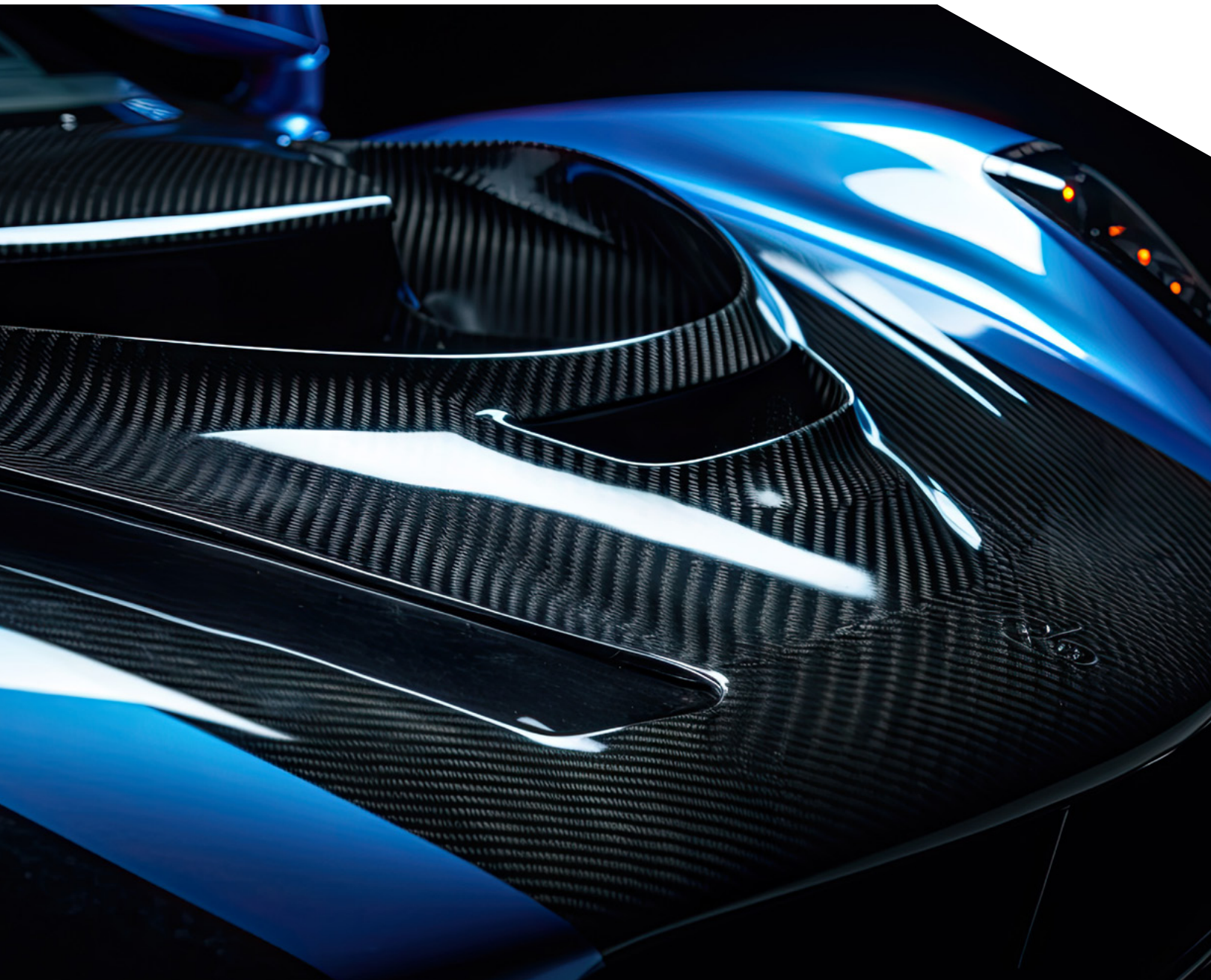


# Quantum-ESC

A summary of the LyondellBasell *Quantum-ESC* (Engineered Structural Composites) portfolio.



## Product Selection Guide

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 is required.

Material Reference	Fiber% w/w	Fiber Length (inches / mm) and Type	Description	Features / Benefits / Applications
<b>Vinyl Ester - Fiberglass E Grade</b>				
QC 8560*	60%	0.5 / 13 E glass	Higher heat resistant Vinyl Ester	High temp auto, industrial. Lower cost Aero / Mil
QC 8700	63%	1 / 25 E glass	Increased temperature resistance over the QC 8800	General purpose structural, prosthetics, marine, automotive, industrial, safety. Color and flame retardant versions available.
<b>Vinyl Ester - Carbon Fiber - PAN based std modulus</b>				
AMC 8590	53%	1 / 25 12K	Widely used across the AMC carbon fiber offerings	Structural automotive, inner panels, brackets, etc. Sporting goods, golf clubs, bicycle components, medical. Designed for structural applications requiring high stiffness and high strength, particularly open- and filled-hole tension and compression. Available as styrene-free version for low-emission molding in Europe.
AMC 85591**	55%	1 / 25 48K split fiber	Widely used across the AMC carbon fiber offerings	
AMC 8593*	50%	1 / 25 3K	Offering highest properties and lowest Coefficient of Variation	
<b>Epoxy - Fiberglass E grade</b>				
Lytex 9063*	63%	0.5 / 13 E glass	Lytex 9063 is specified by numerous aero and military OEMs. Short cure time for complex geometry molded parts solutions.	Aerospace secondary and tertiary components, fairings, brackets, etc. Industrial, high temperature / high pressure. Suitable for molding thick cross sections (>3"). Flame retardant & low density versions available.
<b>Epoxy - Carbon Fiber - PAN based std modulus</b>				
Lytex 4149*	55%	1 / 25 3K	Lytex 4149 is specified by numerous aero and military OEMs	Aerospace secondary and tertiary structures, components, fairings, brackets, panels. Advantages of Lytex resin system with light weight and stiffness of carbon fiber. Flame retardant version available.
<b>Vinyl Ester - Recycled Carbon Fiber</b>				
FP 85545**	30%	non-woven mat	FP 85545 is designed for sustainable approaches in various applications	Carbon Fiber from post-industrial recycling is used as reinforcement for applications that require lower mechanical properties, while substantially decreasing the CO <sub>2</sub> footprint.

\*Global grades available with both European and North American production (European Grades have additional nomenclature to designate EU grades with data supplied from North American supplied material).

\*\*Only available as European Grade

# Everyday Performance



## Product Selection Guide

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. Additionally, it offers faster throughputs together with cost-effective tooling when compared to metal.

Material Reference	SG	Flexural Modulus D-790/ ISO 14125 Machined	Flexural Strength D-790/ ISO 14125 Machined	Tensile Modulus D-638 / ISO 527-4 D-3039 Machined	Tensile Strength D-638/ ISO 527-4 D-3039 Machined	Glass Transition D-7028/ ISO 11357- 2 Tan Delta	
	g/cc	GPa	MPa	GPa	MPa	F°	C°
<b>Vinyl Ester - Fiberglass E Grade</b>							
QC 8560	1.89	20	424	21	210	329	165
QC 85560 (EU)	1.81	18	506	17	264	293	145
QC 8700	1.85	21	483	20	242	260	127
<b>Vinyl Ester - Carbon Fiber - PAN based std modulus</b>							
AMC 8590	1.48	28	448	37	162	288	142
AMC 85590 (EU)	1.48	25	390	27	150	284	140
AMC 85591 (EU)	1.48	27	310	29	120	284	140
AMC 8593	1.47	31	504	36	290	288	142
AMC 85593 (EU)	1.46	30	524	31	281	284	140
<b>Epoxy - Fiberglass E grade</b>							
Lytex 9063	1.82	18	407	18	193	329	165
Lytex 90563 (EU)	1.76	17	380	17	200	356	170
<b>Epoxy - Carbon Fiber - PAN based std modulus</b>							
Lytex 4149	1.48	32	531	35	221	329	165
Lytex 41549 (EU)	1.48	29	530	34	320	320	160

# Everyday Adventure



# 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)**

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.

*Lytex* and *Quantum-ESC* are trademarks owned or used by one of the LyondellBasell family of companies and are registered in the U.S. Patent and Trademark Office.

