

TechnoPlate™ UC

Unidirectional Carbon Laminate

TECHNOPOL

مقاوم سازی تکنوپل

PRODUCT DESCRIPTION

TechnoPlate™ UC is high-strength and light weight unidirectional pultruded laminate constructed with carbon fibers and epoxies. TechnoPlate™ UC carbon laminate is designed for bonding onto the structure as external reinforcement using TechnoInject™ ER epoxy resin as the adhesive.



Buildings
Structures



Transportation
Infrastructure



Water &
Wastewater



Oil, Gas &
Industrial



Waterfront
Structures



Industrial
Facilities

TECHNICAL DATA

	Unit	TechnoPlate™ UC
Fiber Volume Fraction		70%
Primary Fiber Direction		0 ° (unidirectional)
Tensile Strength	MPa	2400
Tensile Modulus	GPa	131
Elongation		1.87%
Laminate Width	mm	50-100
Laminate Thickness	mm	1.2-1.4
Max Design Area	mm²	140
Shelf Life		10 years
Storage Condition	°C	4 - 40
Fiber Type		Carbon
Color		Black

PHYSICAL PROPERTIES

Name	Width(mm)	Thickness(mm)
UC1012	100	12
UC512	50	12
UC1014	100	14
UC514	50	14

ADVANTAGES

- Excellent fatigue resistance, chemicals resistant.
- Corrosion resistance.
- Fully compatible with different resins.
- Easy to install.
- Can be crossed and overlapped to thin section easily.
- Inspection is easy to carry out after construction
- Not harmful to the environment.

TYPICAL USES

- Increased load capacity in buildings, bridges, vibrating structures, hospital floors, roofs of buildings, etc.
- Increased load capacity in case of change of building utilization.

- Seismic strengthening of structural elements such as columns, unreinforced masonry walls.
- Repairing of damaged structural components caused by aging of construction materials, Chemical environments, fire, vehicle impact, etc.
- Correction of design or construction mistakes such as insufficient reinforcements, insufficient structural depth, etc.

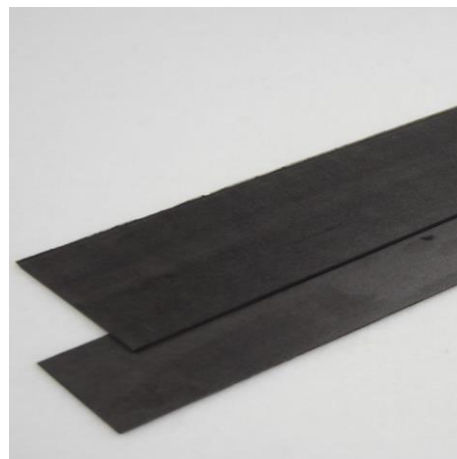
INSTALLATION PROCEDURE

SURFACE PREPARATION

Surfaces to receive FRP Plate laminates TechnoPlate™ UC must be clean and sound. It must be dry and free of frost. All dust, laitance, grease, curing compounds, waxes, deteriorated materials, and other bond inhibiting materials must be removed from the surface prior to application.

Large voids should be patched using an approved repair mortar. Uneven areas should be leveled within appropriate leveling mortar or putty.

Sandblast, pressure wash, shot blast or use other approved mechanical means to achieve an open-pore texture with a concrete surface profile of CSP3 or better (ICRI)



The adhesive strength to the concrete may be verified after surface preparation by random pull-off testing (ACI 503R or ASTM D7522) at the discretion of the engineer. Minimum tensile strength of 1.3 MPa must be achieved. The minimum compressive strength of the concrete must be greater than 17 MPa.

MIXING

Premix part A for 1-2 minute. Add the full contents of part B pail to the full contents of part A pail, or use equal fractions of each pail. Blend part A and part B with a mechanical mixer for 1-2 minutes until uniformly blended.

CUTTING

Laminates can be cut to appropriate length using reciprocal saw with a fine tooth blade or a grinder.

APPLICATION

- Before applying the structural adhesive to the laminate, the sanded side of the laminate is wiped with acetone or other solvent until any excess residue (e.g. carbon dust) is removed. Observe proper fire and health precautions when using solvents.
- Apply thin prime coat of the epoxy adhesive to the surface approximately 1.5 mm thick and 15 mm wider than the plate to be used. Structural adhesives applied to both the carbon and substrate surfaces.
- Apply 1.5 mm thick coat of the epoxy adhesive to the cleaned laminated surface. Plate laminates should be applied with approved epoxy adhesive.
- Press the laminates against the working surface using a hard rubber roller to achieve a void free bond line with thickness between 1.5 to 2.5 mm. Excess adhesive is then removed from the sides of the laminate before it cures.
- The laminate may be coated with a protective or decorative coating. Plates Test plates may be simultaneously installed adjacent to the area being strengthened and should be prepared using the same method described above. Bond pull-off tests are performed to validate proper installation. The bond strength of the plate to concrete may be verified by random pull-off testing at the discretion of the engineer. Minimum tensile strength of 1.3 MPa must be achieved.

STORAGE

TechnoPlate™UC unidirectional carbon laminate should be stored in a dry and cool place at 4°- 40° C.

SHLEFT LIFE

TechnoPlate™UC can be used for unlimited time in proper storage conditions.

FAIRST AID

In case of skin contact with resin, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water; contact physician immediately. For respiratory problems, remove to fresh air. Wash clothing before reuse.

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