

MasterStrength® LAM

High Strength and High Modulus Unidirectional Pultruded Carbon Fiber Laminates

Material Description

MasterStrength® LAM is high strength or high modulus unidirectional pultruded carbon fiber laminates in MasterStrength® FRP System.

Areas of Application

- Increasing the flexural strength of the concrete beams
- Increasing the flexural strength of the concrete slabs under heavy machine loads
- Increasing the rigidity of the beams and slabs against bending deformations
- Increasing the flexural strength of the concrete slabs damaged with ventilating channel openings, stairs and elevator holes etc.
- Increasing the flexural strength of the concrete beams and slabs under increased service loads (change of usage etc.)
- Decreasing disturbing effect of the vibrations on the slabs caused by machines

Characteristics and Benefits

- Light and easy to carry
- Easy to cut and re-shaped
- Easy to design (Unidirectional laminates and similar elasticity modulus with steel)
- Does not increase the gravity of the structure
- Does not require emptying the structure and strengthening works can be done with temporary stops

- Decreases the bending deformations in the slabs and beams

Processing Method

(A) Preparation of Substrate

The mineral based substrates (concrete, stone, brick, tile etc.) must be sound, clean and dry. It shouldn't be weakened by over-troweling and lack of curing. The concrete should be free of frost, curing membranes, waterproofing treatments, oil stains, laitance, friable material and dust. If there is a water leakage it must be drained or properly plugged. In case of low strength concrete ($t_c < 1.5 \text{ N/mm}^2$), the loose parts of concrete must be broken and the surfaces should be refilled with structural repair mortars in MasterCrete® S range.

Before the adhesive application let the repair mortars cure at least 7 days at 20°C. FRP sheets should be free of oil stains and dust. In all kinds of substrates MasterStrength® PRI 3500 should be used as a primer and the adhesive application should be done in the following 24 hours.

(B) Processing

MasterStrength® ER 4000 should be applied with a spatula to the smooth surfaces of pre-prepared carbon fiber polymer plates to achieve a thickness of 1-1.5 mm. At the same time, MasterStrength® ER 4000 should also be applied with a spatula to primed surfaces to achieve a thickness of 1-1.5 mm. Carbon fiber polymer plates with adhesive applied to the back

Technical Properties				
	MasterStrength® LAM			
Density (ISO 1183)	1.5 g/cm ³			
Thickness	1.2 mm	1.4 mm	1.2 mm	1.4 mm
Width	50 mm		100 mm	
Elasticity Modulus (ASTM D 3039)	≥ 165 GPa			
Tensile Strength (ASTM D 3039)	> 3000 MPa			
Elongation at Break (ASTM D 3039)	% 1			
Moisture Absorption (ISO 62)	% < 0.1			

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should then be positioned, stretched lightly in the direction of the fibers, and fixed in place without swelling. The carbon plates should then be rolled down in the direction of the fibers to ensure there are no gaps between them and the concrete surface.

In areas exposed to sunlight, the surface of the material must be covered with suitable MasterCrete® S repair mortars within 7 days after application. When fire resistance is required, the surface must be coated with fire-resistant special mortars to the appropriate thickness.

Point to Consider

- MasterStrength® FRP applications should be done by approved experts.
- Work clothes, protective gloves, glasses and mask defined in Labour Laws must be used during the application. Do not touch to the fibers without hand gloves.
- Consult to the MBT Tech Technicians for special applications aren't defined in this data sheet.

Cleaning of Tools

All the tools and equipments must be cleaned by solvent after the application. After MasterStrength® LAM is hardened, it can only be removed from the surface mechanically.

Packaging

100 m rolls

Storage

Store in original container in cool (+5°C-+30°C) and dry indoor conditions. Keep away from direct sunlight.

Health and Safety

It is dangerous to approach the application sites. During the application, a protective apparel, protective gloves, goggles and masks which comply with the Occupational Health and Safety Rules should be used. Due to the irritation effect of the uncured materials, the mixture should not come into contact

with skin and eyes; in case of a contact, the affected area should be washed with plenty of water and soap; in case of swallowing, a physician should be consulted immediately. No food or beverages should be brought to the application area. The product should be stored and kept out of reach of children. For detailed information please consult the Material Safety Data Sheet.

Disclaimer

The technical information given in this publication is based on the present state of our best scientific and practical knowledge. MBT Teknik Yapı Kimyasalları Sanayi ve Ticaret A.Ş. is only responsible for the quality of the product MBT Teknik Yapı Kimyasalları Sanayi ve Ticaret A.Ş. is not responsible for results that may occur because the product is used other than advised and/or out of instructions regarding the place and the method of use. This technical form is valid only till a new version is implemented and nullifies the old ones.

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