

# Engineered Composites

Advancing what's possible in the Thermoset industry



# Our Key Product Areas

The LyondellBasell 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, LyondellBasell develops products and solutions in **five key areas**



POLYMERS	ADVANCED POLYMERS	CHEMICALS	FUELS	TECHNOLOGIES
<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>wire and cable</li> <li>automotive</li> <li>appliances</li> <li>healthcare</li> <li>piping</li> </ul>	<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>gelcoats</li> </ul>	<p>We produce the chemical building blocks for:</p> <ul style="list-style-type: none"> <li>automotive fluids</li> <li>furniture / household goods</li> <li>coatings / adhesives / cleaners</li> <li>cosmetics / personal care products</li> </ul>	<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> <li>lubricants</li> <li>oxyfuels</li> </ul>	<p>We license our state-of-the-art manufacturing and process technologies</p>

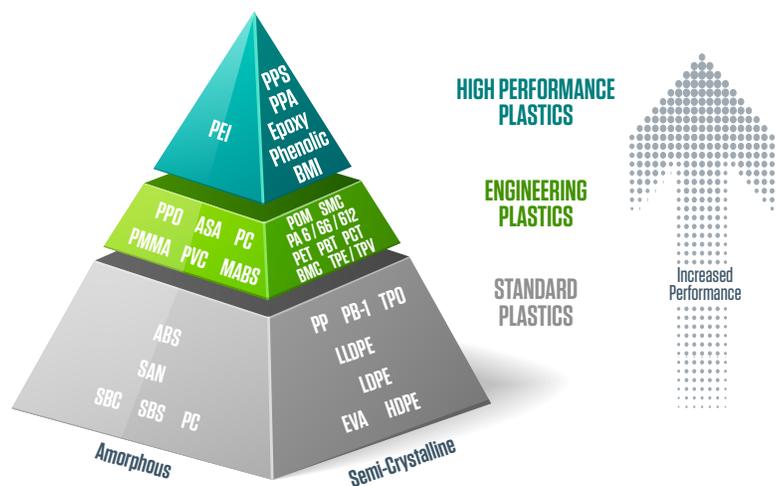
## Engineered Composites

Part of the Advanced Polymer Solutions (APS) business segment, the Engineered Composites portfolio from LyondellBasell 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 LyondellBasell 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.

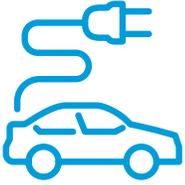
## Key Applications

- 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



# Advancing solutions to 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.



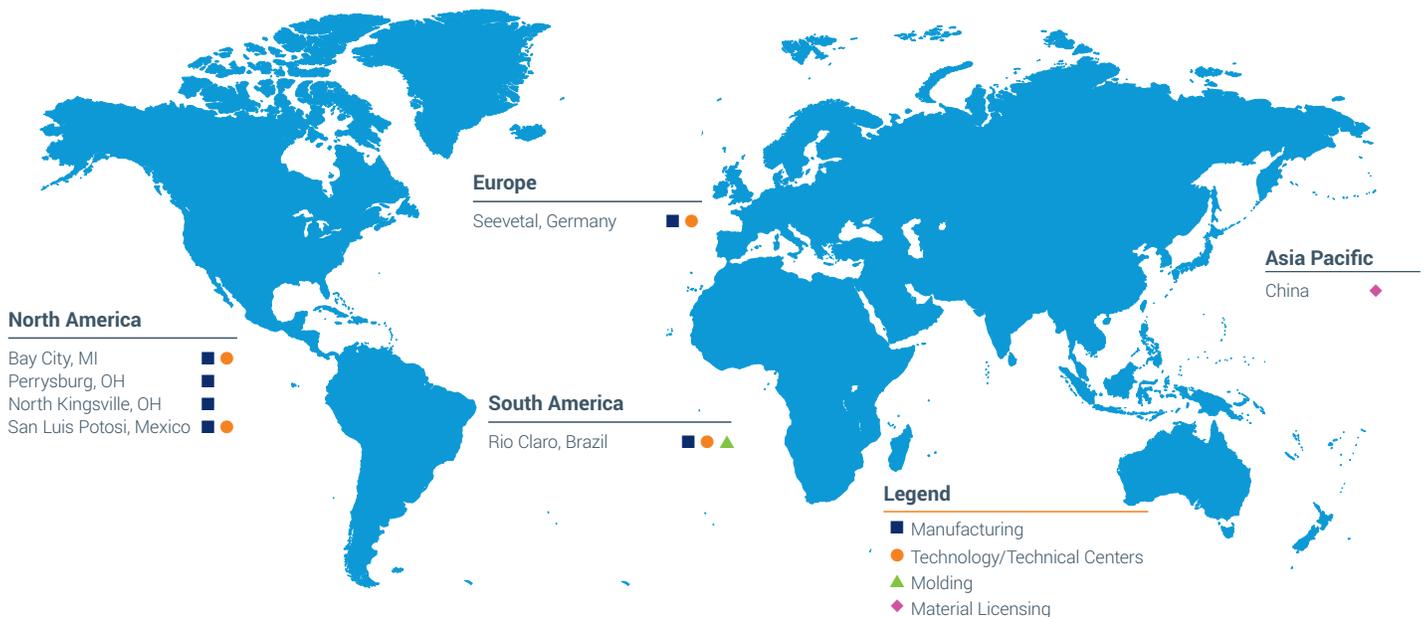
**Heavy Truck and Agricultural Equipment:** body panels and throttle bodies, oil pans and valve covers.



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

## Scope and scale to serve the world

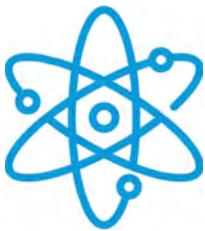
Our worldwide Engineered Composites footprint allows us to serve global customers at the local level.





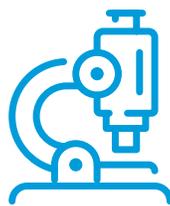
# Providing support through our materials and beyond

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

As a leader in the global chemical industry, LyondellBasell strives every day to be the safest, best operated and most valued company in our industry. The company's products, materials and technologies are advancing sustainable solutions for food safety, access to clean water, healthcare and fuel efficiency in more than 100 international markets. LyondellBasell places high priority on diversity, equity and inclusion and is *Advancing Good* with an emphasis on our planet, the communities where we operate and our future workforce. The company takes great pride in its world-class technology and customer focus. LyondellBasell has stepped up its circularity and climate ambitions and actions to address the global challenges of plastic waste and GHG emissions reduction. For more information, please visit [www.lyondellbasell.com](http://www.lyondellbasell.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)**

Before using a product sold by a company of the LyondellBasell family of companies ("LyondellBasell"), users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally. LyondellBasell MAKES NO WARRANTY, EXPRESS OR IMPLIED (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE) OTHER THAN AS AGREED TO BY LyondellBasell IN THE PRODUCT SALE CONTRACT.

LyondellBasell prohibits or restricts the use of its products in certain applications. For further information on restrictions or prohibitions of use, please contact a LyondellBasell representative.

Users should review the applicable Safety Data Sheet before handling the product.

*Dura-BMC*, *Premi-SMC* and *Quantum-ESC* are trademark owned or used by one of the LyondellBasell family of companies and is registered in the U.S. Patent and Trademark Office.

**lyondellbasell**  
*Advancing Possible*