

MAPEGRID B 400

Primed alkali-resistant basalt fibre mesh for “reinforced” structural strengthening of stone, brick and tuff masonry structures

WHERE TO USE

Primed, bidirectional, alkali-resistant, basalt fibre reinforcing mesh applied in combination with **Planitop HDM Maxi** (two-component, ready-mixed, high ductility, fibre-reinforced, pozzolanic-reaction cementitious mortar for “reinforced” structural strengthening on masonry), **Planitop HDM Restauro** (two-component, ready-mixed, high ductility, fibre reinforced natural hydraulic lime (NHL) and Eco-Pozzolan based mortar for “reinforced” structural strengthening on masonry), **MapeWall Render & Strengthen** (high strength natural hydraulic lime-based transpirant rendering and masonry mortar for making structural render) or **Mape-Antique Strutturale NHL** (ready-mixed, cement-free, natural hydraulic lime (NHL) and Eco-Pozzolan based mortar) to strengthen reinforced concrete and masonry structures in order to improve their mechanical characteristics and overall ductility.

Mapegrid B 400 mesh is part of the **Mapei FRG System**, a complete range of composite materials with an inorganic matrix to guarantee excellent chemical-physical and elastic-mechanical compatibility with masonry.

This system offers several important advantages when used on buildings of historical or artistic interest. Rather than replace existing structures, the system works in parallel without modifying the structure and without altering the way the masses and stiffness are distributed.

This is a very important factor, particularly in seismic areas where stresses are proportional to the masses involved.

The use of **Mapegrid B 400** in particular allows for better distribution of strains caused by cyclic loads.

The system, made up of special meshes and mortars, follows the approach defined by the guidelines for the approval of FRCM (Fibre Reinforced Cementitious Matrix) systems which stress the importance of obtaining approval for the entire strengthening package

Some application examples

- Shear/tensile strengthening of bay walls by applying the system on the internal and/or external face.
- Structural strengthening for the external and internal faces of masonry arches and vaulted roofs.
- Strengthening reinforcement for more even distribution of stresses induced by seismic activity.

TECHNICAL CHARACTERISTICS

Mapegrid B 400 is a special square mesh made from primed, alkali-resistant basalt fibres which, thanks to its special weave, increases the mechanical characteristics and ductility of the reinforced masonry and distributes stresses more evenly.

As a result, in the event of movements in the structure, the strengthening package has the ability to distribute stresses and strains over the entire surface of the members and elements strengthened with the mesh so that its failure mode is transformed from fragile type to ductile type. The system adheres perfectly to substrates and the mechanical properties of the bond formed are such that localised stresses provoke a failure in the substrate rather than at the substrate/strengthening system interface.

In the case of strengthening packages applied to arched or vaulted elements, the masonry acquires the ability to resist tensile loads and inhibit the formation of plastic hinge points on the side opposite to where the strengthening package is applied.

There is also a lower consumption of energy during the production process of **Mapegrid B 400**, thereby guaranteeing less impact on the environment due to the limited amount of CO₂ emissions.

ADVANTAGES

- Excellent tensile strength.



- Excellent resistance to cyclic loads.
- Stable and resistant to chemical aggression by cement.
- Resistant to atmospheric agents.
- High dimensional stability.
- Does not rust.
- Light and easy to handle.
- Easy to cut and fold to suit the shape of the substrate.
- Resistant to wear.
- Limited amount of CO₂ emissions during the production process.

APPLICATION PROCEDURE

Preparation of the substrate

Surfaces on which **Mapegrid B 400** is to be applied must be prepared according to specification.

When used to strengthen bay walls or the internal face of arched or vaulted members and elements, the render must be completely removed either manually or with suitable power tools, along with any deteriorated or detached areas until the substrate is sound, compact and strong so that the strengthening package itself does not detach. This operation must be carried out until the underlying masonry is exposed. While the render is being removed, if new stones, bricks and/or tuff are required to fill large gaps in the wall, use material with characteristics as similar as possible to the material originally used to build the wall.

When used to strengthen the external face of masonry vaulted members and elements, remove all the flooring and spandrels and any deteriorated or detached areas until the substrate is sound, compact and strong so that the strengthening package itself does not detach.

Then wet the structure to be strengthened and leave any excess water to evaporate off so that the masonry is saturated and the surface is dry (s.s.d. condition). Compressed air may be used to speed up this process.

Application procedure

Preparation of **Planitop HDM Maxi**, **Planitop HDM Restauro**, **MapeWall Render & Strengthen** or **Mape-Antique Strutturale NHL** (refer to the relevant Technical Data Sheet).

1. Application of an even layer around 5-6 mm thick of **Planitop HDM Maxi**, **Planitop HDM Restauro**, **MapeWall Render & Strengthen** or **Mape-Antique Strutturale NHL** with a flat metal trowel or by spray. Level off the whole surface so that a sufficiently flat layer is obtained.
2. After applying the first layer of mortar and while it is still wet, place **Mapegrid B 400** mesh over the entire surface and press down lightly with a flat trowel so that it adheres perfectly to the mortar. Overlap adjacent pieces of **Mapegrid B 400** by at least 15 cm both lengthways and widthways.
3. Apply a second even layer of **Planitop HDM Maxi**, **Planitop HDM Restauro**, **MapeWall Render & Strengthen** or **Mape-Antique Strutturale NHL** around 5-6 mm thick so that it completely covers the mesh.

We recommend folding the strengthening package over imposts by at least 40 cm, especially when working on the internal or external face of arched and vaulted elements and members.

Protecting the strengthening system

In order to improve the anchoring mechanism of the strengthening system, strategically placed connectors made from **MapeWrap B Fiocco** may also be applied (see relevant Technical Data Sheet) on the facing wall or on the imposts, keystones and around the springers of arched or vaulted members. The connectors eliminate any “debonding” phenomenon and increase the static efficiency of the strengthening package applied. The number and pitch of the connectors must be defined during the design phase.

PACKAGING

Mapegrid B 300 is supplied in 100 cm wide by 50 m long rolls packed in cardboard boxes.

STORAGE

Store in a covered, dry area.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapegrid B 400 is an article that, according to current European Regulations (Reg. (EC) 1906/2007 - REACH), does not require a Safety Data Sheet. When using this product we recommend wearing gloves and safety goggles and to adhere to the safety guidelines for the area in which work is carried out.

PRODUCT FOR PROFESSIONAL USE.



TECHNICAL DATA (typical values)

PRODUCT IDENTITY	
Material:	basalt fibres
Weight:	400 g/m ²
Weight of weft (including primer):	200 g/m ²
Weight of wrap (including primer):	200 g/m ²
Mesh size:	7 x 7 mm
Density of fibre:	2.54 g/cm ³

APPLICATION DATA	
Tensile strength:	> 3,100 MPa
Modulus of elasticity:	≥ 87 GPa
Maximum load per unit of width:	> 175 kN/m
Elongation at failure:	≥ 3.5%

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website

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