

MasterBrace® ADH 4000 (Formerly known as Mbrace® Laminate 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 (< 1.5 N/mm²), 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 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 1420	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 1m² laminate.

TECHNICAL DATA

Product Chemistry MasterBrace® ADH 4000 Part A MasterBrace® ADH 4000 Part B	Epoxy Resin Epoxy Hardener	
Color	Grey	MK
Mixed Density	1,58 kg/liter	
Compressive Strength TS EN 196 (7 days)	>40 N/mm ²	
Flexural Strength TS EN 196 (7 days)	>20 N/mm ²	
Bonding Strength (7 days) To concrete To steel	>3,0 N/mm ² >3,0 N/mm ²	
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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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.

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 mixtures should not come into contact with skin and eyes; in case of 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. **Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti.** is only responsible for the quality of the product **Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret 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.

CONTACT INFORMATION

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MasterBrace® ADH 4000 Technical Data Sheet -Revision
Date: 12/2020

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Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti. Adres: Barbaros Mah. Begonya Sok. Nidakule Kuzey Ataşehir, C Kapısı No:3 E/5, 34746 Ataşehir İstanbul 20 1020 - CPR - 040 065838 DOP NO: 02.1504.4.003	
EN 1504-4:2004 MasterBrace ADH 4000 LAM) Sistemi için Geliştirilmiş, Epoksi Esaslı Yapıştırıcı Epoxy based bonding agent for Laminate systems Beton Yapıların Korunması Ve Tamiri İçin Mamuller Ve Sistemler - Tarifler, Gereker, Kalite Kontrol Ve Uygunluk Değerlendirmesi – Bölüm 4: Yapısal Bağ (Products and Systems For The Protection and Repair of concrete structures - Definitions, Requirements, Quality Control and evaluation of conformity Part 4: Structural Bonding Tamir prensibi 4: Yapısal takviye (Principal of repair 4: Structural strengthening) Tamir yöntemi 4.4: Bağlanmış harç veya beton (Repair method 4.4: Bonded mortar or concrete)	
Elastisite Modülü (Elastic Modulus)	≥ 2000 N/mm ²
Basınç Dayanımı (Compressive Strength)	≥ 30 N/mm ²
Kesme Dayanımı (Shear Strength)	≥ 6,0 N/mm ²
İşlenebilirlik Süresi (Workable life)	33 minutes (23°C) 33 dakika (23°C)
Büzülme / Genleşme (Linear Shrinkage)	≤ % 0,1
Isıl genleşme katsayısı (Coefficient of thermal expansion)	≤ 100 x 10 ⁻⁶ / °C
Camsıya geçiş sıcaklığı (Glass transition temperatures)	≥40°C
Adezyon : Sertleşmiş beton ile sertleşmiş beton arasında (Adhesion concrete to concrete : Hardened concrete to hardened concrete)	Beton kopar (Deformation should be from concrete)
Adezyon : Taze beton ile sertleşmiş beton arasında (Adhesion concrete to concrete : Wet concrete to hardened concrete)	Beton kopar (Deformation should be from concrete)
Dayanıklılık (Durability)	Uygun (Pass)
Yangına tepki (Reaction to fire)	C-s1; d0
Tehlikeli maddeler (Dangerous substances)	Madde 5.3'e uygun (Comply with clause 5.3)