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# MasterBrace® ADH 4000 (Formerly known as Mbrace® Lamine Adesivo)

## Epoxy Based Adhesive for MasterBrace® LAM System

### DESCRIPTION OF PRODUCT

MasterBrace® ADH 4000 is epoxy based, solvent free, high strength adhesive developed for MasterBrace® LAM System.

### FIELDS OF APPLICATION

- Bonding of carbon fibre laminate on concrete, steel and wooden surfaces.

### FEATURES AND BENEFITS

- Pasty and easy to apply
- High strength
- Non-sag
- Solvent free

### APPLICATION PROCEDURE

#### 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 ( $\sigma_{tc} < 1.5 \text{ N/mm}^2$ ), the loosen parts of concrete must be broken and the surfaces should be reprofiled with structural repair mortars in MasterEmaco® S range. Before the adhesive application let the repair mortars cure at least 7 days at 20°C.

Steel surfaces should be cleaned from rust by sand blasting, or wire brushing. Plastic surfaces

### TECHNICAL DATA

Product Chemistry <b>MasterBrace® ADH 4000</b> Part A <b>MasterBrace® ADH 4000</b> Part B	Epoxy Resin Epoxy Hardener	
Color	Grey	MK
Mixed Density	1.58 kg/litre	
Compressive Strength TS EN 196 (7 days)	> 40 N/mm <sup>2</sup>	
Flexural Strength TS EN 196 (7 days)	> 20 N/mm <sup>2</sup>	
Bonding Strength (7 days) to concrete to steel	> 3.0 N/mm <sup>2</sup> > 3.0 N/mm <sup>2</sup>	
Application Temperature	+5°C - +35°C	
Pot Life	30 minutes	
Fully Cured at 20°C	7 days	

Typical values are obtained from the test results of 4x4x16 mortar prism in 23°C and 50% relative humidity conditions. High temperatures shortens the curing and working time, lower temperatures extends the durations



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must be cleaned with proper cleaners before adhesive application.

**FRP** plates should be free of oil stains and dust. In porous substrates **MasterBrace® P 3500** should be used as a primer and the adhesive application should be done in the following 24 hours.

#### Mixing

**MasterBrace® ADH 4000** 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

MasterBrace® ADH 4000	Part A	Part B
Quantity	3.00 kg	3.00 kg
Mixed Density	1.58 kg/liter	

#### APPLICATION METHOD

**MasterBrace® ADH 4000** should be applied to the prepared surfaces and to FRP laminates by using a steel spatula or steel trowel. Application thickness should be between 1.0-2.0 mm. In the following 10 minutes (at 25°C) FRP laminates should be placed on to the substrate and push on to the laminates with a stiff roller (polyamide, steel etc.) for preventing possible air gaps between the laminate and substrate.

#### COVERAGE

3-4 kg for bonding 1m<sup>2</sup> laminate.

#### WATCH POINTS

- **MasterBrace® FRP** application should be done by approved experts.
- During the application the substrate and ambient temperature should be between 5 - 35°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.
- **MasterBrace® ADH 4000** is provided in ready to mix pails. Do not add any solvent etc. into the mixture during the application.
- 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 a proper detergent or solvent such as thinner. **MasterBrace® ADH 4000** can be cleaned with only mechanical abrasion after hardening.



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#### PACKAGING

6 kg set  
Part A: 3 kg pail  
Part B: 3 kg pail

#### STORAGE

Store in original container in cool (+5°C - +25°C) and dry indoor conditions.

#### SHELF LIFE

18 months under proper storage conditions after production date.

#### HEALTH AND SAFETY PRECAUTIONS

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. **BASF Türk Kimya Sanayi ve Tic. Ltd. Şti.** is only responsible for the quality of the product. **BASF Türk Kimya Sanayi ve Tic. Ltd. Şti.**

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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11 DOP NO: 02.1504.4.003 1020-CPR-040 038990	
EN 1504-4 MasterBrace ADH 4000 Structural Bonding Product	
E-modulus in Compression	≥ 2000 N/mm <sup>2</sup>
Shear Strength	≥ 6 N/mm
Workable Life	40 min. (23°C)
Shrinkage	≤ 0,1 %
Compressive Strength	≥ 30 N/mm <sup>2</sup>
Coefficient of Thermal Expansion	≤ 100 x 10 <sup>-7</sup> /K
Glass Transition Temperature	≥ 40°C
Adhesion (hardened concrete to hardened concrete)	Failure in concrete
Adhesion (fresh concrete to hardened concrete)	Failure in concrete
Durability	Passes
Reaction to fire	C-s1,d0
Dangerous Substances	Complies with 5,4