



# XStrand® R

High-Performance Reinforcements

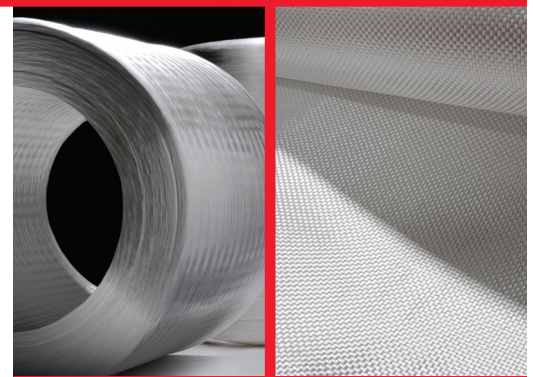
**Delivering Performance.**  
**Enabling Possibilities.**  
**Readily Available.**

**XStrand® R** roving has been specifically developed for pressure vessels and industrial applications that require high-strength reinforcements and long fatigue life. Compared to traditional E-glass fibers, XStrand R reinforcement is up to 35% stronger, 15% stiffer and 70% tougher. For the same strain or stress level, the fatigue life may be improved by as much as 10 times. These benefits enable lighter, more reliable and more cost effective CNG cylinders or tension cables. Because of the critical importance of the synergy between the reinforcements and the matrix, special proprietary sizing systems have been developed for all major polymers used in composites manufacturing today including epoxies, vinyl esters and unsaturated polyesters. XStrand R roving also is available in fabric and prepreg forms either from Owens Corning or from our selected converter customers.

XStrand R roving is part of a new generation of High-Performance Reinforcements from Owens Corning enabling significantly stronger, stiffer and lighter composite parts than traditional E-glass reinforcements at a cost substantially lower than carbon or aramid fibers.

Owens Corning XStrand R High-Performance Reinforcements are made from a boron-free glass formulation that can be classified as a High-Strength R-glass, as defined by the ASTM C-162, DIN 1259 and ISO 2078 standards. This glass formulation is designed for excellent mechanical properties (tensile strength and modulus) and offers significantly better thermal and corrosion resistance properties than E-glass.

This document specifies properties for our standard high-performance reinforcement products; however, should you have other special requirements, please contact our dedicated and knowledgeable staff for assistance.





## USAGE AND PERFORMANCE

XStrand R roving consists of continuous filaments gathered in a single-end roving without mechanical twist and treated with specifically developed sizings. These rovings are characterized by a low level of catenary, excellent processing and handling characteristics; e.g., low fuzz, low static, complete run-out and fast wet-out for filament winding, weaving and knitting, and the pultrusion processes typically used in industrial applications such as CNG/LNG cylinders, cables, belts or clutch facings.

## TECHNICAL CHARACTERISTICS

THERMAL PROPERTIES	XSTRAND® R FIBERS	
Softening Point (ASTM C338)	1760°F	960°C
Annealing Point (ASTM C336)	1382°F	750°C
Strain Point (ASTM C336)	1290°F	699°C
PHYSICAL PROPERTIES		
Bulk Density	2.567 gr/cm <sup>3</sup>	
Estimated 18µm Fiber Density	2.555 gr/cm <sup>3</sup>	

## PRODUCT OFFERINGS

XSTRAND® R ROVING	RESIN COMPATIBILITY	NOMINAL FIBER DIAMETER (µm)	BARE GLASS LINEAR DENSITY TEX (g/km)
EPX10	Epoxy	12	300
EPX10	Epoxy	17	600
EPX10	Epoxy	17	1200
EPX10	Epoxy	17	2400
EPX10	Epoxy	24	2400
EPX15	Epoxy	12	600
MCX21	Polyester, Vinylester, Epoxy	12	300
MCX21	Polyester, Vinylester, Epoxy	17	600
MCX21	Polyester, Vinylester, Epoxy	17	1200
MCX21	Polyester, Vinylester, Epoxy	17	2400
MCX21	Polyester, Vinylester, Epoxy	24	2400

## PRODUCT CHARACTERISTICS AND QUALITY CONTROL LIMITS

PRODUCT CHARACTERISTIC	PRODUCT NOMINAL BARE GLASS	TARGET (TEX WITH SIZING)	MINIMUM	MAXIMUM	METHOD
Linear Density (g/km)	300	302	276	327	ISO 1889
	600	604	551	655	
	1200	1207	1107	1307	
	2400	2414	2214	2614	
Strand Solids (LOI%)	EPX10	0.65%	0.50%	0.80%	ISO 1887
	EPX15	0.67%	0.54%	0.80%	
	MCX21	0.40%	0.25%	0.55%	
Moisture (%)	All	N/A	0	0.15%	ISO 3344

## PRODUCT LABELING, PACKAGING AND PALLETIZING

XStrand® R roving products are supplied on tubeless packages and are designed to be pulled from the inside of the package. If the customer requires outside unwinding, we would gladly discuss these options.

### Package:

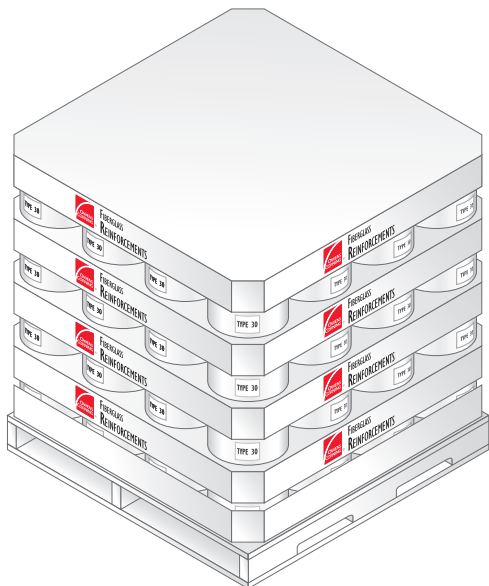
- Cylindrical bobbin without tube, Outside Diameter (OD)  $\pm$  270mm, height 260 - 300mm.
- Partial bobbins have smaller diameter.
- Max bobbin weight must not exceed 19kg.
- A maximum of three partial bobbins between 4.5 - 11.3kg are permitted on each tier on the pallet.
- Bobbin covered by a Tack-Pack® film.

### Pallet:

- Size: 1150 x 1150mm, 4 ways entry.
- 16 bobbins (max OD ) per layer, pallets are 4 tiers high
- Pallet is stretch-wrapped.

### Identification:

- Bobbin label (each bobbin).
- Five pallet labels, one on side of the pallet and one inserted in the first layer.



## VISUAL INSPECTION REQUIREMENTS AND DOCUMENTATION

- A certificate of conformity or analysis may be issued upon request.
- The bobbin shall be firmly and evenly wound with a uniform lay, equal traverse length. The roving shall be wound with even tension and exhibit no catenary. The flanges of the package may present a yellowish aspect which is inherent in the product and is not a cause for reject.
- A package that has (inside the build or on its surface) visible grease, oil, dirt or other foreign matter, 3mm or less in diameter, is rejectable if the total number of defects exceeds two (2). A package is also rejectable if it contains one (1) or more of such defects greater than 3mm in diameter.
- Any package build deformity which interferes with the smooth and uniform runoff of the strand is a cause of rejection of the package.

## STORAGE AND USAGE CONDITIONS

- Glass fiber products must remain in the packaging material until just prior to use. It is recommended to bring material in the workshop place at least 24 hours prior to use. Optimal atmospheric processing conditions are: temperature between 20-22°C and relative humidity between 60-65%.
- The packaging system is designed to allow stacking of two pallets. When stacking two high, care should be taken to place the top pallet correctly and smoothly. Owens Corning is not responsible for any damage resulting from stacking pallets higher than two high.

## CONTACT INFORMATION

- Please contact your sales representative.



## OCV™ Reinforcements

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