



TYFO[®] UC

Precured Carbon FRP Plates

DESCRIPTION

The Tyfo UC Precured Carbon FRP Plates are unidirectional pull-formed, carbon composite laminates. The rigid laminates are premanufactured resulting in high strength, high modulus materials.

USE

The Tyfo UC Precured Carbon FRP Plates are used to strengthen bridges, buildings and other structures. The UC Precured Carbon FRP Plates are externally bonding to the host substrate with the thickened Tyfo S, epoxy adhesives.

ADVANTAGES

- High tensile strength, high modulus
- Uniform material properties
- Ease of installation
- Good high and low temperature properties
- No release agents in the precured laminates
- 100% epoxy matrix
- Ambient cure application

PACKAGING

Available Thicknesses: 0.055" (1.4 mm).

Plate Width: 4.0" (100 mm), 3.0" (75 mm), 2" (50 mm)

Roll Length: 492 lineal ft. per roll (164 sq. ft.)

Typically ships in 40" x 40" x 6" boxes. Rolls are approximately 36" in inside diameter.

CAUTION

When removing from original packaging the materials are supplied as a coil and can release significant stored potential energy. Take great care to unwind safely.

SHELF LIFE

Epoxy - two years in original, unopened and properly stored containers

UC Plates - 10 years in proper storage conditions

STORAGE CONDITIONS

Store epoxy at 60°F to 100°F (15°C to 38°C). Resin is susceptible to crystallization at temperatures below 50°F. If crystallized, epoxy must be reheated until clear. Store fabric rolls flat, not on ends, and at temperatures below 100°F (38°C). Avoid moisture and water contamination

Typical Dry Fiber Properties

Material properties are based on standard laboratory conditions (23°C, 50% relative humidity.)

Property	Typical Test Value
Tensile Strength	710,000 psi (4.9 GPa)
Tensile Modulus	33.4 x 10 ⁶ psi (230 GPa)
Ultimate Elongation	2.1%
Density	0.065 lbs./in. ³ (1.8 g/cm ³)
Fiber Volume Content	72%

Precured Carbon FRP Plate Properties

Property ¹	ASTM Method	Typical Test Value	Design Value
Ultimate Tensile Strength in Primary Fiber Direction		479,000 psi (3.30 GPa)	420,000 psi (2.90 GPa)
Elongation at Break	D3039	1.85%	1.62%
Tensile Modulus		25.9 x 10 ⁶ (psi) 178 GPa	25.9 x 10 ⁶ (psi) 178 GPa
Laminate Thickness	D1777	.055 inches	

¹Design value were determined from a test of at least 20 test samples for Ultimate Tensile Strength is defined as the mean minus three standard deviations. The Tensile Modulus is the mean value tested. The strain is determined from Hooke's Law.

TYFO® UC PRECURED CARBON FRP PLATES

DESIGN

The Tyfo UC Precured Carbon FRP Plates is designed to meet specific project criteria dictated by the engineer of record and any relevant building codes and/ or guidelines. The design shall be based on the allowable strain for each type of application and the design modulus of the material. FyfeFRP LLC engineering staff may provide preliminary design, specification wording and application details based on the project requirements.

INSTALLATION

The Tyfo system is to be installed by FyfeFRP LLC trained and certified applicators in accordance with the FyfeFRP LLC installation instruction manual, project specifications, and design requirements.

SURFACE PREPARATION

The required surface preparation is dependent on the type of element being strengthened. In general, the surface must be clean, dry and free of protrusions or cavities to prevent voids behind the Tyfo UC Precured Carbon FRP Plates. Walls, beams, slabs, etc. require a minimum CSP-3 profile to prepare for bonding, achieved by abrasive blasting, grinding or other approved methods per ICRI 310.2R. FyfeFRP LLC engineering staff will provide the proper specifications and details based on project requirements.

APPLICATION

Apply a prime coat of Tyfo S epoxy to the prepared substrate and allow to soak into substrate. Apply a 1/32" (1mm) layer of the Thickened Tyfo S to the substrate. Clean Tyfo UC Composite Laminate Strip with acetone to remove any foreign debris and let stand for 5-10 minutes to allow for evaporation of the solvent. Apply Thickened Tyfo S epoxy adhesive with a 1/4" (6 mm) notched trowel to the cleaned side of strip. Allow sufficient time for the epoxy to reach maximum tackiness. Apply the Strip within the specified cure time of the Tyfo® epoxy. The Tyfo® UC Precured Carbon FRP Plates to be applied uniformly, meeting all specifications.

COVERAGE

Tyfo 4UC55, Tyfo 3UC55, and Tyfo 2UC55 rolls (492-ft long) require a minimum of 4 kits, 3 kits and 2 kits, respectively of Tyfo S epoxy. This suggested epoxy coverage guidance includes material for primer and thickened material to be used on vertical and overhead surfaces. Should any additional material be required to render a surface even or to fill any voids, additional considerations should be made.

DESIGNATIONS

The Tyfo UC Composite Precured Carbon FRP Plates is designated by the width then the thickness in mils. Example - 4" wide, 0.055-inch laminate would be designated as "4UC55."

Available options are 2UC55, 3UC55, 4UC55.

LIMITATIONS

Recommended substrate temperature range is 50°F to 100°F (10°C to 38°C). All coating applications to be performed at a minimum of 5°F above the dew point. Maintain conditions for the first 48 hours of cure. Temperatures below 50°F will significantly increase the viscosity of the mixed product. Higher viscosity will reduce fabric penetration, introduce additional air into the system, and extend the cure times beyond 48 hours. DO NOT THIN. Solvents will prevent proper cure.

CAUTION!

CLEANUP

Collect with absorbent material. Dispose in accordance with local disposal regulations. Uncured material can be removed with approved solvent. Cured materials must be mechanically removed.

HAZARDS

Use caution when uncoiling roll. Gloves are recommended when handling strips to avoid skin irritation. Consult the Safety Data Sheets (SDS) for associated hazards. SDS will be supplied upon request. Carbon fiber is electro-conductive.

Consult Safety Data Sheet
(SDS) For More Information.
For Industrial Use Only.

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