

## MBrace: A composite strengthening system

Master Builders Technologies (MBT) is offering *MBrace* — a fibre reinforced polymer (FRP) — which acts as a composite strengthening system. It is suitable for high-end applications in seismic retrofitting.

### MBrace FRP

*MBrace FRP* is a family of lightweight systems composed by ready-to-use carbon laminate, carbon tow sheet, glass sheet fibres and aramid sheets. *MBrace FRP* provides very high tensile strength and is used for providing supplemental flexural reinforcement and compression confinement of concrete, masonry and wood elements.

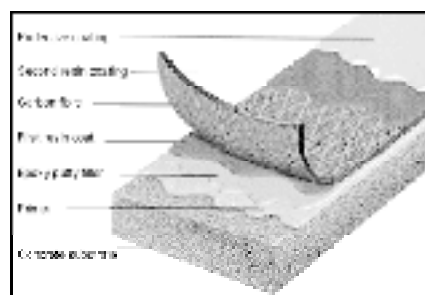
The *MBrace* composite strengthening systems offers single source support from specification through completion.

The system consists of:

- *MBrace* primer
- *MBrace* saturant for fibre sheets
- *MBrace* laminate adhesive for the laminate versions
- *MBrace* fibre sheets (carbon glass and aramid) fibre reinforcement of *MBrace* laminate reinforcement for laminate version.

### MBrace primer

*MBrace* laminate adhesive is the epoxy resin for binding fibre laminates with the *MBrace*



**MBrace material components**

composite strengthening system. It is 100 percent solids, low viscosity epoxy resin which is able to cure in the presence of moisture and at temperatures as low as 2°C. When applied to sound concrete *MBrace* primer gives a high tensile bond strength to the *MBrace* composite strengthening.

### MBrace laminate adhesive

*MBrace* laminate adhesive is the epoxy resin for bonding fibre laminates with the *MBrace* composite strengthening system. It is a 100 percent solid non-sag paste epoxy resin material. Other recommended uses include sealing surfaces prior to epoxy injection, bonding of rigid materials and levelling uneven surfaces prior to application.

### MBrace saturant

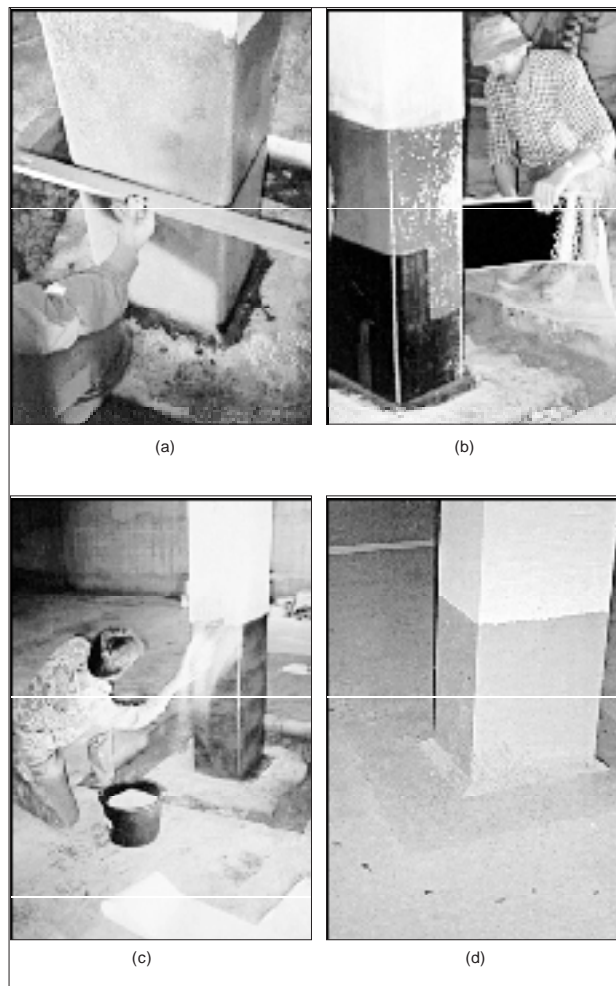
*MBrace* saturant resin is the easy-to-apply, 100 percent solids material that permits adhesion of a lightweight fibre or sheet, within the composite strengthening system. When cured with the tow sheet, *MBrace* saturant resin produces a high performance composite system for use in external structural repair or upgrade applications.

### MBrace fibre reinforcement systems

The backbone of the *MBrace* fibre reinforcement materials are en-

veloped in *MBrace* saturant resin to yield a range of high performance features.

*MBrace* composite materials include the *MBrace* CF240, CF640 and carbon fibre laminate systems as well as *MBrace* AR and E glass systems and the aramid A120 system. Each fibre reinforced system within the finished *MBrace* composite



**Application of the MBrace sheet (a) control of the evenness (b) application (c) sanding (d) additional coating**

strengthening system provides high strength to cross section ratio and structural integrity that is similar to bonding steel plate to structural faces.

## Features and benefits

To reinforce structures with strong elements in tension. *MBrace* FRP enables the traditional technique of plating with steel plates to be replaced with extremely light materials that are easy to install and to:

- increase the load-bearing capacity
- reduce deformation to the working loads (increase in rigidity)
- increase the fatigue strength
- limit or cover the fissuring states (increase in durability)

To add confinement to compression elements, through wrapping techniques, *MBrace* FRP enables the structures to have:

- greater load-bearing capacity
- high ductility against seismic stresses
- greater resistance to dynamic and impulsive stress

The *MBrace* FRP system also:

- enables the amount of reinforcement to be calculated in relation to

the performance required or stress flow.

- enables economic maintenance, thereby reducing costs
- increases the durability of the structure by protecting it against the aggressive action of chlorides and freezing and thawing cycles.

## Application procedure

- The surfaces of elements that are still in good condition or restored with putty from the concrete line should be sand blasted. With degraded structures, the whole layer should be removed by scarifying, hydrodemolition or similar technique and then structural restoration carried out with mortar.
- oils, grease, dust or any other loose material from the surface should be removed
- the layer of *MBrace* primer should be applied by roller brush

## MBrace FRP sheets

- The first layer of saturant may be applied by roller or spray
- Apply the layer of fibre
- Using the ribbed roller, exert a constant pressure by moving the tool

both ways in the direction of the fibres until they are fully impregnated

- Wait for approximately 5 minutes
- Then apply the second coat of saturant
- Repeat the preceding four points for all the layers or plies of *MBrace* fibre scheduled in the application

## MBrace FRP laminate

- Clean up the laminate surface with a proper solvent
- Apply one layer of laminate adhesive which should be 3 mm thick on the surface of the laminate
- Apply primer onto the surface
- Apply laminate and using the relative roller, exert a constant pressure by moving the tool both ways in the direction of the fibres.

For more details, please contact:

*Mr Himanshu Kapadia  
Marketing Manager,  
Master Builders Technology  
(MBT) India Pvt Ltd  
704, Krishna Govinda Tower  
7th Floor, Sector 24, Sanpada  
Navi Mumbai 400 703.  
Tel: 7619992-3, 7671564  
Fax: 7619242  
E-mail: mbtindia@vsnl.com*