






# Engineered Composites

An overview of the LYB Thermoset industry



# Our key product areas

The LYB team is inspired by the power of possibility. We are passionate about the role we play in supporting our customers' efforts to develop products to meet the challenges of today while advancing innovations that will improve tomorrow. To do so, LYB develops products and solutions in **five key areas**

 <h2>CHEMICALS</h2> <p>We produce the chemical building blocks for:</p> <ul style="list-style-type: none"> <li>• Furniture / household goods</li> <li>• Coatings / adhesives / cleaners</li> <li>• Cosmetics / personal care products</li> <li>• Industrial fluids</li> <li>• Fuel additives</li> </ul>	 <h2>POLYMERS</h2> <p>Our versatile plastic resins are used to create a variety of products including:</p> <ul style="list-style-type: none"> <li>• Rigid and flexible packaging</li> <li>• Textiles</li> <li>• Automotive parts</li> <li>• Healthcare</li> <li>• Pipe</li> <li>• Agricultural films/irrigation</li> </ul>	 <h2>ADVANCED POLYMERS</h2> <p>Our diverse portfolio is used to create customizable products including:</p> <ul style="list-style-type: none"> <li>• Automotive parts</li> <li>• Differentiated packaging</li> <li>• Electronics/appliances</li> <li>• Building and construction materials</li> <li>• Oil field services</li> <li>• Aerospace</li> <li>• Pipe</li> <li>• Agriculture</li> <li>• Wire and cable</li> </ul>	 <h2>FUELS</h2> <p>Our refinery in the U.S. produces:</p> <ul style="list-style-type: none"> <li>• Gasoline / fuel components</li> <li>• Low-sulfur diesel</li> <li>• Jet fuel</li> </ul>	 <h2>TECHNOLOGIES</h2> <p>We license our state-of-the-art manufacturing and process technologies</p> <ul style="list-style-type: none"> <li>• Polyolefin catalysts</li> <li>• Petrochemical process licenses</li> </ul>
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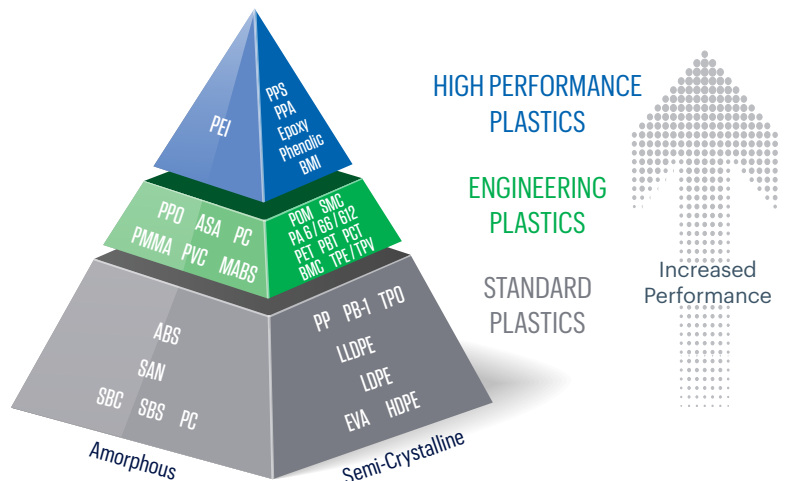
# Engineered Composites

Part of the Advanced Polymer Solutions (APS) business segment, the Engineered Composites portfolio from LYB complements the company's thermoplastic solutions, creating a robust and diverse product offering for a variety of applications. From off-the-shelf materials to custom made formulas, our unmatched compounding portfolio delivers solutions optimized to suit your unique needs.

Our Engineered Composites portfolio is comprised of three global product families:

- *Dura-BMC*
- *Premi-SMC*
- *Quantum-ESC*

Together with our customers and suppliers, we are transforming industries through a global portfolio dedicated to innovation and sustainability.



# Dura-BMC

*Dura-BMC* from LYB is a set of durable bulk molding compounds (BMC) designed for performance diversity and process flexibility. Outperforming traditional materials like steel and aluminum, *Dura-BMC* solutions demonstrate excellent dimensional stability, enhancing the lighting capabilities in the automotive sector. Additionally, this portfolio offers dielectric strength and fire retardancy for sensitive, high volume electrical applications along with corrosion resistance and conductive features to drive energy storage and the renewable power market forward.

The *Dura-BMC* portfolio is suitable for a variety of processing types, is available in bio-based or styrene-free versions and can be purchased in a variety of colors.

## Key applications

- Bipolar plates in energy storage applications
- Electrical boxes and circuit breakers
- Automotive forward lighting
- Street lighting and other infrastructure applications
- Throttle bodies for heavy truck and agriculture equipment



# Premi-SMC

*Premi-SMC* is a collection of premium sheet molding compounds (SMC) formulated for strength, longevity and aesthetics for any environmental condition. This portfolio is the right fit for applications that demand high strength and stiffness, such as battery enclosures, side body panels, and underbody shields enabling weight savings and greater performance for today's electric vehicles. *Premi-SMC* offers improved mechanical performance making it ideal for heavy truck, agriculture and infrastructure applications where maintaining appearance in harsh weathering conditions is essential.

*Premi-SMC*, like *Dura-BMC*, is also available in bio-based or styrene-free versions while offering a variety of colors to meet our customers' requirements.

## Key applications

- Electric vehicle battery enclosures
- Class A body panels for vehicles and heavy equipment
- HVAC housings and components
- Tactile safety tiles and other infrastructure applications
- Oil pans in heavy equipment



# Quantum-ESC

In a class of its own, our proprietary Quantum Engineered Structural Composites (*Quantum-ESC*) is a series of unique materials with exceptional performance for the most demanding applications. This industry-renowned portfolio goes head-to-head with metal in the most challenging environments where high pressure and heat tolerance are required, driving energy recovery solutions to the forefront. The high strength-to-weight ratio enables the aerospace and automotive markets to meet groundbreaking efficiency targets for a full system solution.

*Quantum-ESC* addresses complex 3D geometry for the most intricate designs while achieving a lighter weight. When using carbon fiber, this material's unique luxurious look and feel has global appeal.

## Key applications

- Personal protective equipment such as hockey helmets
- Frac plug components in Oil & Gas markets
- Snowboard bindings and other sporting equipment
- Aircraft seating structures in general aviation
- Vehicle underbody heat and impact shields



# Everyday solutions for modern challenges

Helping customers achieve their application needs across a variety of markets.



**Automotive:** such as electric vehicle battery enclosures, forward lighting, body panels and interior trim.



**Aerospace:** tertiary parts and secondary structures in general and military aviation.



**Energy:** storage applications for renewable energy, frac plug components and centralizers in oil and gas.



**Building & Construction:** electrical boxes, circuit breakers, HVAC housings, wall panels and window & door skins.



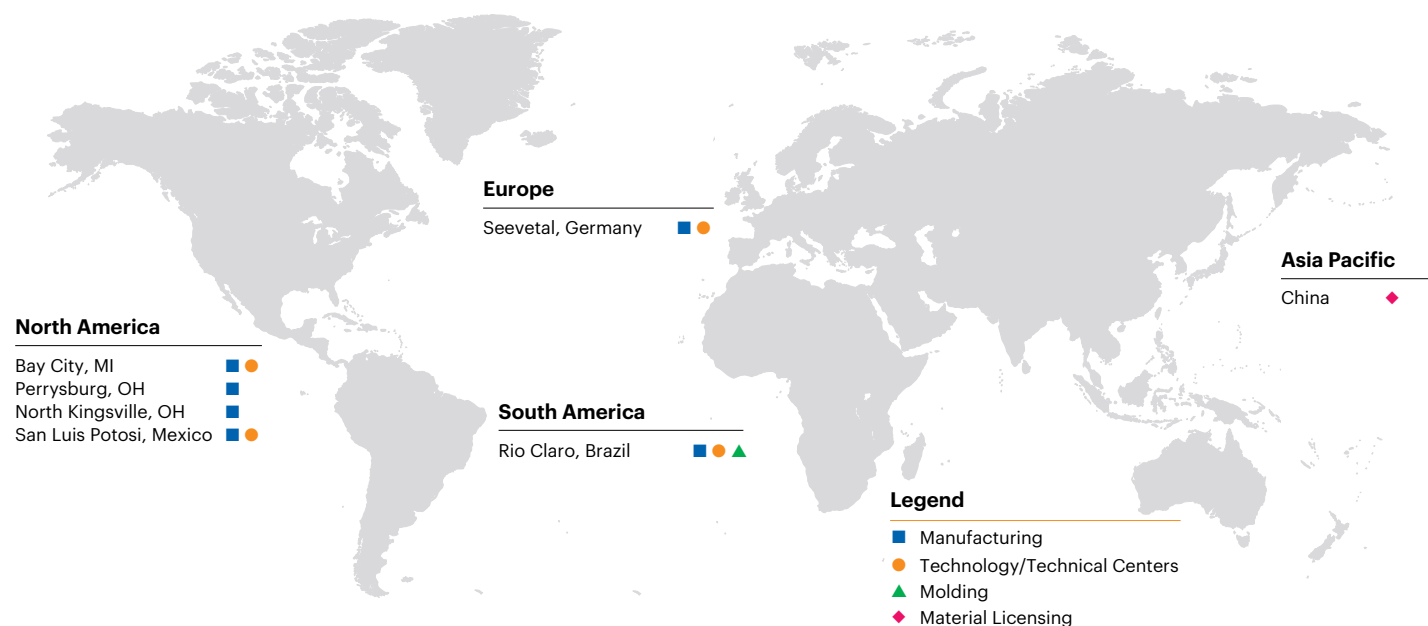
**Heavy Truck and Agricultural Equipment:** body panels and throttle bodies, oil pans and valve covers.



**Sporting Equipment:** snowboard bindings, hydrofoils and personal protective equipment such as hockey masks.

## Scope and scale to serve the world

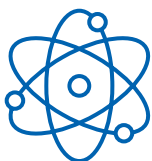
Our worldwide Engineered Composites footprint allows us to serve global customers at the local level.





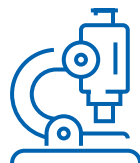
# Providing support through our materials and beyond

Bringing your ideas from concept to creation through a heritage of technical excellence.



## Material development and Custom formulations

- Low-density formulas
- Samples produced in pilot environment
- Extensive portfolio of proprietary formulations
- Offering bio-based and styrene-free solutions



## Fundamental research

- Experience with different resin systems and fiber reinforcements
- Comprehensive and advanced laboratory
- Next-generation materials
- Driving advancements in energy markets



## Part design and applications engineering

- Mechanical testing and material characterization
- Structural analysis, modeling and simulation
- Rapid prototyping and part design
- Part performance and quality enhancements

# About us

We are LyondellBasell (LYB) – a leader in the global chemical industry creating solutions for everyday sustainable living. Through advanced technology and focused investments, we are enabling a circular and low carbon economy. Across all we do, we aim to unlock value for our customers, investors and society. As one of the world's largest producers of polymers and a leader in polyolefin technologies, we develop, manufacture and market high-quality and innovative products for applications ranging from sustainable transportation and food safety to clean water and quality healthcare. For more information, please visit [www.lyb.com](http://www.lyb.com) or follow [@LyondellBasell](https://www.linkedin.com/company/lyondellbasell) on LinkedIn.

**More information about Engineered Composites from LyondellBasell can be found at [www.lyb.com/engineeredcomposites](http://www.lyb.com/engineeredcomposites)**

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