

# 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.


## 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

## Technical Properties

Structure of the Material <b>MasterStrength™ ER 4500</b> Part A <b>MasterStrength™ ER 4500</b> Part B	Epoxy Resin Epoxy Hardener	
Color	Blue	
Mixed Density	1,04 kg/litre	
Viscosity	1500-2500 mPa.s	
Compressive Strength TS EN 196 (7 days)	>60 N/mm <sup>2</sup>	
Flexural Strength TS EN 196 (7days)	>50 N/mm <sup>2</sup>	
Bonding Strength to concrete (7 days)	>3,0 N/mm <sup>2</sup>	
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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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/m<sup>2</sup> **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/m<sup>2</sup> in first layer, and 0.8 kg/m<sup>2</sup> 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 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.

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## Disclaimer

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