Excellent mechanical properties, rigidity, heat aging resistance and chemical resistance
Olefista™	Halogen-Free FR Olefin	High-voltage wiring and connectors
Pyrofil™	Carbon Fiber	Lightweight, excellent strength and stiffness
Qtex™	Organo Sheet	Lightweight, High strength, High stiffness
rCF	Recycled Carbon Fiber	Lightweight, excellent strength and stiffness
SF-MPG	Anode Material	High output performance, smooth ion release
SoarnoL™	High Gas Barrier Resin	Excellent barrier properties
Sol-Rite™	Formulated Electrolytes	High power density & output
SymaLITE™	Low Weight Reinforced Thermoplastics	Durable, noise-insulating material
TEFABLOC™	Thermoplastic Elastomer (TPE)	Soft, flexible and multi-material compatibility
Thermal Spacer	Thermally responsive insulator/conductor	High heat conductor, unique phase-change behavior
XAI™	Ultra-fine Acrylic Fiber	Excellent sound absorption

Structural Materials

CF FMC | Structural components

KyronMAX™ | Structural components, latches, brackets

GMT™ | Structural components

KryonTEX™ | Structural components

CMP Prepreg | Structural components

RecycledCF | Structural components

GMT™ eFR | Structural components, capacitors

Suspension Systems

CF FMC | Structural components

KyronMAX™ | Brackets

Lithium-Ion Battery Cell & Module Materials

Sol-Rite™ | Formulated Electrolytes

SF-MPG | Anode Materials

Thermal Management & Fire Protection

MAFTEC™ | Fire shield

Hostaphan™ Opaque Film | Material encapsulation

MODIC™ | Battery cooling lines & tubes

ADTEX™ | Battery cooling lines & tubes

Mitsubishi Thermal spacers | Thermally responsive insulator/conductor

Gelest | Gap fillers

Gelest | Adhesives

Connectors & Electrical Components

NOVADURAN™ | Connectors

Olefista™ | High voltage wiring & connectors

TEFABLOC™ TPE | High-voltage wiring jackets

Gelest Silicone Solutions | Protective encapsulates, protective gels, coatings

Noise, Vibration & Harshness

SymaLITE™ | Noise absorption

XAI™ | Noise Absorption

HV Pressure Vessels & Carriers

ADTEX™ | Adhesive polymer

SoarnoL™ EVOH | Gas barrier

GMT™ eFR | Pressure vessel carrier

PYROFIL™ | CFP/GDL Gas Diffusion Layer

Electric Motors

CF FMC | Structural components

KyronMAX™ | Structural components







Innovation

Today, consumers demand more sustainable solutions, driving the need for technology development in materials, manufacturing, and end-of-life impact. As a vertically integrated manufacturer, Mitsubishi Chemical views material innovation through a sustainability lens, and develops custom solutions that address application challenges while also reducing negative environmental and social impacts.

Our sustainable materials support our customers in fulfilling their goals as well as the market demands by offering added value throughout the supply chain. Mitsubishi Chemical material technologies include offerings that:

- Enhance performance and functionality
- Offer state-of-the-art design
- Result in less waste at the end of life
- Optimize energy and resources
- Have less impact on the environment

Carbon Fiber

Fully Vertically Integrated Material Supply Chain
Mitsubishi Chemical Group is uniquely positioned to be able to provide a fully integrated material supply chain for Carbon Fiber - from raw materials to composites to molded parts.



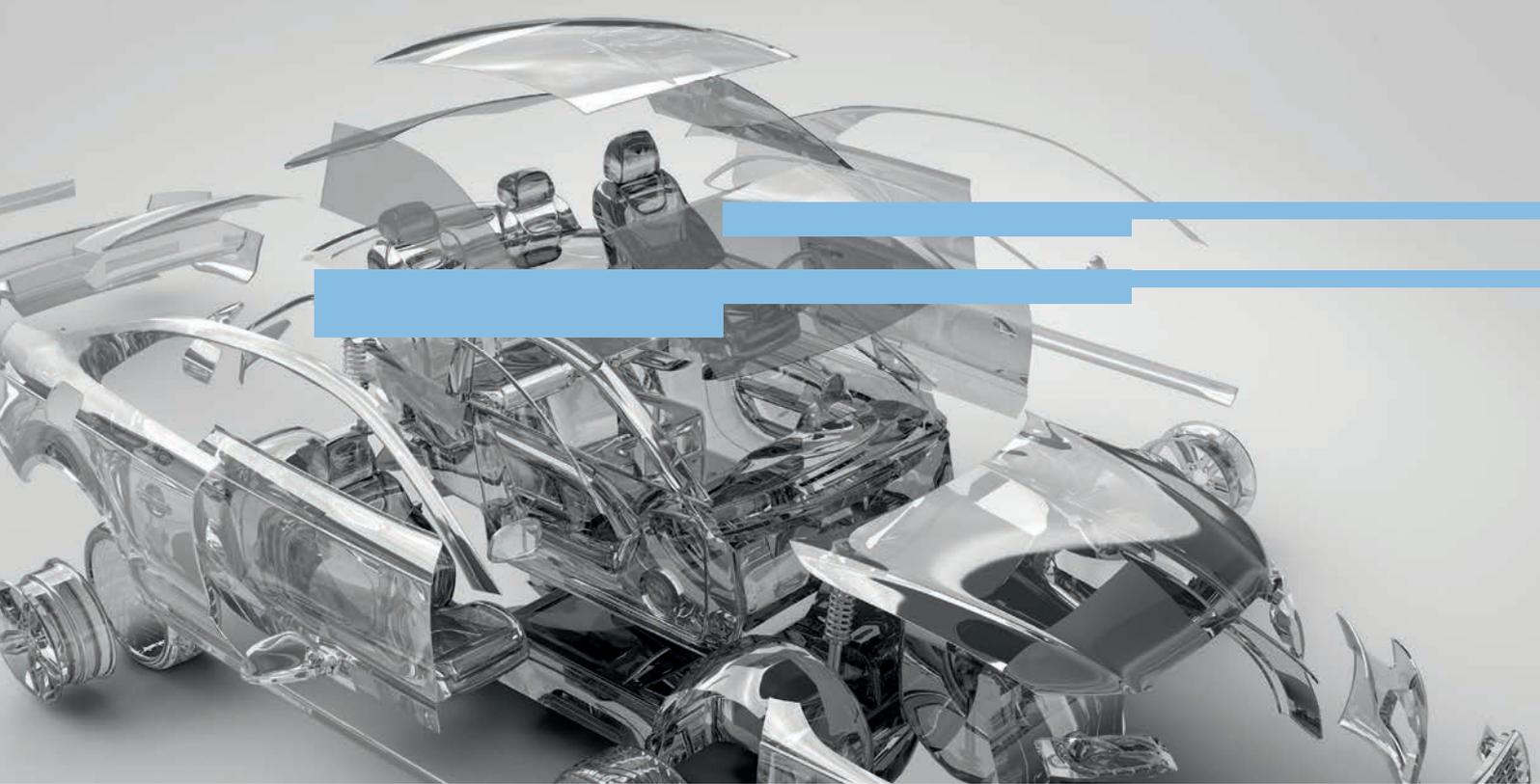
Award-Winning Innovation

KyronMAX™ Roof Receivers

Mitsubishi Chemical Group, has developed a groundbreaking lightweight solution for the automotive industry. KyronMAX Roof Receivers are the first high-volume structural carbon fiber reinforced injection molded engineering thermoplastic composite in a weatherable structural body application.

Redefining lightweighting, the KyronMAX material solution was able to outperform the previous cast steel parts, slashing weight by approximately 80% and cutting material costs by 35%. In partnership with Stellantis, Mitsubishi Chemical Group proudly accepted the following awards:

- 2021 CAMX Unsurpassed Innovation Award
- 2021 Automotive News PACE Award
- 2021 Automotive News PACE Innovative Partnership Award
- 2021 SPE ACCE Award



Structural

Our composite materials make it possible to replace metal structural and semi-structural vehicle parts with lighter and safer components. Mitsubishi Chemical Group's reinforced thermoplastic composite materials display excellent material properties in rigidity, strength, dimensional stability, and crash performance, eliminating the need for steel reinforcement.

CF FMC | Large-scale production parts

Qtex | Fuel tank protection

KyronTEX | Structural panels

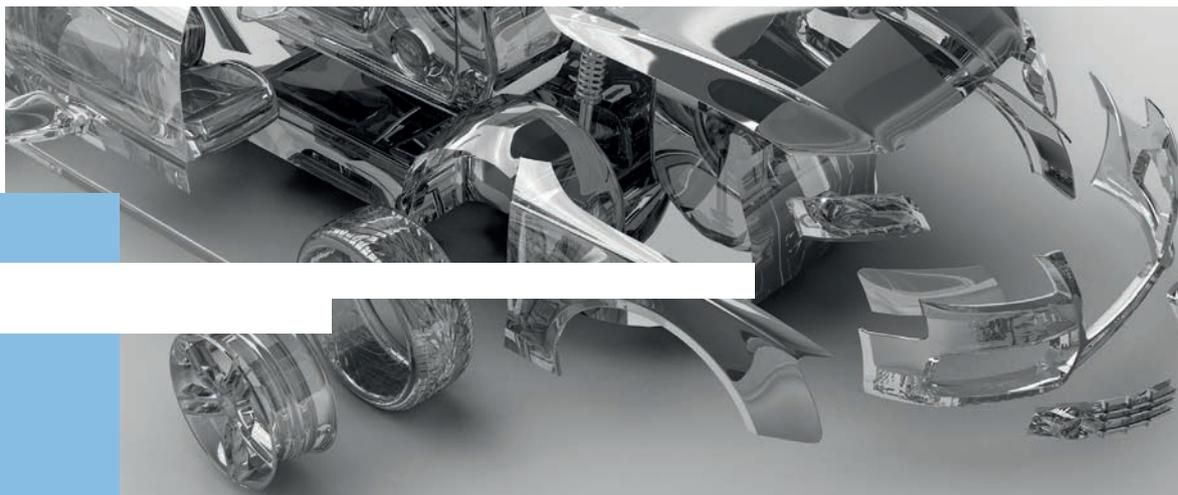
KyronMAX | Mounting brackets

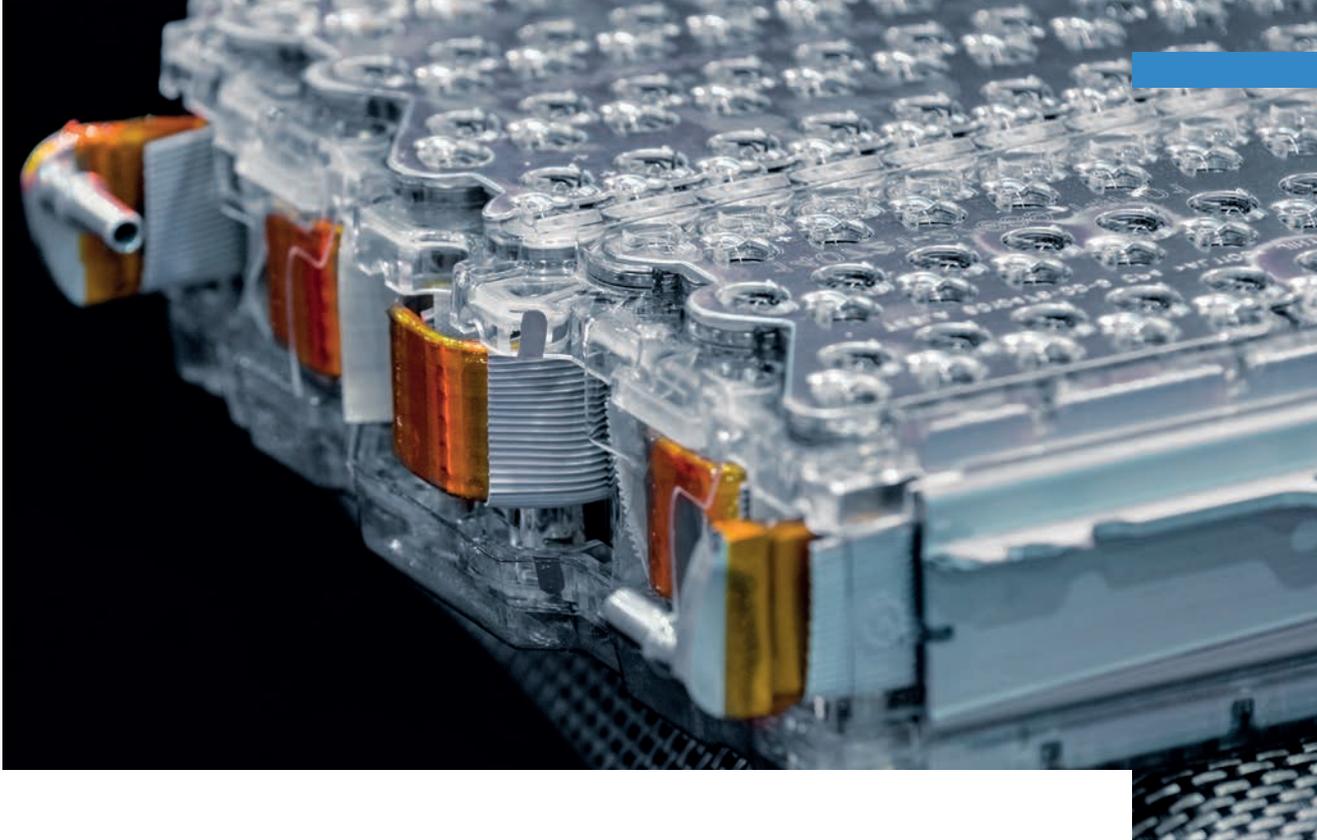
Suspension

The materials and design of steering systems, shafts, spring pans and wishbone play an integral part in ensuring lifelong performance. Mitsubishi Chemical Group has developed innovative composite materials with excellent abrasion and stress resistance for challenging environments where anti-vibration and suspension systems must perform.

CF FMC | Large-scale production parts

KyronMAX | Mounting brackets





EV Battery Cells

The quality of EV battery cell materials and manufacturing is critical, as any damage can impact the entire battery pack. Mitsubishi Chemical Group incorporates technical expertise and patented technologies to control the electrolyte interface on the cathode and anode of each EV battery cell.

- Sol-Rite** | Formulated electrolytes
- SF-MPG** | Anode materials
- Hostaphan™** | Battery cell manufacturing

Battery Pack Structural Materials

With a focus on driver safety, Mitsubishi Chemical Group customizes structural, lightweight materials for battery pack housings and enclosures that are designed to out-perform the most stringent material properties. These thermoplastic and thermoset resin systems are reinforced by a variety of materials such as short or long glass fibers, carbon fiber, glass mat, and weave technologies.

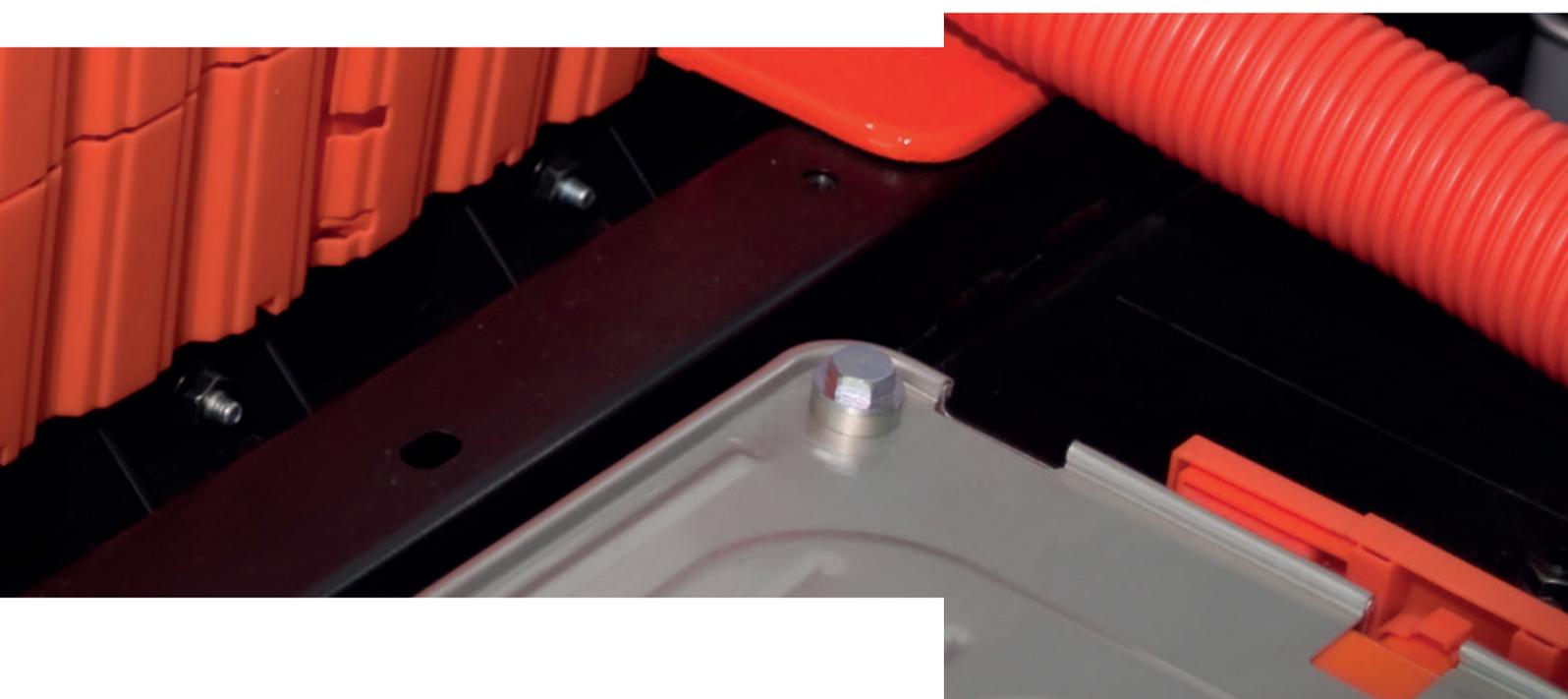
- CF FMC** | Structural components
- KyronMAX** | Structural components, latches, brackets
- GMT** | Structural components
- KryonTEX** | Structural components
- CMP Prepreg** | Structural components
- RecycledCF** | Structural components
- GMT eFR** | Structural components

Thermal Management

Thermal management and fire protection are the most essential components to driver safety in EV battery packs. Mitsubishi Chemical Group has developed various solutions for controlling heat flow, fire protection, battery cooling lines and tubes, and a foam casting liner. We also offer silicone adhesives for bonding electronic assemblies in components requiring thermal management.

- MAFTEC** | Fire shield
- Hostaphan™ Opaque Film** | Material encapsulation
- MODIC™** | Battery cooling lines & tubes
- ADTEX™** | Battery cooling lines & tubes
- Mitsubishi Thermal spacers** | Thermally responsive spacer, conductor - insulator
- Gelest** | Gap fillers and adhesives





EV Electric Motors

Mitsubishi Chemical Group has partnered with customers to develop high-quality materials for the EV space, including solutions specific to rotors and housings of electric motors. Our molding compounds and thermoplastic composites produce high-strength, lightweight structural components made to stand the test of time.

CF FMC | Structural components

KyronMAX | Structural components



HV Pressure Vessels & Carriers

Material solutions for HVs bring a unique set of challenges to manufacturers. Mitsubishi Chemical Group offers a wide range of structural, lightweight materials and adhesives suitable for CNG and Hydrogen vehicle pressure vessels and carriers. These thermoset and thermoplastic materials fulfill the most demanding crash and mechanical property requirements.

ADTEX | Adhesive polymer

SoarnoL EVOH | Gas barrier

Pyrofil Carbon Fiber Paper | Gas Diffusion Layer

GMT, GMTex | Pressure vessel carrier

Electrical

Mitsubishi Chemical Group provides high-performance resins for electrical components to enable flexible, reliable, and safe systems. Within automotive applications, our resins and additives can significantly increase the material durability and toughness, increase processability, and bolster other properties.

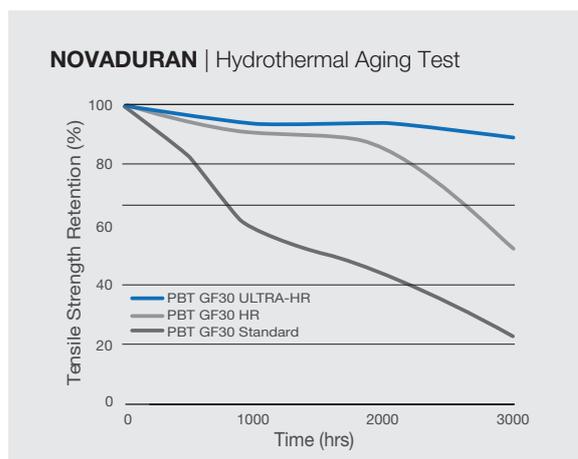
METABLEN | Additives

NOVADURAN | Connectors

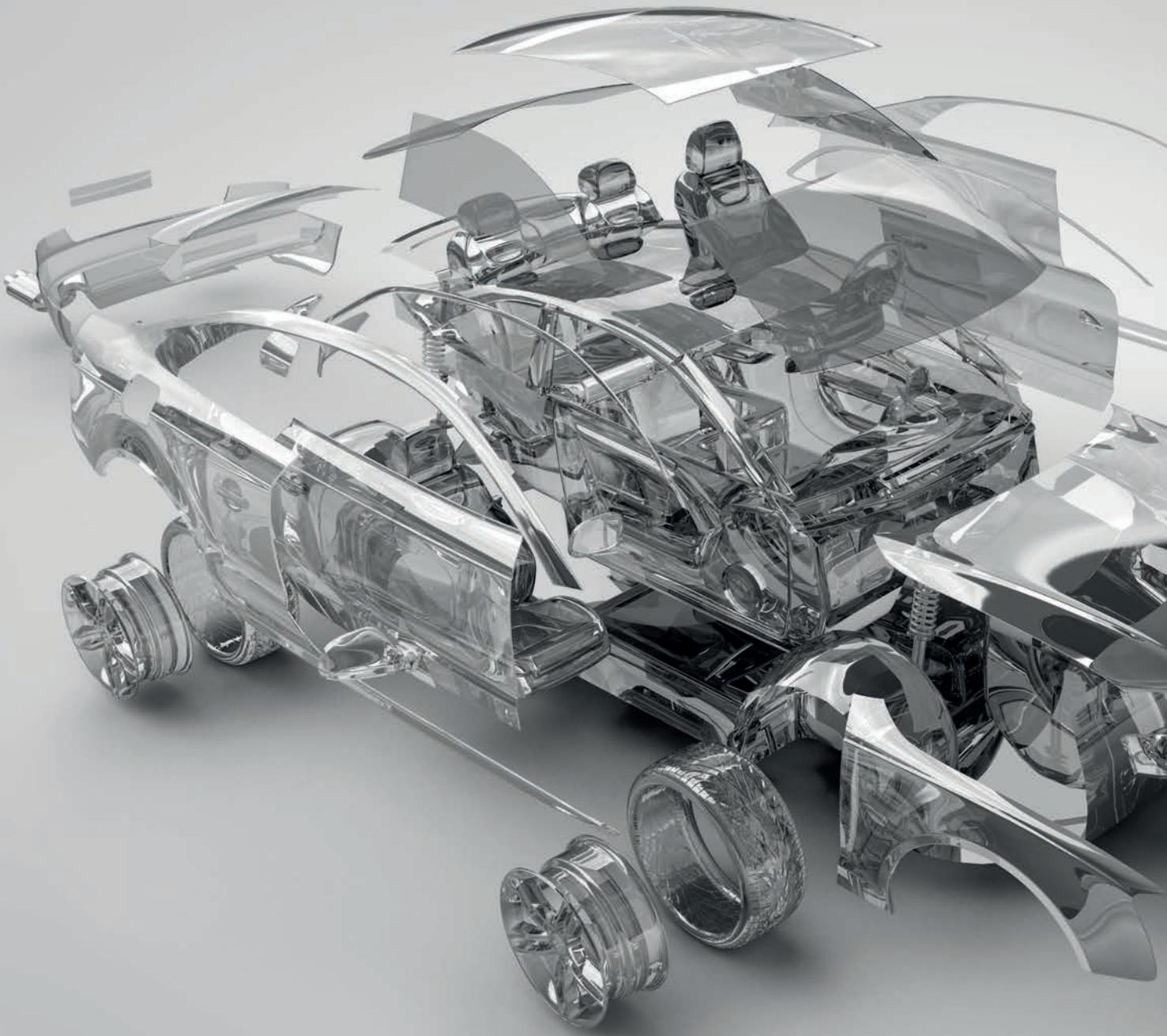
Olefista FR Olefin | High voltage wiring & connectors

TEFABLOC TPE | High-voltage wiring jackets

Gelest Silicone Solutions | Protective encapsulants, protective gels, coatings









Noise, Vibration, & Harshness

Just because the world around you is full of noise doesn't mean your vehicle has to be. Mitsubishi Chemical Group offers lightweight composites, resins, and acrylic fibers with excellent sound absorption and insulation.

XAI | Ultra fine acrylic fiber for enhanced sound absorption

SymaLITE™ | Light Weight Reinforced Thermoplastic
for noise absorption



Supporting the world of Automotive Functional Systems



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