

ShaliLam[®] C

Carbon Fibre Laminates for Structural Strengthening



STP Limited

Description

ShaliLam[®] C is a pultruded ready to use carbon fibre reinforced polymer (CFRP) laminate designed for strengthening concrete, timber and masonry structures. **ShaliLam C** is bonded onto the structure as external reinforcement using **ShaliBond Lam**, an epoxy resin-based adhesive.

Characteristics

The following are typical properties of the range of Carbon Fibre Laminates available:

Properties	ShaliLam C 1450	ShaliLam C 1410
Width (mm)	50	100
Thickness (mm)	1.4	1.4
Cross Sectional Area (mm ²)	70	140
Fibre Content	68% ± 2%	68% ± 2%
Density (g / cm ³)	1.6	1.6
Interlaminar Shear Strength (MPa)	55	55
Elongation at Break (%)	> 1.7	> 1.7
Tensile Strength (MPa)	> 2800	> 2800
Modulus of Elasticity (GPa)	> 165	> 165

Application

Structural strengthening of reinforced concrete, masonry, brickwork and timber elements or structures, to increase flexural and shear loading capacity for:

- Replacing missing steel reinforcement
- Increasing the strength and ductility of columns
- Increasing the loading capacity of structural elements
- Used for shear strengthening, confinement strengthening, flexural strengthening
- Enabling changes in use / alterations and refurbishment
- Correcting structural design and/or construction defects
- Increasing resistance to seismic movement
- Improving service life and durability
- Structural upgrading to comply with current standards

Advantages

- High strength – provides additional strength without adding to the 'dead load' of a structure
- Maintains overhead clearance in buildings or parking structures
- Available in a range of cross sections
- Allows for cost effective design
- Lightweight – easily applied using hand application techniques
- Fast curing adhesive – quick installation avoiding costly downtime of structures or buildings
- Simple installation – can be applied in-situ to structures in use

Application Methodology

➤ Surface Preparation

As with all refurbishment work, the first step is correct surface preparation to remove any chemicals or dirt.

- If the concrete is deteriorated, remove damaged parts by manual surface preparation. Clean the steel reinforcements and remove any traces of rust by **ShaliRust Off**. Remove all traces of rust from the reinforcement rods and protect them using **ShaliPrime Zn**, two-component anti-corrosion zinc-rich primer, repair the surface with one-component cementitious mortar **ShaliFix FRM** range (please refer to the relevant Technical Data Sheet for each product for application procedures).
 - Wait at least three weeks before applying **ShaliLam C**.
 - All concrete must possess an open surface texture with all paints, curing compounds and sealers removed.
 - All bug holes, depressions, imperfections, cavities etc., shall be repaired by using **ShaliFix 3EP** epoxy putty.
- **Material Preparation**
- The **ShaliLam C** laminate shall be cut into required size before application starts with cutter as per site requirements.
 - Roll the laminate for handling purpose. Do not bend or fold the laminate.
 - Prepare the **ShaliBond Lam** by mixing component A (Resin) & B (Hardener) thoroughly by using slow speed drill mixer with a spiral type blade at the bottom of stirrer rod. Mix till homogeneous mix is obtained.
 - After stirring and mixing, wait for the product to settle in order to let entrapped air escape
 - **ShaliLam C** is applied on the prepared concrete surface with the **ShaliBond Lam** applied on the laminate surface.
- **Application of Material**
- Apply an even coat of **ShaliBond Lam** onto the clean and dry **ShaliLam C** with a putty blade or a spatula. Thickness of **ShaliBond Lam** shall be at minimum 2 mm.
 - The adhesive applied on **ShaliLam C** laminate is now adhered to the prepared substrate such that excess mixed adhesive squeezes out from both the sides of the laminate. The excess material shall be removed using spatula or by suitable means.
- **Finishing**
- In case of protection with plaster, ensure to apply a bond coat over the laminate and sprinkle oven dried fine quartz grains to assist bond strength with the plaster.
 - When exposed to direct sunlight or in other cases, the laminated surface must be overcoated with **ShaliProtek 2AC PU TC** or **ShaliUrethane PU TC 2K**.

Cleaning & Maintenance

Clean tools and equipment with solvent before the material hardens.

Health & Safety

- Avoid contact with skin / eyes and avoid swallowing.
- Ensure adequate ventilation and avoid inhalation of vapour.
- Wear suitable protective clothing, gloves and eye protection.
- In case of skin contact, rinse with plenty of clean water, then cleanse with soap and water. Do not use solvent to clean the contacted area.
- In case of eye contact, wash with plenty of clean water and seek medical advice.
- If swallowed, seek medical attention immediately. Do not induce vomiting.

Packaging

ShaliLam C 1450 and **ShaliLam C 1410** are available in roll length of 100 m.

Storage

Keep in cool and dry place, under shed, away from heat and moisture.

Shelf Life

12 months in original unopened sealed condition.



STP Limited
Enhancing Structures' Life

Product Range

- Waterproofing & Insulation
- Road Surfacing
- Sealants & Adhesives
- Pipeline Coatings
- Protective/Anti-Corrosion Coatings
- Epoxy and Flooring
- Grouts and Admixtures (GARA)
- RestoFix - Repair/Rehabilitation
- Other Construction Chemicals



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