



# MapeWall Inject & Consolidate

**Reactive natural hydraulic lime-based inorganic binder with very low emission level of VOC for making super-fluid injection slurry for consolidating masonry**



## WHERE TO USE

Consolidating foundations, pillars, vaulted roofs and archways.

Consolidating “rubble masonries”.

Consolidating stone, brick, tuff and mixed masonry on old buildings, including those of historical or artistic interest, with cracks or small to large internal gaps and cavities.

## Some application examples

Super-fluid, volumetrically-stable injection slurry for consolidating:

- foundations, pillars, vaulted roofs and archways;
- “rubble masonries”;
- stone, brick, tuff and mixed masonry in general on old buildings, including those of historical or artistic interest, with cracks or small to large internal gaps and cavities.

## TECHNICAL CHARACTERISTICS

**MapeWall Inject & Consolidate** is a powdered fillerized binder with very low emission level of volatile organic compounds (EMICODE EC1 R Plus) made from natural hydraulic lime (NHL 3.5 and NHL 5), reactive inorganic compounds, ultra-fine natural sand and special admixtures according to a formula developed in the MAPEI research laboratories. The product is classified as G according to EN 998-2 Standards (*Guaranteed-performance, general-purpose*

*masonry mortar for external use on elements with structural requirements*) Class M15, in that it reaches a compressive strength level of  $\geq 15 \text{ N/mm}^2$ .

When mixed with water in a suitable clean container, **MapeWall Inject & Consolidate** forms a super-fluid, volumetrically-stable injection slurry which is easy to inject into structures with internal cracks, gaps and cavities using either a manual, mechanical or electronic pump or by pouring.

Once hardened, the properties of slurry made from **MapeWall Inject & Consolidate**, such as mechanical strength, modulus of elasticity and porosity, are very similar to those of mortar made from lime, lime-pozzolan or hydraulic lime originally used in the construction of old buildings.

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

## RECOMMENDATIONS

- Do not use **MapeWall Inject & Consolidate** for pouring into formwork (use **Mape-Antique Hi-Flow**).
- Do not use **MapeWall Inject & Consolidate** on structures with frescoed renders (use **Mape-Antique F21**).
- Do not use **MapeWall Inject & Consolidate** for rendering (use **MapeWall Render & Strengthen**, **Mape-Antique Intonaco NHL** or **Mape-Antique Strutturale NHL**).

# MapeWall Inject & Consolidate



Drilling the holes



Positioning the small injection tubes



Fastening the small injection tubes in place

## TECHNICAL DATA (typical values)

### PRODUCT IDENTITY

Type of mortar (EN 998-2):	G - Guaranteed performance, general-purpose masonry mortar for external use on elements with structural requirements	
Consistency:	powder	
Colour:	light grey	
Maximum size of aggregate (EN 1015-1) (µm):	100	
Bulk density (kg/m <sup>3</sup> ):	1,300	
Chloride content (EN 1015-17) (%):	Requirements according to EN 998-2	Performance of product
	< 0.1	< 0.05
EMICODE:	EC 1 R Plus – very low emission	

### APPLICATION DATA OF PRODUCT (at +20°C – 50% R.H.)

Mixing ratio:	100 parts of <b>MapeWall Inject &amp; Consolidate</b> with 29-30 parts of water (5.8-6.0 litres of water per 20 kg bag of product)
Colour of mix:	light grey
Consistency of mix:	super-fluid
Bleeding test (EN 445) (%):	< 0.1
Fluidity of mix (EN 445) (s):	< 20 (initial) < 40 (after 60 mins.)
Bulk density of wet mortar (EN 1015-6) (kg/m <sup>3</sup> ):	1,950
Application temperature:	from +5°C to +35°C
Workability time of wet mortar (EN 1015-9):	approx. 60 mins.

### FINAL PERFORMANCE: 29.5% mixing water; mixed in compliance with EN 1015-2 standards

Performance characteristic	Test method	Requirements according to EN 998-2	Performance of product
Compressive strength after 28 days (N/mm <sup>2</sup> ):	EN 1015-11	from class M 1 (> 1 N/mm <sup>2</sup> ) to class M d (> 25 N/mm <sup>2</sup> )	≥ 15 (Class M15)
Slip-resistance of steel reinforcing bars (Ø 16 mm) Maximum adhesion stress (N/mm <sup>2</sup> ):	EN 1881 mod. (*)	not required	8
Slip-resistance of glass reinforcing bars (Maperod G 40/10) Maximum adhesion stress (N/mm <sup>2</sup> ):	EN 1881 mod. (*)	not required	8
Initial shear strength (f <sub>vk</sub> ) (N/mm <sup>2</sup> ):	EN 998-2 Appendix C	chart value	0.15
Static modulus of elasticity after 28 days (N/mm <sup>2</sup> ):	EN 13412	not required	10,000
Capillary action water absorption [kg/(m <sup>2</sup> ·min <sup>0.5</sup> )]:	EN 1015-18	declared value	< 0.6
Thermal conductivity (λ <sub>10,dry</sub> ) (W/m K):	EN 1745	chart value	0.70 (P = 50%)
Water vapour permeability factor (µ):	EN 1015-19	chart value	15-35
Reaction to fire:	EN 13501-1	value declared by manufacturer	Class A1

(\*) EN 1881 standards refer to a pull-out test on a steel reinforcing bar anchored in a block of concrete made from a specified composition. For this product, the test was carried out on a masonry substrate made from solid bricks. Because of the nature of the product, the tests were carried out with a pull-out speed applied to the bar of 128 N/second rather than 1,600 N/second as specified in the standards.

- Do not use **MapeWall Inject & Consolidate** for skimming render (use **Mape-Antique FC Ultrafine**, **Mape-Antique FC Civile** or **Mape-Antique FC Grosso** or one of the skimming products from the **Planitop** range).
- Never add admixtures, fillers, sand, cement or other binders (lime and gypsum) to **MapeWall Inject & Consolidate**.
- Do not apply **MapeWall Inject & Consolidate** if the temperature is lower than +5°C.

## APPLICATION TECHNIQUE

### Preparation of the substrate

Grout and “seal” all cracks and gaps on the masonry facing wall from where the slurry could seep out. Drill 20-40 mm diameter holes to a depth of 2/3 of the thickness of the wall, preferably at a square pitch of 50 x 50 cm. If the wall is thicker than 60 cm, we recommend drilling holes on both sides. Fasten small tubes or injectors in place to inject the slurry. The day before injecting the slurry, we recommend saturating all the inside of the structure by pumping water through the tubes or injectors previously fastened in place. Saturate the wall starting with the holes in the highest position. Make sure the structure has absorbed all the water before injecting the slurry.

### Preparation of the slurry

Prepare **MapeWall Inject & Consolidate** in a suitable clean container using a drill at low speed with a mixing attachment. Mixing by hand is not recommended. After pouring in approximately 6 litres of clean water for each 20 kg bag of **MapeWall Inject & Consolidate**, slowly add the binder in a continuous flow. Mix for approximately 5 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. Inject the slurry within 60 minutes of preparation.

### Injecting the slurry

Inject **MapeWall Inject & Consolidate** through the small tubes or injectors previously fastened in place using a manual, mechanical or electronic pump at a pressure of up to 1 bar at the nozzle. Inject the product starting from the bottom working upwards to help expel the air contained within the structure and fill all the cavities. When the slurry seeps out of a tube or injector near the one being injected, stop injecting, close the injector used and continue the operation from the tube or injector from which the slurry is seeping out. Follow this pattern until the slurry seeps out of the highest hole.

When the consolidation procedure has been completed, remove all tubes and injectors and grout the holes with a suitable mortar, such as **MapeWall Render & Strengthen** or one of the products from the **Mape-Antique** range.

### Cleaning

Remove any traces of slurry from tools

before it hardens with water. Once hardened, cleaning is more difficult and must be carried out mechanically.

### PACKAGING

20 kg bags.

### CONSUMPTION

approx. 1.50 kg/dm<sup>3</sup> (of cavities to be filled).

### STORAGE

12 months in a dry, covered area in its original, unopened packaging. This product complies with the prescriptions of Reg. (EC) N. 1907/2006 (REACH) - Annex XVII, article 47.

### SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

**MapeWall Inject & Consolidate** contains cement that when in contact with sweat or other body fluids causes irritating alkaline reactions and allergic reactions to those predisposed. It can cause damage to eyes. If the product comes in contact with the eyes or skin, wash immediately with plenty of water and seek medical attention. It is recommended to wear protective gloves and goggles and to take the usual precautions for handling chemicals.

For further and complete information about the safe use of our product please refer to the latest version of our Material Safety Data Sheet.

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](http://www.mapei.com)**



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.



**Our Commitment To The Environment**  
MAPEI products assist Project Designers and Contractors create innovative LEED (The Leadership in Energy and Environmental Design) certified projects, in compliance with the U.S. Green Building Council.

**All relevant references for the product are available upon request and from [www.mapei.com](http://www.mapei.com)**



Injection of MapeWall Inject & Consolidate



Closing the injection tubes



**MapeWall**  
**Inject & Consolidate**



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