

REC CFRP WRAP 300

WOVEN UNIDIRECTIONAL CARBON-FIBER FABRIC FOR STRUCTURAL STRENGTHENING WITHIN THE RECKON REINFORCEMENT SYSTEM

DESCRIPTION

REC CFRP WRAP 300 is a high-performance, unidirectional woven carbon-fiber fabric designed for the structural strengthening of reinforced concrete, masonry, timber and steel elements. The fabric provides tensile strength with low weight and excellent fatigue resistance. It is compatible with both the wet layup and dry installation techniques, allowing flexibility in application on flat, curved, or irregular substrates. The material is specifically formulated for reliable performance in hot, humid and tropical environments, maintaining stability of its mechanical properties and adhesion when used with compatible epoxy impregnation or bonding resins.

PRIMARY APPLICATIONS

REC CFRP WRAP 300 is intended for use only by suitably trained and experienced professionals. It is a unidirectional woven carbon-fiber fabric designed for the structural strengthening and upgrading of reinforced concrete, masonry, brickwork, and timber members. Typical objectives include improving flexural, shear, and axial load-carrying capacity. Recommended applications include:

- Enhancement of the seismic performance of masonry and concrete walls.
- Substitution for missing or insufficient steel reinforcement.
- Increasing the strength, stiffness, and ductility of columns, beams, and slabs.
- Upgrading the load-bearing capacity of structural elements subjected to increased service loads.
- Supporting alterations or changes of use in refurbishment and adaptive re-use projects
- Correction of deficiencies arising from structural design or construction errors
- Improvement of resistance to seismic or dynamic actions
- Extending the service life and durability of existing structures
- Structural upgrading to satisfy current design codes and regulatory standards

FEATURES/BENEFITS

- Μulti functional fabric – suitable for a wide range of structural strengthening and retrofitting applications.
- Excellent adaptability – easily conforms to complex geometries and surface planes, including beams, columns, chimneys, piles, walls, soffits, silos, tanks, and other irregular substrates.
- Lightweight construction – very low density adds negligible dead load to the structure, making it ideal for overhead or vertical applications.
- Cost efficiency – provides a highly economical solution compared to conventional strengthening methods such as steel plate bonding or section enlargement.

TECHNICAL INFORMATION

Type	Woven, unidirectional carbon-fiber fabric
Appearance	Black, Carbon-fibre fabric rolls
Fiber Type	Selected mid-range strength carbon fibers
Dry fiber density	1.82 g/cm ³
Dry fiber thickness	0.168 mm (based on fiber content)
Mass per area	300 g/m ² ± 10 g/m ² (carbon fibers only)
Dry fiber tensile strength	4 000 N/mm ²
Dry fiber modulus of elasticity in tension	230 000 N/mm ²

Dry fiber elongation at break		1.8 %	
Design nominal thickness		0.167 mm	
Design nominal cross section		167 mm ² per m width	
Laminate tensile strength	ASTM D 3039	Average	Characteristic
		3 500 N/mm ²	3 200 N/mm ²
Laminate modulus of elasticity in tension	ASTM D 3039	Average	Characteristic
		220 kN/mm ²	210 kN/mm ²
Laminate elongation at break in tension	ASTM D 3039	1.59 %	
Tensile resistance	ASTM D 3039	Average	Characteristic
		590 N/mm	537 N/mm
Tensile stiffness	ASTM D 3039	Average	Characteristic
		36.7 MN/m	35.1 MN/m
		36.7 kN/m per % elongation	35.1 kN/m per ‰ elongation

DIRECTIONS FOR USE

SUBSTRATE QUALITY

Before installation, confirm that the substrate is structurally sound and free from defects. Concrete, masonry, timber, or steel elements must have a minimum tensile strength of 1.0 N/mm² or the value defined in the strengthening design. Surfaces should be inspected for cracks, honey combing, or areas of weakness that may reduce adhesion or load transfer.

SUBSTRATE PREPARATION

The surface must be clean, dry, and free of laitance, dust, grease, oils, curing compounds, or any other contaminants. Prepare concrete or masonry by grinding, shot-blasting, or other approved mechanical means to create an open-textured profile suitable for bonding. Fill blow holes, voids, or other surface defects with a compatible epoxy or cementitious repair mortar and allow the repairs to cure fully prior to application.

FABRIC HANDLING AND CUTTING

Measure and cut **REC CFRP WRAP 300** to the required length using sharp industrial scissors or a Stanley/razor knife. Avoid folding or sharply bending the fabric to prevent fiber damage. Keep the fabric clean and dry until installation.

APPLICATION METHOD

REC CFRP WRAP 300 may be installed using either the wet lay-up or dry application process:

Wet lay-up: Impregnate the fabric with the appropriate REC DUR resin while placing it on the prepared substrate.

Dry application: Apply the mixed resin evenly to the substrate and then press the dry fabric into the resin, ensuring intimate contact.

CONSOLIDATION AND FINISHING

Use rollers, spatulas, or squeegees to thoroughly work the resin through the fabric, ensuring complete saturation and the removal of air pockets. Apply additional resin to the surface if necessary to achieve full encapsulation. After installation, allow the laminate to cure as recommended in the relevant Reckon Method Statement. Where the system will be exposed to sunlight or fire risk, over-coat with an approved UV- or fire-protective layer.

IMPORTANT CONSIDERATIONS

1. Qualified Applicators

REC CFRP WRAP 300 must only be installed by trained and experienced professional's familiar with fiber reinforced polymer (FRP) strengthening systems and the safe handling of epoxy resins.

2. Structural Design Responsibility

All structural calculations, detailing, and design checks must be carried out by a qualified structural engineer with experience in FRP strengthening. The engineer should ensure that the design complies with relevant standards, considers environmental factors, and includes appropriate safety coefficients.

3. System Compatibility

The fabric is supplied with a factory-applied sizing that ensures maximum adhesion and long-term durability when used with REC DUR adhesives and impregnating/laminating resins. To maintain full compatibility and performance, do not substitute or mix components from other manufacturers or systems.

4. Protective Over coating

After installation and curing, **REC CFRP WRAP 300** can be protected or finished with a cementitious overlay, epoxy coating, or other suitable system, depending on exposure conditions and project requirements. For areas exposed to sunlight or ultraviolet radiation, apply an appropriate UV-stable topcoat or an equivalent protective coating to enhance service life and maintain the aesthetic appearance of the strengthening system.

PACKING

REC CFRP WRAP 300 is available in 500mm x 100m roll.

STORAGE

- **REC CFRP WRAP 300** have a shelf life of 24 months if kept in a dry store in the original, unopened packs. In tropical climates it is essential to store in air-conditioned warehouse.
- Store in dry conditions between 10°C and 30°C, away from sources of heat and naked flames in the original, unopened packs. If stored at high temperatures the shelf life may be reduced.

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