



## The FRP Retrofit Experts

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### Product Data Sheet

## QuakeWrap™ VU23C Carbon Fabric for Structural Strengthening

#### DESCRIPTION

QuakeWrap™ VU23C is a high-strength unidirectional carbon fabric. The fabric is black and is impregnated in the field using QuakeBond™ J300SR Saturating Resin to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural elements. The fabric weighs 23 oz/yd<sup>2</sup> (779 g/m<sup>2</sup>) and the fibers are primarily in the longitudinal (0°) direction.

#### USE

- Increased live load capacity in buildings and bridges, hospital floors, roofs of buildings, etc.
- Seismic retrofit of structural elements such as columns, unreinforced masonry walls, etc.
- Repair of large diameter pipes to achieve strengthening and water-proofing
- 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: misplaced reinforcing bars, insufficient structural depth

#### ADVANTAGES

- Very strong 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
- Versatile; can be wrapped around complex shapes
- Light weight does not alter mass & dynamic loads on structure
- Alkali resistant
- Special manufacturing of the fabric makes it very stable & prevents fraying

#### PACKAGING

Rolls: 50 in. X 50 yards (1.27 m X 45 m). The fabric can be easily cut in the field into narrower widths of various lengths.

#### SHELF LIFE

Unlimited shelf life in proper storage conditions.

#### STORAGE CONDITIONS

Store in dry place at 45°-95° F (7°-35° C).

#### APPLICATION

Surface must be clean and sound; it may 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.

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 ¼ in. (19 mm). Apply QuakeBond™ J200TC onto the substrate with a trowel or spatula to a nominal thickness of 40 mil (1 mm). A notched trowel may be used for this application.

Saturate QuakeWrap™ VU23C fabric thoroughly with QuakeBond™ J300SR; for more details, refer to the Product Data Sheet for J300SR. Before the epoxies harden, apply saturated fabric to the substrate surface that has been coated with J200TC. Using gloved hands, 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™ J200TC.

Installation of QuakeWrap™ fabrics must be performed only by specially trained and approved contractors.

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

#### 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™ VU23C is non-reactive. However, caution must be used when handling since a fine carbon dust may be present on the surface. Gloves must therefore 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 fitted NIOSH approved respirator is recommended.

FIBER & LAMINATE PROPERTIES		
	US Units	SI Units
<b>Fiber Properties:</b>		
Tensile Strength	550 ksi	3,800 MPa
Tensile Modulus	33,500 ksi	231,000 MPa
Ultimate Elongation	1.64%	1.64%
Density	0.065 lb/in <sup>3</sup>	1.8 g/cm <sup>3</sup>
<b>Laminated with J300SR:</b>		
Aerial Weight	23 oz/yd <sup>2</sup>	779 g/m <sup>2</sup>
Tensile Strength	113.4 ksi	782 MPa
Tensile Modulus	9,900 ksi	68,300 MPa
Ultimate Elongation	1.1%	1.1%
Breaking Force	5,250 lb/in.	919 N/mm
Ply Thickness	0.05 in.	1.27mm

**KEEP OUT OF REACH OF CHILDREN. FOR INDUSTRIAL USE ONLY. NOT FOR INTERNAL CONSUMPTION.  
KEEP CONTAINER CLOSED TIGHTLY. CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION.**

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.