

MasterStrength® ER 4500

Epoxy Based Adhesive for MasterStrength® FIB System

Material Description

MasterStrength® ER 4500 is epoxy based, solvent free, high strength adhesive developed for MasterStrength® FIB System.

Areas of Application

Bonding of FRP (carbon, glass and aramide) sheets on concrete, steel and wooden surfaces.

Characteristics and Benefits

- Easy to apply
- Low viscosity
- High strength
- Solvent free

Processing Method

(A) Preparation of Substrate

Surfaces to be treated with MasterStrength® ER 4500 must be primed with MasterStrength® PRI 3500.

(B) Mixing

MasterStrength® ER 4500 has two parts in pails, produced according to right mixing ratio. Material temperature should be between 15 - 25°C before mixing. Part B should be added into the Part A without any remaining material in the pail. It should be mixed with using a proper mixer (~300rpm) for polymer mixing. Mix the parts at least 3 minutes to have a homogenous mixture.

Technical Properties

Structure of the Material MasterStrength® ER 4500 Part A MasterStrength® ER 4500 Part B	Epoxy Resin Epoxy Hardener	
Color	Blue	LX
Mixed Density	1,04 kg/litre	
Viscosity	1500-2500 mPa.s	
Compressive Strength TS EN 196 (7 days)	>60 N/mm ²	
Flexural Strength TS EN 196 (7days)	>50 N/mm ²	
Bonding Strength to concrete (7 days)	>3,0 N/mm ²	
Application Temperature	+5°C + 30°C	
Pot Life	40 minutes	
Re-coatable Time (+20°C)	Min. 48 hours Max. 7 days	
Fully Cured (+20°C)	7 days	

Typical values are obtained from the test results of 4x4x16 mortar prism in 230C and 50% relative humidity conditions. High temperatures shortens the curing and working time, lower temperatures extends the durations

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Mixing Ratio

MasterStrength® ER 4500	Part A	Part B
Quantity	3,73 kg	1,27 kg
Mixed Density	1,02 kg/liter	

(C) Processing

MasterStrength® ER 4500 should be applied to the primed surfaces by using a soft roller. Application thickness should be between 0.8-1.0 mm. Lay down the sheets on to the surfaces while the adhesive is still wet. After lying, strongly press the sheets two or three times in the longitudinal direction of the fiber using a roller or rubber spatula in order to allow MasterStrength® ER 4500 penetrate into the sheet and to eliminate air from the coat of resin. In the case of multiple layers of fiber, 700-800 gr/m² MasterStrength® ER 4500 should be applied between the all layers. Under UV radiations the fibers should be coated with a UV resistant paint in MasterShield® range. For plastering on the fiber surface, clean and sound sand should be spread on to the fiber surface while the adhesive is still wet. After curing of adhesive any kind of plaster can be easily applied. For fire resistance, the fibers should be coated with special fire resistant coatings

Consumption

1.8 kg/m² in first layer, and 0.8 kg/m² in the following coats.

Point to Consider

- MasterStrength® FRP application should be done by approved experts.
- During the application the substrate and ambient temperature should be between 5 - 30°C.
- Resinous materials' pot life and curing times vary depending on the relative humidity, substrate and ambient temperature. Reaction gets slow in low temperatures and it causes to extension on pot life and working time. On the other hand high temperatures speed up the reaction, which results to short pot life and working time. For full

curing of material, both the substrate and ambient temperature shouldn't be under allowed application temperature.

- MasterStrength® ER 4500 is provided in ready to mix pails. Do not add any solvent etc. into the mixture during the application.
- The amount of mixed resin should be such that it may be applied within its useful workability time.
- Mixing should be made with proper mixers and do not allow mixing by hand.

Cleaning of Tools

After the application all tools should be cleaned with solvent. MasterStrength® ER 4500 can be cleaned with only mechanical abrasion after hardening.

Packaging

5 kg set

MasterStrength® PRI 3500 Part A: 3,73 kg pail

MasterStrength® PRI 3500 Part B: 1,27 kg pail

Shelf Life

18 months after the production date under appropriate storing conditions. Opened packages have to be stored by tightly sealing the bag/cover and must be used in one week.

Storage

It should be stored in its unopened original package, in a cool (+5°C - +25°C) and dry environment, protected from frost. In short-term storage, maximum 3 pallets should be placed on top of each other and shipment should be made with a first-in, first-out system. In long-term storage, pallets should not be placed on top of each other.

Health and Safety

It is dangerous to approach the application sites. During the application, a protective apparel, protective gloves, goggles

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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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