Mapegrid G 220



Primed alkali-resistant A.R. glass fibre mesh for structural “reinforced” strengthening of stone, brick, tuff and mixed masonry structures

WHERE TO USE

Primed alkali-resistant A.R. glass fibre mesh used in combination with **Planitop HDM** or **Planitop HDM Maxi** (two-component ready-mixed high ductility pozzolan-reaction fibre-reinforced cementitious mortar for structural “reinforced” strengthening of masonry structures) or **Planitop HDM Restauro** (two-component ready-mixed high-ductility fibre reinforced natural hydraulic lime (NHL) and Eco-pozzolan based mortar for structural “reinforced” strengthening of masonry structures) to strengthen stone, brick, tuff and mixed masonry structures in order to improve the resistance and the overall ductility.

Mapegrid G 220 mesh is part of the MAPEI FRG System, a complete range of composite materials that use an inorganic matrix to guarantee excellent chemical-physical and elastic-mechanical compatibility with masonry substrates. This type of system offers several important advantages when used on buildings of historical or artistic interest. Rather than replace existing structures, the system works in parallel with them without altering the way the masses and rigidity within the structures are distributed.

The latter is a very important aspect, particularly in the field of seismic design, where stresses are proportional to the masses involved.

The system 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 through application to the internal and/or external face.
- Structural strengthening of masonry arches and vaulted roofs through application to both the external and internal faces.
- Strengthening reinforcement for more even distribution of stresses induced by seismic activity.

TECHNICAL CHARACTERISTICS

Mapegrid G 220 is a special square mesh made from primed, alkali-resistant A.R. glass fibres with a zirconia content of 17% which, thanks to its special weave, when applied on masonry structures makes up for their lack of tensile strength and increases their overall ductility so that stresses are distributed 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 brittle type to ductile type. The system adheres perfectly to the substrate and its mechanical properties are such that localised stresses always provoke a failure in the substrate rather than at the substrate/strengthening system interface. In the case of strengthening 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.

Mapegrid G 220



Application of the first layer of Planitop HDM



Positioning of Mapegrid G 220

TECHNICAL DATA (typical values)	
PRODUCT IDENTITY	
Type of fibre:	A.R. glass
Weight (g/m²):	225
Mesh size (mm):	25 x 25
Density of fibre (g/cm³):	2.50
APPLICATION DATA	
Tensile strength (kN/m):	45
Modulus of elasticity (GPa):	72
Load-resistant area per unit of width (mm²/m):	35.27
Equivalent thickness of dry fabric (mm):	0.035
Elongation at failure (%):	1.8

ADVANTAGES

- Excellent tensile strength.
- Stable and resistant to chemical aggression from cement.
- Resistant to atmospheric agents.
- High dimensional stability.
- High durability and stability within the inorganic matrix.
- Very little affect on the appearance of the structure.
- Does not rust.
- Light and easy to handle.
- Easy to cut and fold to suit the shape of the substrate.

APPLICATION TECHNIQUE

Preparation of the substrate

Surfaces on which **Mapegrid G 220** 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.

We recommend hydro-cleaning surfaces with low pressure water jets. Leave surface 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 technique

Application of the first layer of mortar

Prepare **Planitop HDM**, **Planitop HDM Maxi** or **Planitop HDM Restauro** (see the relative Technical Data Sheet).
Apply an even layer of **Planitop HDM, Planitop HDM Maxi** or **Planitop HDM Restauro** around 5-6 mm thick with a flat metal trowel or by spray. Level off the surface of the wall to form a sufficiently flat layer.

Application of Mapegrid G 220

After applying the first layer of mortar and

while it is still “wet”, place **Mapegrid G 220** mesh all over the surface and press down lightly with a flat trowel so that it adheres perfectly to the mortar. Overlap adjacent pieces of **Mapegrid G 220** by at least 15 cm both lengthways and widthways.

Application of the second layer of mortar
Apply a second even layer of **Planitop HDM, Planitop HDM Maxi** or **Planitop HDM Restauro** around 5-6 mm thick so that it completely covers the mesh.

We recommend folding the strengthening package over the 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 FIOCCO** may also be applied (see relative 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 increases the static efficiency of the strengthening package applied. The number and pitch of the connectors is defined during the design phase.

PACKAGING
Mapegrid G 220 is supplied in 0.90 m wide by 45.70 m long rolls packed in cardboard boxes.

STORAGE
Store in a covered dry area.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION
Mapegrid G 220 is an article and referring to the current European regulations (Reg. 1906/2007/CE - REACH) does not require the preparation of the material safety data sheet. During use it is recommended to wear gloves and goggles and follow the safety requirements of the workplace.

PRODUCT FOR PROFESSIONAL USE.

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 www.mapei.com

All relevant references for the product are available upon request and from www.mapei.com

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1033-12-2014 (GB)

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