



E6-CR Glass Fiber

Best Corrosion Resistance Solution for High-Performance Composite Material



E6-CR

Boron-Free Fluorine-Free Glass Fiber



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GOALS

Best Corrosion Resistance Solution for
High-Performance Composite Materials

To achieve clean production and minimize environmental footprint, Jushi Group successfully developed E6[®] enhanced glass fiber in 2008. With the rapid development of new applications, the design of fiberglass composite parts is becoming more and more demanding, for example, both the manufacturers and end users want products with long-term consistency and reliability. To meet these demands, as well as to meet the technical requirements from corrosion resistance application field, the development of E6-CR glass fiber was successfully completed by Jushi Group and was commercially available since 2012.

E6-CR enhanced glass fiber is a new E-glass fiber with enhanced properties. It combines all the benefits of E6[®] glass fiber with excellent corrosion resistance, thus meeting the requirements of the most demanding applications. E6-CR provides customers with best solutions for corrosion resistance.

E6-CR GLASS FIBER

Excellent Corrosion
Resistance

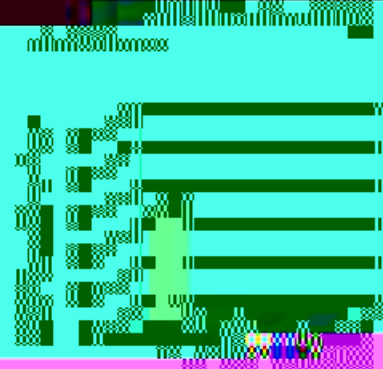


Compared with typical E-glass fiber, E6-CR offers the following unique benefits:

- Higher chemical stability
- Boron-free fluorine-free, to ensure clean production

E6-CR glass fiber is produced with a unique glass

Material	Chemical Composition	Modulus	Strength	Weight	Volume
E-glass	SiO ₂ 52.0%, CaO 16.0%, Al ₂ O ₃ 12.0%, B ₂ O ₃ 1.0%, MgO 1.0%, Na ₂ O 1.0%, K ₂ O 1.0%	70 GPa	2000 MPa	2.5 g/cm ³	1000 cm ³
E6-CR	SiO ₂ 52.0%, CaO 16.0%, Al ₂ O ₃ 12.0%, B ₂ O ₃ 1.0%, MgO 1.0%, Na ₂ O 1.0%, K ₂ O 1.0%	70 GPa	2000 MPa	2.5 g/cm ³	1000 cm ³



Material	Chemical Composition	Modulus	Strength	Weight	Volume
E-glass	SiO ₂ 52.0%, CaO 16.0%, Al ₂ O ₃ 12.0%, B ₂ O ₃ 1.0%, MgO 1.0%, Na ₂ O 1.0%, K ₂ O 1.0%	70 GPa	2000 MPa	2.5 g/cm ³	1000 cm ³
E6-CR	SiO ₂ 52.0%, CaO 16.0%, Al ₂ O ₃ 12.0%, B ₂ O ₃ 1.0%, MgO 1.0%, Na ₂ O 1.0%, K ₂ O 1.0%	70 GPa	2000 MPa	2.5 g/cm ³	1000 cm ³



E6-CR REINFORCEMENTS

Excellent Environment Durability

In the future, end-use composite products will operate in even harsher environments and the end-users will expect enhanced durability. Compared with E6® glass fiber, **E6-CR enhanced glass fiber** reinforced composite materials offer better corrosion resistance and temperature endurance, making composite parts more reliable and cost effective.

Superior Mechanical Properties

Test Sample	Property	Standard	E	E6®	E6-CR
Tensile property of impregnated roving, Epoxy resin	Tensile strength (MPa)	ASTM D2343	1900~2000	2500~2700	2500~2700
	Tensile modulus (MPa)	ASTM D2343	73~75	81~83	81~84
1200 g/m ² UD fabric, (tested in 0° direction), Infusion process, Epoxy resin	Tensile strength (MPa)	ISO 527-5	/	1120.6	1125.0
	Tensile modulus (MPa)	ISO 527-5	/	42.6	42.9
	Fiber Volume Content (%)	ISO 1172	/	53.6	54.0
	Tensile strength (MPa)	ISO 14126	/	805.5	810.5
	Tensile modulus (GPa)	ISO 14126	/	42.9	43.1
	Fiber Volume Content (%)	ISO 1172	/	54.3	54.4

Chemical Stability

Degradation (% Loss) after boiling in water for 7 days

Sample	Property	Standard	E6®	E6-CR
800g/m ² woven roving	Glass content (%)	ISO 1172	57	57
	Tensile strength (MPa)	GB/T 1447	38.1%	11.4%
Unsaturated polyester	Tensile modulus (GPa)	GB/T 1447	2.8%	1.9%
	Flexural strength (MPa)	GB/T 1449	29.5%	22.3%
Hand laid laminates	Flexural modulus (GPa)	GB/T 1449	12.0%	13.1%

Temperature Resistance

Glass fiber reinforced composites are increasingly used in harsh environments, such as pipes used in oil-field process, which require it of high temperature, waste gases. Drastic changes in ambient temperature reduce the strength and thus shorten the operating life of composite materials.

The composite samples tested below were dried for 10 days at 180, and then put in an -60 environment for another 10 days. The relative loss of properties after the exposure is shown in the table below.

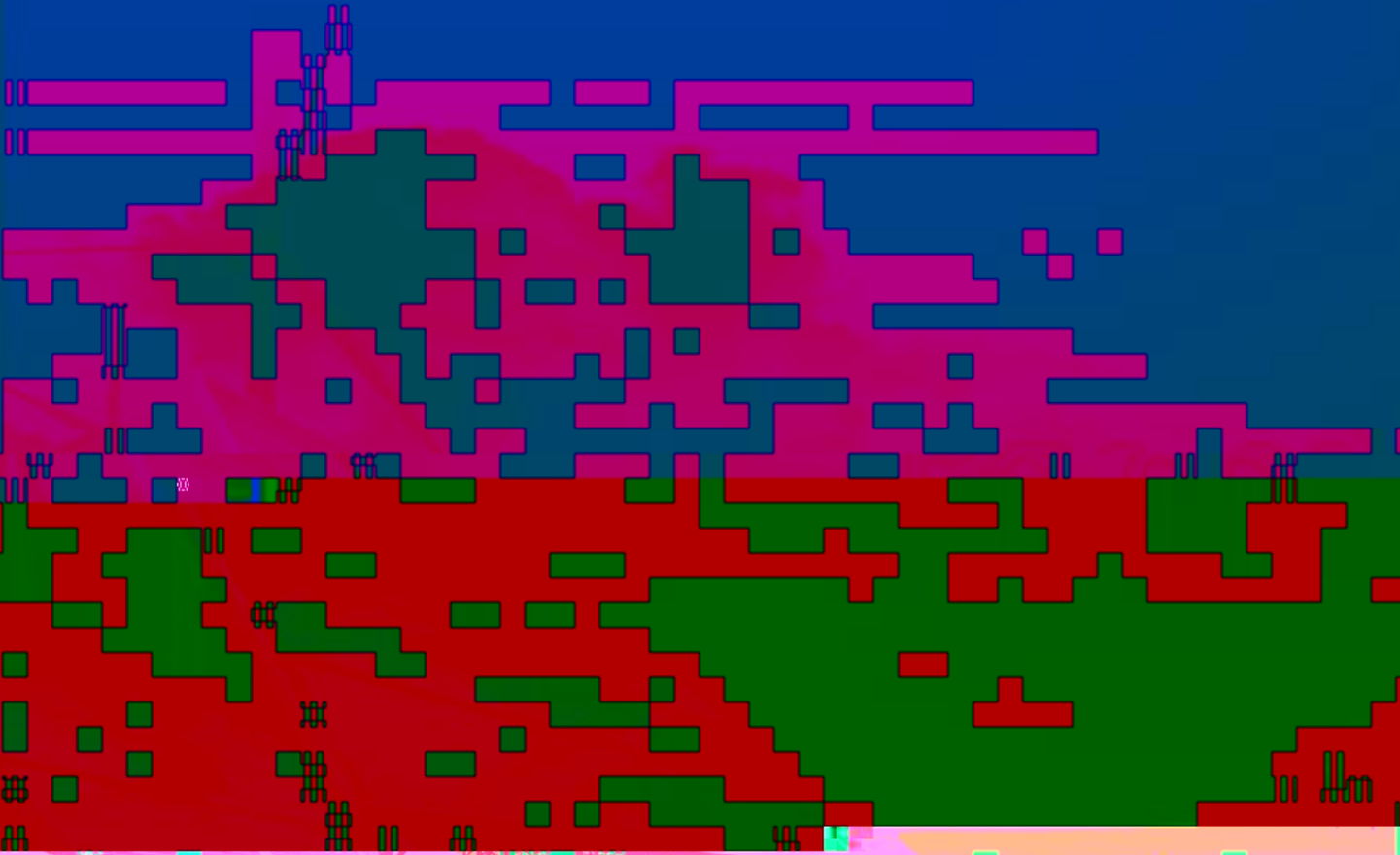
Sample	Property	Standard	E6®	E6-CR
800g/m ² woven roving	Glass content (%)	ISO 1172	58	58
	Tensile strength (MPa)	GB/T 1447	4.9%	4.5%
Unsaturated polyester	Tensile modulus (GPa)	GB/T 1447	6.8%	6.1%
	Flexural strength (MPa)	GB/T 1449	17.0%	15.4%
Hand laid laminates	Flexural modulus (GPa)	GB/T 1449	14.0%	12.8%

ENVIRONMENTAL

PROTECTION

Environmental Protection Agency

U.S. DEPARTMENT OF AGRICULTURE
NATIONAL SERVICE CENTER
1400 TOMPKINS AVE
WASHINGTON, DC 20250
202-743-4640





CUSTOMER AND TECHNICAL SUPPORT ORGANIZATION

Offer Best Technical Support

China Jushi possesses world class core technologies and advanced testing and analysis capabilities for glass, organic chemistry, fiberglass and composites. We have established a global network of marketing and technical service professionals to help customers solve problems in materials development and process optimization. We collaborate closely with customers to address market challenges and promote the growth of the composites industry.

We will share with you all the information on **E6-CR** glass fiber reinforcements as well as our considerable knowledge of compounding and molding technology and processes.



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★All the data given in this brochure is preliminary and China Jushi reserves the right to update or modify the data without notice.



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