

### Carbon Fiber System for Structural Strengthening

#### Product Description

V2 CFRP is a heavy-duty strengthening system for reinforced concrete and timber. It consists of two components: V2 100 for bonding reinforcement and V2 CFRP laminates.

#### Uses

The V2 CFRP system can be used to strengthen reinforced concrete and timber structures that are weakened by:

- Load increases
- Damage to structural parts
- A change in previously used structural system
- Design or construction defects

#### Advantages

- Low in weight
- Available in any length
- Low thickness
- Outstanding fatigue resistance
- Economical application - no heavy handling and installation equipment
- Easy installation

#### Instructions for Use

##### Surface Preparation

The concrete or timber surface must be clean and free from grease and oil, dry, and have no loose particles or laitance. This can be prepared by blast cleaning, scabbling or grinding. The concrete age should be 3 to 6 weeks minimum, depending on thickness, curing conditions, etc. The surface to be coated must be level with steps and formwork marks must not be greater than 0.5mm. After cleaning remove all dust from the surface with an industrial vacuum cleaner.

##### Mixing

Pre-mix each component. Measure exactly 2 parts "A" to 1 part "B" by volume into a clean pail. Only mix the amount of material that can be used within the pot life. Mix epoxy for three minutes using a low speed drill with a mixing paddle (never mix by hand). Scrape the sides and bottom of the pail while mixing.

##### Application

Only a specially trained contractor should perform installation of this system.

Before application, the existing surface must be primed and sealed with (epoxy). Apply the well mixed Biscuit Bond adhesive carefully with a putty knife or trowel to the substrate. An ideal glue line is 1/8" or less. Clean the CFRP laminate then apply a thin amount of adhesive across the width of the laminate. Place the laminate onto the substrate surface. Using a roller, press the laminate into the epoxy until adhesive is pushed out from under the laminate. Remove all excess adhesive.

##### Cleaning

Clean tools immediately, Wash hands and skin thoroughly in warm soapy water. Cured material can only be removed technically.



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Technical Data	CFRP Bar	CFRP Laminate
PRODUCT	Fully cured carbon fiber/epoxy rod	Fully cured carbon fiber/epoxy laminate
TENSILE STRENGTH	400,000 psi	400,000 psi
MODULUS OF ELASTICITY	22,500,000 psi	24,000,000 psi
ELONGATION AT BREAK	1.8%	1.7%
FIBER VOLUME CONTENT	>65%	>68%
TEMPERATURE RESISTANCE	300F	300F
SHELF LIFE	Unlimited (if UV protected)	Unlimited (if UV protected)
STANDARD SIZES	1/8 in. Diameter to 1/2 in. Diameter	.0472" x 1.97" ◦ .0472" x 3.15" ◦ .0472" x 3.94"

#### Limitations

- All design and load calculations must be made and certified by a licensed professional engineer for each specific design installation
- The installed system acts as a vapor barrier. Concrete should not be fully encapsulated in areas of freeze/thaw.

#### V2 100 Parts A & B - Design Notes

A V2 CFRP® laminate has no plastic deformation reserve. Maximum bending resistance of a strengthened section is reached when laminate failure occurs during steel yield and before concrete failure. Mode of failure is influenced by the laminate cross section. To limit crack widths and deformation the yield point should not be reached in the reinforcing bars under service conditions. Any shear cracks which occur must be prevented from causing displacement on the strengthened surface and shearing of the laminate. Stress and deformation calculations can be made by the normal methods. When assessing the condition of the structure, look at the dimensions, quality of existing construction materials, climatic conditions and agreed conditions of service.

#### Important Notes

- All design and load calculations must be made and certified by a licensed professional engineer for each specific design installation
- Do not apply V2 CFRP® to surfaces with standing water.
- Maximum moisture content of the concrete is 10%.
- Always mix a full kit to avoid mix ratio error.
- Only mix as much material as can be applied within the stated pot-life.
- Do not dilute the product with solvent as this will affect the cure and in service performance.
- Constant exposure to service temperatures >50° C may affect the performance of the product.
- Compressive strengths etc. of epoxy resins must be qualified by the testing method eg. Test Standard or size of specimen under test and the rate at which the test piece is loaded under test, as these factors will affect the result markedly. Faster loading rates will generally give higher ultimate loads and vice versa. Also, a specimen at lower temperature will show higher strengths and vice versa.

#### Handling Precautions

Avoid contact with the skin, eyes and avoid breathing its vapor.

Wear protective gloves when mixing or using.

If poisoning occurs, contact a doctor or the Poisons Information Centre.

If swallowed, do NOT induce vomiting. Give a glass of water.

If skin contact occurs, remove contaminated clothing and wash skin thoroughly.

If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

#### Important Notification

The information, and, in particular, the recommendations relating to the application and end-use of V2's products, are given in good faith based on V2's current knowledge and experience of the products when properly stored, handled and applied under normal conditions. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject of our terms and conditions of sale. PLEASE CONSULT OUR TECHNICAL DEPARTMENT FOR FURTHER INFORMATION.

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