

CRS-CPS 05012/08012/10012

PULTRUDED CARBON FIBRE PLATES FOR STRUCTURAL STRENGTHENING

SUITABLE FOR

Load increases

- Increasing the capacity of floor slabs and beams
- Increasing the capacity of bridges to accommodate increase axle loads
- Installation of heavier machinery
- Stabilizing vibrating structures
- Changes of building use

Damage to structural elements

- Deterioration of original construction materials
- Steel reinforcement corrosion
- Vehicle impact
- Fire
- Earthquakes

Service improvements

- Reduced deflection
- Stress reduction in steel reinforcement
- Crack width reduction
- Reduced fatigue

Change in structural system

- Removal of walls or columns
- Removal of slab sections for openings

Change of specification

- Earthquakes
- Changed design philosophy

Design or construction defects

- Insufficient / inadequate reinforcement
- Insufficient / inadequate structural depth

ADVANTAGE

- Non corrosive
- Very high strength
- Excellent durability
- Lightweight
- Unlimited length, no joints required
- Low overall thickness, can be coated
- Easy transportation (rolls)
- Simple plate intersections or crossings
- Very easy to install, especially overhead
- Outstanding fatigue resistance
- Minimal preparation of plate, applicable in several layers
- Combinations of high strength and modulus of elasticity available
- High alkali resistance
- Clean edges without exposed fibers thanks to the pultrusion process
- Approvals from many countries worldwide

TECHNICAL DATA

Appearance & Color	Black laminate
Length/Roll	100 Meters
Width	50mm/80mm/100mm standard, Other widths available on request.
Thickness	1.2 mm
Braiding	0° (Unidirectional)
Composition	Carbon fiber reinforced laminate in epoxy resin matrix
Fiber Content	65% min.
Density	1.6 g/cm ³
Storage Conditions	Dry, temperature at 4°C to 35°C
Shelf Life	50 years
Tensile Strength	2800 MPa
Tensile Elastic Modulus	165 Gpa
Interlaminar Shear Strength	50 MPa
FRP With Base Materials Bonding Strength (MPa)	For concrete and masonry: 2.5Mpa min., concrete cohesion damage
Elongation	1.70 %

OPERATIONS PROCEDURE

Preparation

Tensile forces are transferred from the carbon fiber plate through the adhesive into the bearing substrate. The substrate should therefore have an inherent surface tensile strength greater than 1.5 N/mm². Testing of the tensile strength of the substrate should be carried out prior to application of carbon fiber plate by a bond test. The surface of the substrate must be roughened by grinding or sandblasting to remove any weak surface laitance or deleterious friable material. In order to prevent peeling due to deviation forces, the evenness of the prepared surface must be tested with a 2 m straight edge. Maximum allowable deviation is 5 mm over a 2 m length.

If the substrate is uneven, then it will need to be re-profiled using epoxy putty. If the substrate is poor and the tensile bond strength is less than 1.5 N/mm², the surface may need to be primed.

Solvent-wipe the carbon fiber plate with to remove carbon dust and any contaminants. Wait until surface is dry before applying adhesive.

Application

Apply mixed CRS-CB362 to the prepared concrete at 2 mm thickness and carbon fiber plate at 2–3 mm thickness within the pot life of the adhesive.

Place the carbon fiber plate onto the prepared substrate with the two adhesive layers in contact. Use hard rubber roller to press the laminate onto the substrate until adhesive squeezes out from both sides of the laminate.

Roller along the center of the plate to achieve a void-free bond line of approximate thickness of 2–4 mm.

Remove the surplus adhesive from the sides of the laminate.

After 24 hours, when the adhesive has cured, test for voids by lightly tapping the laminate with a small hammer.

HEALTH & SAFETY INFORMATION




For information and advice on the safe handling, storage, and disposal of chemical products, users should refer to the most recent SAFETY DATA SHEET containing physical, ecological, toxicological and other safety-related data.

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