Talrakfibwrap CF 600

High performance high strength, carbon fibre system for structural strengthening

The Construction Alchemists

Description

Talrakfibwrap CF 600 is a carbon fibre composite wrapping system consists of Talrakfibwrap CF 600 sheets, Talrakfibwrap primer, an epoxy sealer cum primer and a high build epoxy saturant Talrakfibwrap SE. The system is protected from UV by a polyurethane top coat Talrakfibwrapkote PU in case of atmospherically exposed structures.

Features & Benefits

- Talrakfibwrap CF 600 system is lightweight, non-corrosive, and exhibit high tensile strength. Does not increase dead load.
- Carbon fibre sheets that can be wrapped to conform to the geometry of a structural member.
- The relatively thin profiles of cured FRP systems are useful in applications where aesthetics or access is a concern.
- Talrakfibwrap CF 600 systems can be used to strengthen masonry walls.
- Chemical resistant - durable in aggressive environment Resistant to deformation under sustained loading conditions.
- Resistant to moisture permeability - Creates a moisture impermeable layer on the surface of the concrete, there by preventing the moisture related deterioration mechanism of concrete.
- User friendly – fast progress of work.

Primary Application

Talrakfibwrap CF 600 is a carbon fibre composite system for strengthening or retrofitting of existing concrete structures to resist higher design loads, correct strength loss due to deterioration, correct design or construction deficiencies, or increase ductility accomplished by using conventional materials and techniques such as externally bonded steel plates, steel or concrete jackets, and external post-tensioning etc. construction errors.

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 Talrakfibwrap CF 600 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

Performance Specification

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 ±28 ° 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 fibre composite system shall be Talrakfibwrap CF 600, a wrapping system consists of Talrakfibwrap CF 600 sheets, Talrakfibwrap primer - an epoxy sealer cum primer and a high build epoxy saturant Talrakfibwrap SE. The system is protected from UV by a polyurethane top coat Talrakfibwrapkote PU.**

Technical properties

Talrakfibwrap CF

Fibre orientation	Unidirectional
Weight of fibre	600 g/m^2
Density of fibre	1.80g/cc
Fibre thickness	0.64mm
Ultimate elongation(%)	1.7
Tensile strength	4000 MPa
Tensile modulus	240 x 10^3 MPa

Talrakfibwrap Primer

Density	1.14 g/cc
Pot Life	25 min. @ 27°C
Full cure	7 days

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Talrakfibwrap ERS, Saturant

Colour	Pale yellow to amber
Application temperature	15°C - 40°C
Viscosity	Thixotropic
Density	1.25 - 1.26 g/cc
Pot Life	2 hours at 30°C
Cure time	5 days at 30°C

Talrakfibwrap PU - UV Resistant top coat

Pot life at 30°C	min 1 hr
Recoat time at 30°C	2 - 4hrs
Initial time at 30°C	16 hrs
Final time at 30°C	5 days
Colour	Available in range of colours

Product	Color	Pot Life @ 30°C	WTF (microns)	DFT(microns)	Indicative Coverage per coat /ltr
Talrakfibwrap Primer	Clear	20 min.	100	100	8.0-10.0 m^2
Talrakfibwrap SE	Amber	120 min.	250	250	3.5-4.0 m^2
Talrakfibwrap PU	Grey	60 min.	100	45	8.0-10.0 m^2

Application thickness	90-100 microns DFT in 2 coats
Mixed density	1.30 g/cc
Mixed viscosity	2 - 4 poise

Application Instructions

Surface preparation

Concrete surfaces shall be free from bond breaking agents such as oil residues, de-moulding agents, curing compounds, grout holes and protrusions.

Surface Repairs

Incase of distressed structures, all problems associated with the condition of the original concrete and the concrete substrate that can compromise the integrity of Talrakfibwrap CF 600 system should be addressed before surface preparation begins. The concrete surface on which Talrakfibwrap CF 600 system to be installed, shall be structurally repaired prior to treatment. All concrete repairs should meet the requirements of the design drawings and project specifications. The compatibility of the Talrakfibwrap CF 600 system with materials used for repairing the substrate should be ascertained before hand .Contact Talrak.

Corrosion induced damages shall be repaired with Rendercem™ range of mortars and Talrakote® ZE reinforcement corrosion protection coating shall be installed wherever necessary. Structural damages shall be repaired by using epoxy grouting/appropriate mortar from the Rendercem™ range. All depressions, imperfections etc., can be repaired by using Talrak epoxy mortar.

Mixing

Before mixing, the contents of each can should be thoroughly Stirred to disperse any settlement, which may have taken place during storage. The base and hardener are emptied into a suitable container and the material is thoroughly mixed for atleast 3 minutes. Mechanical mixing using a heavy-duty slow speed (300 - 500 rpm), drill, fitted with a mixing paddle is recommended.

Priming

The mixed material of Talrakfibwrap epoxy Primer primer is applied over the prepared and cleaned surface. The application shall be carried out using a brush and allowed for drying for about 24 hours before application of saturant.

Saturant

The mixed material of Talrakfibwrap SE saturant is applied over the tack free primer. The wet film thickness shall be maintained @ 250 microns.

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Talrakfibwrap CF 600 fabric shall be cut to required size and Shape and then pressed first by gloved hand on to the saturant applied area and then with a stiff spatula or a surface roller to remove air bubbles.
One more coat of Talrakfibwrap SE saturant is applied over the carbon fabric at 250 microns WFT after a minimum time lapse of 30 minutes.
The same procedure shall be followed for multiple layer fibre strengthening.
Note: Care shall be taken to ensure that the fibre orientation is aligned as per design and shall not be disturbed while applying the second coat of saturant.

Top protective coat

If UV resistance is required then two additional coats of two component aliphatic polyurethane coating Talrakfibwrapkote PU shall be applied as topcoat. The WFT shall be 100 microns per coat.

Curing

The coatings will become tack free in approximately 4 - 6 hours and be fully cured in 7 days.

Cleaning

Tools and equipments should be cleaned with Talrasol GP, solvent immediately after use. Hands and skin shall be washed with soap, or an industrial hand cleaner.

Limitations

Talrakfibwrap CF 600 is only recommended for uses as described in the uses section of this datasheet. The performance of Talrakfibwrap CF 600 is limited to the specifications and recommendations as described in this datasheet.

Estimating
Packaging

Talrakfibwrap Carbon Fibres is supplied in rolls of length 100m & width 0.5m (50m^2).
Talrakfibwrap Primer, Primer - 3.5 ltr
Talrakfibwrap SE, Saturant - 4 ltr
Talrakfibwrap PU, Topcoat - 4 ltr
Talrasol, Solvent - 5 & 20 ltr

Coverage

Please refer to the table given under 'Technical Properties' for individual product coverage. However, the practical coverage may vary depending on the surface conditions.

Storage

All the above products has a shelf life of 12 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

Some people are sensitive to epoxy resin systems and may develop dermatitis on skin contact. **Rubber gloves and/or barrier creams, protective clothing, goggles and respirator shall be worn while handling the materials**. Sufficient mechanical and/or local exhaust ventilation shall be provided to maintain easy working conditions. If contact with skin or eyes occurs, washing with plenty of water is suggested. SOLVENT SHALL NOT BE USED. If irritation persists, seek immediate medical advice shall be sought. Smoking and naked flame should be avoided while using the materials

Flash Points

Talrakfibwrap Primer - 25°C
Talrakfibwrap SE, Saturant - 33°C
Talrakfibwrap PU, Topcoat - 65°C
Talrasol Solvent - 33°C

Separate datasheets are available on these range of products.

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