

# Talrakfibplate CF

## Externally bonded carbon fibre laminates for strengthening concrete structures



The Construction Alchemists

### Description

Talrakfibplate CF is a lightweight, precured pultruded carbon fibre composite laminate with high tensile strength. The system includes sandwiching of Talrakfibplate CF between a high build thixotropic epoxy adhesive Talrakfibplate EA.

### Features & Benefits

- Lightweight and hence adds negligible additional dead load
- Very high tensile strength
- Very high strength/weight and stiffness/weight ratio
- Non-corrosive
- Resistant to deformation under sustained loading conditions
- Improved long term durability and fatigue resistance
- Fast progress of work

### Primary Application

Talrakfibplate CF is a carbon fibre laminate composite system for strengthening or retrofitting of existing concrete structures to;

- Increase the loading capacity of structural elements
- Correct structural design or construction defects
- Improve seismic performance
- Increase the strength and ductility
- Enable changes in use/alterations
- Improve service life and durability
- Structural upgradation

### Technical Properties

Nominal Thickness	1.4mm, 2.4mm, 3.0mm
Nominal Width	50mm, 100mm
Tensile Strength	Min. 3100MPa
Tensile Modulus	Min. 165 GPa
Elongation at break	Max. 1.8 %

### Design Criteria

To assess the suitability of an FRP system for a given application, a qualified design professional should perform a condition assessment of the existing structure that includes establishing its existing load-carrying capacity, identifying deficiencies and their causes, and determining the condition of the concrete substrate. The overall evaluation should include a thorough field inspection, a review of existing design or as-built documents, and a structural analysis in accordance with IS 456-2000 or equivalent.

Existing construction documents for the structure should be reviewed, including the design drawings, project specifications, as-built information. A minimum, field investigation is strongly recommended before consideration of the installation of Talrakfibplate CF system.

Careful consideration should be given to determine reasonable strengthening limits. These limits are imposed to guard against collapse of the structure, if bond or other failure of the composite system occur due to damage, vandalism, or other causes.

### Specification Clause

The carbon fibre-matrix shall retard deterioration, shall be resistant to thermal expansion and shall not affect bond for small ranges of temperature change, of at least  $\pm 28^{\circ}\text{C}$ . The matrix shall have an electrical conductivity that avoids potential galvanic corrosion of steel elements that will not allow the carbon fibres come in direct contact with steel. The system shall have a good mechanical performance in terms of creep-rupture and fatigue under sustained and cyclic loading respectively. The system shall include a UV protection component when the treated structures are exposed to environmental conditions.

The carbon fiber composite system shall be consisting of Talrakfibplate CF - a carbon fiber laminate, Talrakepoprime LV - an epoxy sealer cum primer and Talrakfibplate EA - a high build epoxy adhesive. The system is protected from UV by a polyurethane top coat Talrakote PU.

### Application Instructions

#### Surface Preparation

The surface must be clean, sound and free from bond breaking materials such as grease, wax, laitance, dust, pockets, cracks and ridges. Use suitable methods such as wire brushing, vacuuming, grinding, milling, shot blasting and water jetting to prepare the substrate dependent on its condition. Any damaged mineral surfaces shall be repaired to sound condition with Talrak range of repair products.

#### Application

**Talrakepoprime LV** - an epoxy-based primer is recommended for concrete substrates before the application of epoxy adhesive (for further details refer product data sheet).

- Talrakfibplate CF laminates shall be cut to the desired length before starting the application.
- Base layer of adhesive – Apply a dedicated epoxy adhesive for bonding of laminates to the substrate - **Talrakfibplate EA** on the prepared substrate to achieve uniform 2mm thick using trowel (for further details refer Talrakfibplate EA data sheet).
- Place Talrakfibplate CF on the base layer adhesive firmly without entrapping air into it and pressed to hold in position by using adhesive tapes or any suitable method for a few hours. Use a small roller to roll the plate till the excessive adhesive is pushed out from the sides of the plate and remove the excess with a spatula or a straight edge.

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- Top layer of adhesive – Apply Talrakfibplate EA on the installed laminates to achieve uniform 2mm thick bed using trowel. Ensure that the base adhesive is not affected during the application of top adhesive.
- When Talrakfibplate CF are intersecting, the bottom plate should be allowed to cure, and then the surface of the other plate crossing above at the intersecting zone should be thoroughly cleaned prior to the application of the top layer.
- The adhesive shall be allowed to cure for 7 days prior to installing further renders or coatings.

## Estimating Packaging

Talrakfibplate CF is available in –  
Thickness : 1.4mm, 2.4mm and 3.0mm  
Width : 50mm and 100mm  
Length : 25m, 50m and 100m rolls

## Storage

Talrakfibplate CF has a shelf life minimum of 24 months if kept in dry store in original, unopened containers. If stored at high temperature and/or high humidity conditions the shelf life may be reduced.

## Precautions

### Health & Safety Instructions

Use hand gloves and protective glasses while handling Talrakfibplate CF. Beware of snapping of coil while unwinding.



**Talrak Construction Chemicals Pvt. Ltd.**

An ISO 9001:2015 Certified Company

#### Works:

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### Important note :

Talrak products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Talrak endeavours to ensure that any advice, recommendation specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products whether or not in accordance with any advice, specification, recommendation or information given by it.

Ref : TCC/TDS/RE04 - R4