

MasterBrace ADH 4500

Resin for MasterBrace FIB Fibre Reinforced Polymer Strengthening Systems

MATERIAL DESCRIPTION

MasterBrace ADH 4500 is an epoxy resin for use in conjunction with **MasterBrace FIB** sheets. With the chosen **MasterBrace FIB** fibre, the **MasterBrace ADH 4500** resin produces a high-performance composite system for use in structural strengthening and upgrade, repair, or blast mitigation applications.

FEATURES AND BENEFITS

- Increased flexural strength
- Increased shear strength
- Increased impact resistance
- Confinement
- Blast resistance
- Fatigue enhancement
- Lightweight
- Durable
- Control of crack propagation
- Excellent strength to thickness ratio

PACKAGING

MasterBrace ADH 4500 Base	4.24kg
MasterBrace ADH 4500 Reactor	2.12kg
Total	6.36kg

YIELD

6 litres

TYPICAL PROPERTIES*

Composition	Two parts (A & B)
Mixed density	1.06 kg / Lt
Colour	Blue
Bond strength	>2.5 N/mm ² (Failure in concrete)
Full cure	7 days at 20°C

APPLICATION PROCEDURE

Preparation of Substrate:

Preparation shall be by grinding or abrasive blasting to remove loose material, laitance and surface contamination. Concrete must be, free of oils, curing compounds or mould release agents and must be thoroughly dried and free of dust at time of application. It is not always necessary to remove existing coatings.

Substrates must be repaired using epoxy resin or polymer modified cementitious mortars from the MasterEmaco or MasterBrace range of repair materials. Small surface defects in concrete should be made good using **MasterBrace ADH 2200**. Concrete surface protrusions such as small projections, grouting lines etc. must be ground flat. Depressions in concrete surfaces such as a concrete joint must be filled with **MasterBrace ADH 2200**. Sharp corners must be rounded with a radius of at least 30mm.

Mixing:

Mechanically premix the **MasterBrace ADH 4500** Part A resin individually prior to adding Part B. Mechanically mix Resin Part A and Hardener Part B for 3 minutes or until homogeneous.

Application:

The chosen **MasterBrace FIB** sheet must be cut to the correct length and prescribed sizes using scissors or cutters before application of **MasterBrace ADH 4500**. The number of sheets cut shall be limited to those that can be used within a day.

The mixed **MasterBrace ADH 4500** shall be applied to the **MasterBrace FIB** sheet a roller ensuring that the fibres are completely impregnated with the resin.

At the same time apply a coat of the **MasterBrace ADH 4500** resin by roller or brush to the substrate to 'wet' out the surface.

The resin saturated **MasterBrace FIB** sheet should be placed immediately fibre side down onto the concrete surface onto which the **MasterBrace ADH 4500** has been applied. The applied FRP sheet should be squeezed only in the longitudinal direction of the fibres using a defoaming roller, rubber spatula or by hand to ensure that the fibres are fully impregnated with the resin and to ensure all air bubbles are removed.

For joining strips of fibre sheet, a 10cm overlap length is required in the horizontal direction and 2cm overlap length in the vertical direction. Additional resin must be applied

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at the overlap location on top of the outer layer of fibre sheet to be overlapped.

The plastic backing sheet shall be removed from applied FRP sheet before continuing and the adhered Fibre Reinforcement System should be allowed to stand for at least 30 minutes before continuing. Any lifting or dislocation that occurs during this period must be corrected using the roller and spatula.

Where a second layer of **MasterBrace FIB** sheet is required the mixed **MasterBrace ADH 4500** should then be applied onto the cut fibre sheet then the resin impregnated second layer laid onto the initial application of fibre sheet.

Applied FRP sheet should be squeezed in the fibre longitudinal direction with a roller, spatula or by hand to impregnate the fibre sheet in the same manner as above.

In cases where multiple layers of fibre sheets are to be applied, the above application method should be repeated.

MASTERBRACE SYSTEM - OVERCOATING

The MasterBrace system should be overcoated where the installed system is directly exposed to sunlight or chemicals. The chosen coating system / finish should be determined by the type of exposure anticipated and should be from the Master Builders Solutions range of available coatings.

Where an Architectural plaster or render is required **MasterTop SR 3** aggregate can be cast into the wet resin to act as a key for the subsequent finish.

COVERAGE

Estimated coverage is 0.7-1.6 Lt /m² per layer of FRP sheet depending upon the type, grade and weight of sheet chosen for the particular application.

CLEANING

Use **MasterTop THN 2**, Methyl Ethyl Ketone or Acetone. Observe fire and health precautions with solvents.

STORAGE

Store in cool, dry area (10 to 32°C) away from direct sunlight, flame or other hazards. MasterBrace fibre reinforcement materials contain carbon fibres. During application of MasterBrace fibre materials, wear appropriate work clothing to minimize contact. Use caution when handling flammable liquids and eliminate all sources of ignition from work area. Product Material Safety Data Sheets (MSDS) are available and should be consulted and on hand during application and/or whenever handling these products. These products are for professional and industrial use only; application directions must be followed.

SHELF LIFE

Twelve months when properly stored in unopened containers.

WATCHPOINTS

MasterBrace ADH 4500 contains reactive resins and diluents. Observe the following health and physical precautionary measures before using this product:

Wear gloves, eye protection, and appropriate work clothing to avoid contact with components. Ventilation is required with special consideration for enclosed or confined areas. Air movement must be designed to ensure turnover at all locations in work adjacent areas to avoid build-up of heavy vapours.

Do not apply the MasterBrace Fibre Reinforcement Systems when ambient temperature is less than 5°C. Surfaces should be overcoated within two days when exposed to direct sunlight, or in other cases within one week to assure proper adhesion of coating to saturant.

MAINTENANCE

Periodically inspect the applied material and repair localised areas needed. Consult Master Builders Solutions Technical Services for additional information.

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HEALTH AND SAFETY

For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

The following general comments apply to all products. As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

SOLVENT BASED PRODUCTS

Use in well ventilated areas; avoid inhaling. Suitable respiratory equipment may be needed, e.g. when spraying. Can cause skin, eye irritation. Wear protective eye shields and gloves during use. Do not smoke or allow sparks or naked lights when stored or in use.

POWDER PRODUCTS

Should be handled to minimise dust formation; use light mask if excessive dust unavoidable. Cement powders when wet or moistened can cause burns to skin and eyes which should be protected during use.

RESIN PRODUCTS

Can cause irritation, dermatitis, or allergic reaction. Use protective equipment particularly for skin and eyes. Use only in well ventilated areas.

SPILLAGE

Chemical products can cause damage, clean spillage immediately.

NOTE

Technical support, where provided, does not constitute supervisory responsibility. For additional information contact your local MB Construction Chemicals Solutions South Africa (Pty) Ltd representative. MB Construction Chemicals Solutions South Africa (Pty) Ltd shall not be liable for technical advice provided.

MB Construction Chemicals Solutions South Africa (Pty) Ltd reserves the right to have the true cause of any difficulty determined by accepted test methods. Undertaking such tests is not, and shall not be deemed to be, an admission of liability or an assumption of any risk, loss, damage or liability.

QUALITY AND RESPONSIBLE CARE

All products originating from MB Construction Chemicals Solutions South Africa (Pty) Ltd are manufactured under a management system independently certified to conform to the requirements of the quality standards ISO 9001, environmental and occupational health and safety standards.

* Properties listed are based on laboratory controlled tests.

DISCLAIMER

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