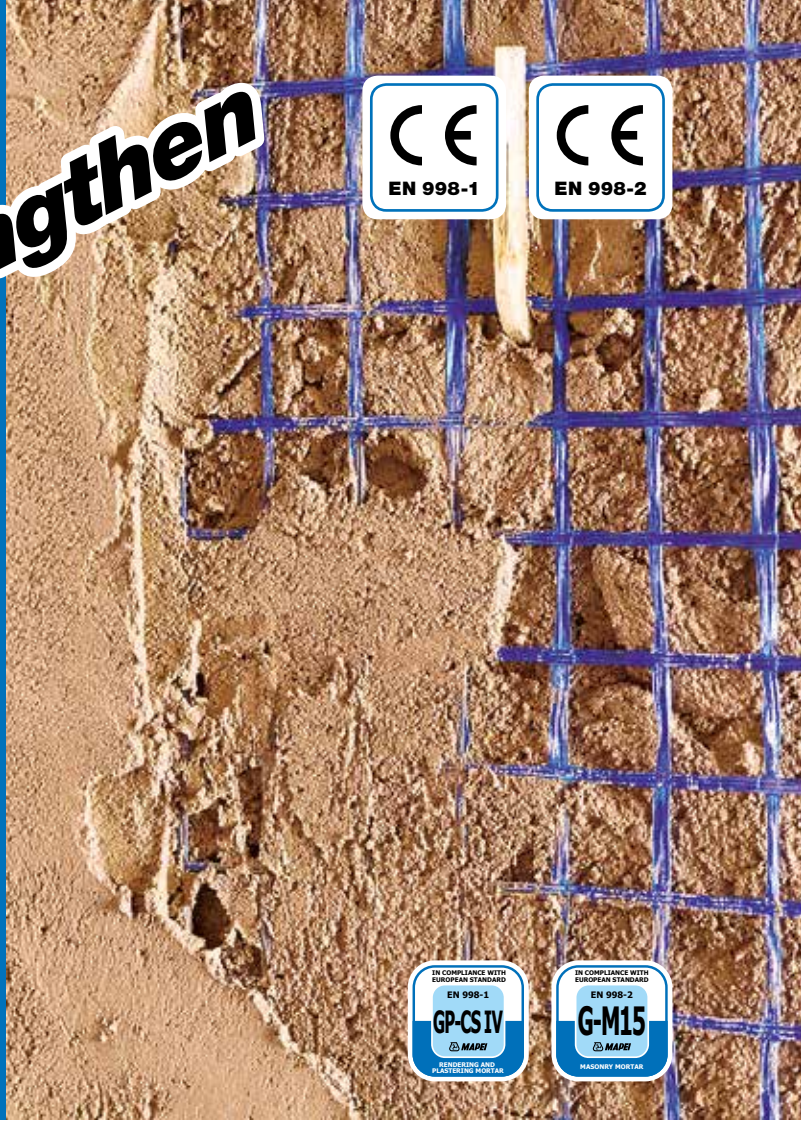
MAPEI

MapeWall Render & Strengthen



High-strength fibre-reinforced natural hydraulic lime-based breathable rendering and masonry mortar with very low emission level of VOC for making structural render, even "reinforced" (CRM) and installation mortar

GEV-EMICODE EC 1 PLUS very low emission

WHERE TO USE

High-strength mortar suitable for machine or manual application used to make breathable render for existing stone, brick, tuff and mixed masonry, including on buildings of historical or artistic interest. "Reinforced" render with metal or composite mesh and mortar joints for consolidating, strengthening and renovating weak masonry.

MapeWall Render & Strengthen combined with **Mapenet EM 30** and **Mapenet EM 40**, pre-primed, A.R. glass fibre mesh **is consistent with the current guidelines for the qualification of CRM (composite reinforced mortar) systems**, which stipulate that the complete strengthening system must be qualified.

Building new load-bearing and buffer walls or rebuilding old walls.

Some application examples

- New internal and/or external high-performance breathable render on stone, brick, tuff and mixed masonry.
- New render or renovating existing render on masonry, including on buildings of historical or artistic interest.
- New render "reinforced" with galvanized or steel mesh or composite material (such as **Mapenet EM 30** and **Mapenet EM 40**) on weak masonry.
- New render on which a ceramic or stone covering should be installed,
- Reinforced extrados vault with composite or metal strengthening mesh on the outer face of vaulted roofs.
- Levelling off uneven surfaces on the outer face of vaulted roofs.
- Pointing between stone, brick and tuff elements on "exposed" masonry.
- Mortar joints, including joints "reinforced" with rebar or composite material (such as **Maperod**), and steel bows (such as **MapeWrap S FIOCCO**) using the reporting technique.
- Building facing walls with high-performance masonry mortar in compliance with standards applied in seismic zones.
- "Plumbing" and "touching-up" facing walls with gaps and/or uneven surfaces.

TECHNICAL CHARACTERISTICS

MapeWall Render & Strengthen is a ready-mixed, powdered breathable rendering and masonry mortar with very low emission level of volatile organic compounds (EMICODE EC1 Plus) made from natural hydraulic lime (NHL 3.5 and NHL 5), reactive inorganic compounds, natural sand, special

MapeWall Render & Strengthen

Preparing the holes for Mapenet EM Connector

Placing Mapenet EM 40

Application of the second layer of MapeWall Render & Strengthen

admixtures, and micro-fibres, according to a formula developed in the MAPEI research laboratories.

This product is classified as GP according to EN 998-1 Standards: "*General purpose mortar for internal/external render*" with guaranteed performance characteristics, category CS IV.
It is also classified as G according to EN 998-2 Standards: "*Guaranteed-performance, general-purpose masonry mortar for external use on elements with structural requirements*" Class M 15, in that it reaches a compressive strength level of > 15 N/mm^2.
When mixed with water in the hopper of a continuous-feed rendering machine or in a cement mixer, **MapeWall Render & Strengthen** forms a breathable rendering and masonry mortar with a plastic-thixotropic consistency which is easy to apply by spray or trowel. Thanks to its special composition, **MapeWall Render & Strengthen** has an extremely low rate of hygrometric shrinkage which drastically reduces the risk of cracks forming in the mortar.

Typical values are shown in the Technical Data table (see Application Data and Final Performance sections) which refer to the main characteristics of **MapeWall Render & Strengthen** at both the wet and hardened states.

RECOMMENDATIONS

- Do not use **MapeWall Render & Strengthen** for pouring into formwork (use **Mape-Antique Hi-Flow**).
- Do not use **MapeWall Render & Strengthen** to make consolidating slurry for injection into facing walls (use **MapeWall Inject & Consolidate**, **Mape-Antique I**, **Mape-Antique I-15** or **Mape-Antique F21**).
- Never add admixtures, cement or other binders (lime and gypsum) to **MapeWall Render & Strengthen**.
- Wait until **MapeWall Render & Strengthen** is completely cured before skimming the surface or applying a thin layer of coloured coating.
- Do not apply coloured paint or thin layers of coating products that could significantly affect the breathability of **MapeWall Render & Strengthen**. Use a skimming product from the **Mape-Antique FC** or **Planitop** ranges, products from the **Silexcolor** or **Silancolor** range, lime-based paint, or a water-repelling product such as **Antipluviol S** or **Antipluviol W**.
- For renders with total thickness > 3 cm, apply a first coat of product with a thickness of at least 1 cm by pressing it down firmly on the previously prepared substrate (a notch trowel can be used for this purpose) in order to create a suitable bonding layer.
- Do not apply **MapeWall Render & Strengthen** if the temperature is lower than +5°C.

APPLICATION PROCEDURE

Preparation of the substrate

Remove all traces of loose or crumbling material, dust, mould and any other material or substance that could affect the adhesion of **MapeWall Render & Strengthen** with either hand or power tools until the substrate is clean, sound and compact. Remove all deteriorated and loose mortar before pointing the joints between masonry elements.
Clean the masonry with low-pressure water jets to remove any efflorescence or soluble salts present on the surface. Repeat this operation several times if necessary.
If weak substrates need to be consolidated, apply several coats of **Consolidante 8020** or **Consolidante ETS** or **Primer 3296** (follow the instructions on the relative Technical Data Sheets).

Fill any gaps and uneven areas in the masonry using the "plumbing" and "touching-up" techniques with **MapeWall Render & Strengthen** as a base mortar and pieces of stone, brick or tuff with characteristics as similar to the original material as possible.
If large surfaces need to be rendered, we recommend applying the product with a continuous-feed rendering machine and to place vertical guides on the walls to help apply the specified thickness and achieve the flatness required.
Before applying **MapeWall Render & Strengthen** the substrate must be partially saturated to prevent the substrate absorbing water from the mortar and affecting its final performance characteristics. Excess water must be removed 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.
For creating reinforcing render or reinforced extrados vault, put the metal mesh or composite material (such as **Mapenet EM 30** or **Mapenet EM 40** pre-primed, alkali-resistant A.R. glass fibre mesh) on the existing masonry and fasten it in place after having applied a first coat of render. When using metal mesh (not considered as CRM), fasten it in place with nails or plugs or with metal connectors. When using composite mesh, fasten it in place with **Mapenet EM Connector**,

TECHNICAL DATA (typical values)

PRODUCT IDENTITY			
Type of mortar (EN 998-1):	GP - General purpose mortar for internal/external render		
Type of mortar (EN 998-2):	G - Guaranteed performance, general-purpose masonry mortar for external use on elements with structural requirements		
Consistency:	powder		
Maximum size of aggregate (EN 1015-1) (mm):	2.5		
Bulk density (kg/m³):	1,500		
Chloride content (EN 1015-17) (%):	**Requirements according to EN 998-1**	**Requirements according to EN 998-2**	**Performance of product**
	not required	< 0.1	< 0.05
EMICODE:	EC1 R Plus - very low emission		

APPLICATION DATA OF PRODUCT (at +20°C - 50% R.H.)	
Mixing ratio:	100 parts of **MapeWall Render & Strengthen** with 16-18 parts of water (4.0-4.5 litres of water per 25 kg bag of product)
Colour of mix:	hazel, beige and grey
Consistency of mix:	thixotropic
Bulk density of wet mortar (EN 1015-6) (kg/m³):	1,900
Porosity of the mix while still wet (EN 1015-7) (%):	16
Application temperature:	from +5°C to +35°C
Workability time of wet mortar (EN 1015-9):	approx. 60 mins.
Minimum applicable thickness (mm):	10
Maximum applicable thickness per layer (mm):	30

FINAL PERFORMANCE (17% mixing water; mix with a low speed mixer for approx. 1 minute until an even mix with the declared density is obtained)

Performance characteristic	Test method	Requirements according to EN 998-1	Requirements according to EN 998-2	Performance of product
Compressive strength after 28 days (N/mm²):	EN 1015-11	CS I (from 0.4 to 2.5) CS II (from 1.5 to 5) CS III (from 3.5 to 7.5) CS IV (≥ 6)	from class M1 (≥ 1 N/mm²) to class M d (d ≥ 25 N/mm²) or multiple of 5	> 15 (Category CS IV) (Class M 15)
Adhesion to substrate (N/mm²):	EN 1015-12	declared value and failure pattern (FP)	not required	≥ 1 Failure pattern (FP) = B
Initial shear strength (N/mm²):	EN 998-2 Annex C	not required	chart value	0.15
Static modulus of elasticity after 28 days (GPa):	EN 13412	not required	not required	10
Capillary action water absorption [kg/(m²·min$^{0.5}$)]:	EN 1015-18	Wc0 not specified Wc1 ≤ 0,40 Wc2 ≤ 0,20	declared value	≤ 0.2 Category Wc2
Thermal conductivity ($\lambda_{10,dry}$) (W/m K):	EN 1745	chart value	chart value	0.71 (*P* = 50%)
Water vapour permeability factor (μ):	EN 1015-19	≤ declared value	–	≤ 25
Reaction to fire:	EN 13501-1	Euroclass	Euroclass	Class A1

Levelling MapeWall Render & Strengthen with a straight-edge

Levelling the substrate

Bonding of ceramic covering over MapeWall Render & Strengthen

special “L” shaped connectors made from A.R. alkali-resistant glass fibre and thermosetting, vinylester-epoxy resin. Fasten the connectors to the masonry with **Mapefix VE SF** styrene-free, vinyl resin-based chemical anchor. The recommended number of fasteners to be used is 4-5/m^2. Whatever type of strengthening mesh is used, it must be set at a certain distance from the substrate so that it lies at the mid-point of the total thickness of the finished render. The two layers between which the mesh is embedded must be fresh on fresh, with a total thickness of max. 3 cm.

When carrying out strengthening work using the “reinforced” mortar joints technique with rebar or composite material, (such as **Maperod**) they must be placed at a depth which guarantees they are covered by a layer of mortar at least 2 cm thick.

Preparation of the product
Prepare **MapeWall Render & Strengthen** in the hopper of a continuous-feed rendering machine if applied by spray or in a cement mixer if applied by trowel. Even though this product is suitable for the application using hand tools, we recommend using a rendering machine for the application on large surfaces to obtain a higher yield. Small amounts of the product may be prepared using an electric drill at low speed with a mixing attachment. Mixing by hand is not recommended.

Application of the product
Application with a rendering machine
Pour the contents of the bags of **MapeWall Render & Strengthen** into the hopper of a continuous-mix rendering machine (such as a PFT G4 or G5, IMER, Putzmeister MP 25, Turbosol or a similar machine) and set the flow-rate at 320-340 l/h, depending on the type of equipment used, until a “plastic”, consistency is obtained.
Tests to validate the product were carried out using a Putzmeister MP 25 with the following set-up:

Stator Rotor	Mixer	Hose	Spray lance
D6 Power D6 - 3	*Standard*	Ø 25 mm, length 15 m	*Standard*, 14 mm nozzle

Apply a single layer (up to 30 mm) thick of **MapeWall Render & Strengthen**, starting from the bottom working upwards. If the total thickness to be applied is more than 30 mm, apply **MapeWall Render & Strengthen** in several layers. Each layer must be applied without tamping the previous one.
We recommend applying the render from a distance of approximately 20 cm so that the product is applied evenly. After applying the render, wait a few minutes and level off the surface using an aluminium “H”-type or blade-type straight edge by going over the surface horizontally and vertically until it is flat.
Remove the vertical guides which were previously attached to the wall and fill the gaps with the same mortar.
Finish off the surface of **MapeWall Render & Strengthen** with a plastic, wooden or sponge float a few hours after application, depending on the surrounding temperature and conditions.
Even though **MapeWall Render & Strengthen** contains products which contrast the formation of micro-cracks, it is good practice to apply the mortar when the wall is not exposed to direct sunlight and/or wind. In such cases, such as during hot and/or particularly windy weather, take special care when curing the mortar, especially during the first 24-36 hours. Spray water on the surface or employ other systems to prevent the mixing water evaporating off too quickly.

Application by trowel
After pouring the minimum amount of clean water required into the mixer (approx. 4 litres for each 25 kg bag of **MapeWall Render & Strengthen**), slowly add the powdered mortar in a continuous flow. Mix for approximately 3 minutes and check that the blend is well mixed, even and free of lumps and remove any powder that has stuck to the sides or bottom of the container.
Add more water if required up to a maximum of 4.5 litres per bag including the water added at the start of mixing. Mix the **MapeWall Render & Strengthen** again for a further 2-3 minutes, depending on the efficiency of the mixer, to form an even, “plastic” and thixotropic mix.
Apply **MapeWall Render & Strengthen** in layers of up to 30 mm thick, starting from the lower part of the wall.
If the product is used as masonry mortar on facing walls or for “plumbing” and “touching-up”, form an installation bed beforehand and then apply the masonry elements by pressing them into the mortar with a light pressure until they are in the correct position. Remove excess mortar with a trowel.

If the mortar is used for pointing, the thickness applied must be at least 2 cm. On “exposed” masonry, remove any excess product and clean the facing wall with water and a sponge float.

FINISHING COAT
If finer-textured finish than the normal floated finish of **MapeWall Render & Strengthen** is required, apply a skim

coat of one of the products from the **Mape-Antique Eco Rasante**, **Mape-Antique FC** or **Planitop** ranges of skimming mortars, which are available in various textured finishes. If required, **Mapenet 150**, A.R. glass fibre mesh, may also be embedded in the skimming mortar (please refer to the relative data sheet of the product used).
If, on the other hand, a skim coat, decoration and protection of the surface of the render at the same time is needed, use a coloured finish product, such as **Silexcolor Tonachino** silicate-based coating or **Silancolor Tonachino** siloxane-based coating, after priming the surface with their corresponding primer (**Silexcolor Base Coat** or **Silancolor Base Coat**). As an alternative to the products mentioned above, if the surface of the render needs only to be painted, use **Silexcolor Paint** or **Silancolor Paint** after priming the surface with their corresponding primer (**Silexcolor Primer** or **Silancolor Primer**).
Always wait until the render is completely cured, usually around 7 days per cm of thickness, before skimming the surface or applying any other type of finishing product.
If the render is not going to be finished-off, especially on constructions particularly exposed to rain, it may be protected with a transparent, breathable, water-repellent product such as **Antipluviol S**, siloxane resin-based impregnator in solvent, or **Antipluviol W**, siloxane resin-based impregnator in water dispersion.

Cleaning
Remove mortar from tools with water before it hardens. Once hardened cleaning is more difficult and must be carried out mechanically.

PACKAGING
25 kg bags.

COLOURS AVAILABLE
Hazel, beige and grey.

CONSUMPTION
approx. 16 kg/m^2 (per cm of thickness).

STORAGE
12 months in a dry, covered area in its original, unopened packaging.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION
Instructions for the safe use of our products can be found on the latest version of the Safety Data Sheet, available from our website www.mapei.com.

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

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GEV-EMICODE EC 1 PLUS very low emission

This symbol is used to identify Mapei products which give off a low level of volatile organic compounds (VOC) as certified by GEV (Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V.), an international organisation for controlling the level of emissions from products used for floors.

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

MapeWall
Render & Strengthen

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