

CC Quantum[®] Plates

PULTRUDED CARBON FIBRE LAMINATE PLATES

DESCRIPTION & APPLICATIONS

CC Quantum[®] Plates are pultruded resin impregnated carbon fibre plates. Pultruded carbon fibre plates have high strength, strong corrosion resistance, are lightweight, have excellent durability and fatigue resistance.

RECOMMENDED USES

CC Quantum[®] Plates are widely used in, but not limited to multiple strengthening projects, where there is a need to increase load capacity or repair damaged structures (floor slabs, walls and bridges structures). Additionally, they serve to aid in the following:

- Increase the flexural load-bearing capacity of columns, beams, and slabs
- Help to increase the crack resistance of a structure (increase in durability)
- Increase the fatigue life of the structure, minimising damage associated with cyclic loading.
- High modulus of elasticity.
- High tensile strength.
- Low in weight.
- Available in various lengths and width.
- Material is stored in manageable storage size boxes. Allowing for ease in transportation
- Laminate Plates require no preparation.
- Economical application – no heavy handling and installation equipment.

CHARACTERISTICS

- Very high tensile or flexural strengths can be achieved.
- Easy to transport.
- Can be coated without preparation.
- Alkali resistant.
- Fast and easy installation - reducing overall installation cost of strengthening.
- Durable - non-corroding even if in contact with moisture.
- Thin section compared to traditional methods -Low profile (thickness) does not impact on architectural aesthetics or reduce useable space.
- Simplified designs enable engineering to easily calculate amount of reinforcement required to overcome applied loads.
- Available in a range of sizes to optimize design requirements

COMPLIANCE AND CERTIFICATION

- Vic Roads Specification Section 688 - Fibre Reinforced Polymer Composite Strengthening of Concrete Structures
- AS5100.8:2017 Bridge Design, Part 8 Rehabilitation and Strengthening of existing bridges & Appendix A CLS (2) Laminate type

CC QUANTUM® PLATES PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE	UNITS
Tensile Strength	ASTM D3039	3200	MPa
Tensile Modulus	ASTM D3039	170	GPa
Elongation at Break	ASTM D3039	1.80	%
Density	ASTM D792	1.57	g/cm ³
Fibre Volume	ASTM D792	70	%
Glass Transition Temperature	ASTM D7028	85	°C
Appearance/Colour	-	Black	-

NOTE: All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

TYPICAL STANDARD CONFIGURATIONS FOR CC QUANTUM® PLATES

BRAND	WIDTH	THICKNESS
CCQ-50-1.2	50mm	1.2 mm
CCQ-50-1.4	50mm	1.4 mm
CCQ-50-3.0	50 mm	3.0 mm
CCQ-80-1.2	80mm	1.2 mm
CCQ-80-1.4	80mm	1.4 mm
CCQ-80-3.0	80 mm	3.0 mm
CCQ-100-1.2	100 mm	1.4 mm
CCQ-100-1.4	100 mm	1.4 mm
CCQ-100-3.0	100 mm	3.0 mm
CCQ-120-1.2	120 mm	1.2 mm
CCQ-120-1.4	120 mm	1.4 mm
CCQ-120-3.0	120 mm	3.0 mm
CCQ-150-1.2	150 mm	1.2 mm
CCQ-150-1.4	150 mm	1.4 mm
CCQ-150-3.0	150 mm	3.0 mm

NOTE: The above table shows the current standard sizes, other product sizes can be customized according to customer requirements. Lead time applies.

DESCRIPTION & APPLICATIONS

Surface Preparation

Prior to application of any CC Quantum® material products, it is expected that the substrate be appropriately prepared according to the following:

- Ensure that all surfaces are cleaned, this entails the removal of a surface contaminates such as oils, grease, dust and other contaminates which could affect the bonding of the CC Quantum® system.
- Specifically, for Concrete, Mortar and Stone which is still in good working condition, it is recommended to Mechanically abrade the surface with a needle gun, water blast, grit blast or grind. For small areas wire brushing (mechanical) is adequate.
- For degraded substrates, it is recommended to remove the affected area and restore allowing sufficient time to cure before applying CC Quantum® System.
- The age of the concrete to be strengthened should be more than 8 weeks.
- Uneven surfaces shall be remedied to within 0.5mm using CC Quantum® range.

Additional information can also be found in the relevant Method Statement document.

Application

- CC Quantum® A shall be applied using trowel, spatula or other similar equipment which will allow for an even and smooth application.
- The adhesive shall be applied forming a concave shape onto the CC Quantum® Plates, minimum 1mm thickness at the sides, 2mm in the centre.
- Once the CC Quantum® Plates which is combined with CC Quantum® A are placed on the substrate it should be firmly pressed down either by hand or a firm rubber roller.
- It is vital that the laminate plate is firmly however delicately rolled so as not to damage the surface, which could lead to a reduction in overall strength.
- Ensure there is squeeze out of the adhesive on both sides of the laminate plate, which will indicate appropriate adhesive bonding.
- Once cured the top of the laminate plates can be painted with a coating material

Quality Assurance

1. Each batch of manufactured CC Quantum® Plates are complimented with a Certificate of Assurance document which ensure compliance to the given customer requirements.
2. For each CC Quantum® A material batch or site project, test samples shall be made to ensure the material adheres to both handling and mechanical properties.
3. Tap testing can be carried out as a form of non-destructive testing to ensure bonding conformance.

Refer to the “Application Guide for CC Quantum® System” for further information.

Important Notes

- The application of the CC Quantum® Plates and CC Quantum® A Adhesive shall be carried out by trained and Cathay approved specialist contractors.
- Failure to apply the CC Quantum® system as per the given guidelines could lead to premature failure of the structure.
- U.V rays can significantly affect the laminate plate strength and the system bond. It is therefore recommended to apply CC Quantum® SP to the laminate plate within 1 day once the adhesive cure time has lapsed

SIGNBOARD

The contents shall be clearly marked on the product package:

- a) Manufacturer and address.
- b) Product name, brand and standards.
- c) Date of manufacture and batch number.
- d) Product quantity.
- e) Attention.

PACKAGING

The product will be supplied in rolls of 100m and be tightly packed.

Note: The length can be varied at the request of the customer.

TRANSPORT AND STORAGE

Store in dry conditions, storage temperatures should not exceed 50 °C, avoid direct sunlight, water and fire. Ensure boxes are clear of the ground on pallets. Handle with care.

SHELF LIFE

Unlimited, providing the storage requirement are adhered.

PRECAUTIONS

For the full health and safety hazard information and how to safely handle and use this product, please make sure that you obtain a copy of the Cathay Material Safety Data Sheet (MSDS) from our office or our website.

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Important notice

The data and information provided in this datasheet represent the typical properties that can be obtained from these products when properly processed in a controlled environment. The user should make their own assessment of the suitability of these products for the purpose required by conducting appropriate testing under conditions as close as possible to the proposed manufacturing conditions. Any advice or recommendation is given in good faith and no further duty or responsibility is accepted by the company. All such advice and every sale is subject to Cathay Composite's standard terms and conditions. The company reserves the right to change specifications without notice and customers should satisfy themselves that they are using the current version of the Technical Data Sheet.