



# QuakeWrap® U27C

## Description

QuakeWrap® U27C is a high-strength, high modulus unidirectional carbon fabric. The fabric is black in color and is impregnated in the field using QuakeBond™ 300SR Saturating Resin to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural elements. The fabric weighs 27.8 oz/yd<sup>2</sup> (943 g/m<sup>2</sup>) and the fibers are primarily in the longitudinal (0°) direction.

## Uses

- Strengthening of the structural elements in buildings, bridges, and other structures due to increased loads.
- Seismic retrofit of structural elements such as columns, unreinforced masonry walls, shear walls, and diaphragms
- Repair of large diameter pipes and culverts to achieve strengthening and water-resistance
- Repair of damaged structural components caused by aggressive environments, fire, vehicle impact, aging, etc.
- Changes in structural system: new openings in floors, removal of existing walls, etc.
- Correction of design or construction errors

## Advantages

- High-strength and lightweight fabric ideal for confined spaces
- Used for flexure and shear strengthening as well as confinement
- Fully compatible and excellent adhesion to QuakeBond™ resins
- Non-corrosive
- Can be formed to strengthen and repair complex shapes
- Light weight does not alter dead load of structure
- Alkali resistant
- Special manufacturing of the fabric reduces potential of fraying

## Coverage

45 ft<sup>2</sup> per 1-gallon (1.22 m<sup>2</sup> per liter) QuakeBond™ 300SR

## Packaging

- Rolls: 24 in x 75 yards (610 mm x 68 m).
- This fabric can be easily cut in the field.

## Shelf Life & Storage

Shelf life is unlimited in proper storage conditions. Store in a dry environment at 45°-95°F (7°-35°C).

## Fiber & Laminate Properties

	US Units	SI Units
<b>Fiber Properties:</b>		
<b>Tensile Strength</b>	550 ksi	3.8 GPa
<b>Tensile Modulus</b>	33,500 ksi	231 GPa
<b>Ultimate Elongation</b>	1.64%	1.64%
<b>Density</b>	0.065 lb/in <sup>3</sup>	1.8 g/cm <sup>3</sup>
<b>Aerial Weight</b>	27.8 oz/yd <sup>2</sup>	943 g/m <sup>2</sup>
<b>Laminate with 300SR: *</b>		
<b>Tensile Strength</b>	179.0 ksi	1234 MPa
<b>Tensile Modulus</b>	14,000 ksi	96,500 MPa
<b>Ultimate Elongation</b>	0.92%	0.92%
<b>Breaking Force</b>	8,400 lb/in	1470 N/mm
<b>Ply Thickness</b>	0.047 in	1.19 mm

\*Results based on tests of single plies of fabrics saturated with 300SR

## Surface Preparation

Surface must be clean and sound; it can be dry or damp but must be free of standing water and frost. Remove dust, laitance, grease, curing compounds, disintegrated materials, and other bond inhibiting materials from the surface. Existing uneven surfaces must be filled with an appropriate repair mortar. The adhesive strength of the substrate must be verified after surface preparation by random pull-off testing (ACI 503R) at the discretion of the engineer. Minimum tensile strength of 200 psi (1.4 MPa) with substrate failure is required for bond-critical applications. Blast clean, shot-blast, scarify or use other approved mechanical means to clean the substrate surface. Any sharp edges (i.e. fins, form-marks, etc.) must be ground smooth and flush. Sharp edges must be rounded to a minimum radius of 3/4 in. (19 mm). Apply QuakeBond™ 220UR onto the substrate with a trowel or spatula to a nominal thickness of 40 mil (1mm). A notched trowel may be used for this application.

## The Infrastructure Innovators

QuakeWrap.com

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QuakeWrap, Inc. warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current technical data sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. QUAKEWRAP, INC. SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES.



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## Application

Saturate QuakeWrap® U27C fabric thoroughly with QuakeBond™ 300SR; for more details, refer to the Product Data Sheet for S300R. Prior to mixing and applying QuakeBond™ 300SR, all products should be preconditioned to a temperature of 75-85°F (24-29°C). Before the epoxies harden, apply saturated fabric to the substrate surface that has been coated with QuakeBond™ 220UR. Using gloved hands or a putty knife, carefully remove any entrapped air bubbles under the fabric; a plastic laminating roller can be used for this purpose. If required, additional layers of saturated fabric can be directly applied on top of previous layers. Feather the edges of the fabric with QuakeBond™ 220UR.

Installation of QuakeWrap® fabrics may only be performed by specially trained and approved contractors.

Fabric can be cut to appropriate length using a commercial quality heavy duty scissor. Dull or worn cutting tools can damage, weaken or fray the fiber; their use should be avoided.

## Cleanup

Dispose of waste in accordance with local disposal regulations. Cured materials can only be removed mechanically. See QuakeBond™ 300SR and 220UR SDSs for more information on resin cleanup.

## Limitations

Design calculations must be made and certified by an independent licensed professional engineer. System is a vapor barrier. Concrete should not be encapsulated in areas of freeze/thaw.

## Caution

QuakeWrap® U27C is non-reactive. Caution must be used when handling since a fine carbon dust may be present on the surface. Gloves must be worn to protect against skin irritation. Caution must also be used when cutting the fabric to protect against airborne carbon dust generated by the cutting procedure. Use of an appropriate, properly fitting NIOSH approved respirator is recommended.

## First Aid

Appropriate Personal Protective Equipment (PPE) should be worn at all times when handling product.

## Certificate of Compliance

Certificate of compliance can be supplied upon request.

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QuakeWrap, Inc. warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current technical data sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. QUAKEWRAP, INC. SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES.