



Mape-Antique F21

Super fluid cement-free fillerized hydraulic binder, for consolidating, by injection stone, brick and tuff structures. Especially suitable for frescoed walls



WHERE TO USE

Consolidation injections in ravelled or cracked stone, brick and tuff structures due to subsidence. Injection in cavity wall masonry in period buildings.

Some application examples

- Consolidating, by injection, foundations of brick, stone and tuff buildings.
- Consolidating, by injection, stone or brick walls and vaults of period buildings.
- Consolidating, by injection, cracked renders.
- Consolidating, by injection, frescoed renders.

TECHNICAL CHARACTERISTICS

Mape-Antique F21 is composed of fillerized hydraulic binders with pozzolanic reaction and water retaining special additives manufactured according to a formula developed in the Mapei Research and Development laboratories.

The micro-structure of **Mape-Antique F21** has physical and mechanical properties very similar to those of mixes originally used before the advent of cement because it is based on lime and pozzolanic materials.

The principal properties of products of the **Mape-Antique** line are:

- high resistance to sulphates;
- high porosity;

- absence of free lime only 48 hours after hardening.

The products of the **Mape-Antique** line have low levels of free lime after hardening. The lime that is produced after the hydration of the cement can interact with sulphates (that are present in many construction materials and in certain earth), causing calcium sulphate, and then with calcium aluminates to form ettringite (a very well known product feared because of the expansion phenomena it creates).

This is the principal reason why all mortars for injection, or renders, used to repair masonry must not contain cement.

Furthermore, **Mape-Antique F21** is in compliance with the 1965 Italian law on "Technical characteristics and hydraulic binder requirements" and the 1972 Italian Ministerial Decree on "Norms on the acceptance and testing method requirements of cement mixtures and hydraulic binders", therefore can be defined as: **HYDRAULIC LIME BASED.**

Mape-Antique F21 is in compliance with all the chemical, physical and mechanical requirements provided for by the 1972 M.D. for hydraulic limes in terms of:

- compressive strength - Art. 1 - (which is higher than that required for both hydraulic lime and for those highly hydraulic);
- magnesium oxide (MgO) content - Art. 2 - (turns out less than 5%);

- 0.18 mm sieve residue - Art. 3 - (turns out less than 2%);
- volume stability - Art. 4 - (absence of cracks and swelling);
- initial and final setting time - Art. 5 - (the initial setting time turns out more than 1 hour while the final setting time turns out less than 48 hours).

Mape-Antique F21 is completely free of all types of cement (from Portland cement to composite cements) provided by UNI-ENV 197/1 "Common cements" (Italian M.D. September 13, 1993).

Mixed with water (approximately 60%), **Mape-Antique F21** forms a fluid and stable slurry that can fill the cavities of structures that need consolidation and gradually hardens through a pozzolanic reaction without inter-reaction with the bricks, stones and existing mortars – even in the presence of soluble salts in the structures to be consolidated. Furthermore, unlike cement, **Mape-Antique F21** does not produce alkaline ingredients (sodium, potassium) that could trigger dangerous expansive phenomena with alkali-reactive stone aggregates.

Mape-Antique F21 is a product specifically designed to meet all the requirements and ensure easy and reliable filling of all existing cavities (also of small dimensions) in structures that need to be consolidated.

The efficiency of **Mape-Antique F21** for the consolidation of cracked masonry has been evaluated by the Italian "Istituto Centrale del Restauro" (Central Restoration Institute).

RECOMMENDATIONS

- Do not use **Mape-Antique F21** for mortar or rendering (use **Mape-Antique LC**, **Mape-Antique MC** or **Mape-Antique CC**).
- For consolidating large cracks, **Mape-Antique I** can also be used.
- Do not add cement or any other binder (lime or gypsum) to **Mape-Antique F21**.
- Do not add additives, fillers or sand to **Mape-Antique F21** (consult the Mapei Technical Assistance).
- Do not apply **Mape-Antique F21** at temperatures below +5°C.

APPLICATION PROCEDURE

Before injecting the slurry, if possible, it is recommended to saturate the whole internal structure that needs to be consolidated with water. It is not recommended to wet the structure if frescos are present because they could be seriously damaged.

Mape-Antique F21 contains water retainers

that ease the flow of the product through dry masonry. The day before the work is done, thoroughly soak the entire structure (where possible) through the same holes where the slurry will later be injected. In the interval, any excess water remaining on the inside will evaporate.

If possible the holes should be drilled symmetrically at the intersecting points of a square grid with sides 20-50 cm. For sections less than 60 cm thick, the slurry is usually injected into one side only. In thicker sections, it is recommended to inject the slurry into both sides. The holes should have a 15-20 mm diameter (5-10 mm if injected manually with a syringe) and be perpendicular to the surface or slightly inclined. Fit with a rapid setting binder (e.g. **Lampocem**) or plasters used for restoration (which will then be removed), plastic nozzles 10-15 mm in diameter (3-8 mm if injected manually) through which the **Mape-Antique F21** slurry will be injected under pressure (max. 3 atm.). Seal any points where the slurry may leak out, with the same product.

Prepare the slurry by mixing **Mape-Antique F21** and water (approximately 60% of the binder) in a high speed mixer or with a drill fitted with a whip (for 5 minutes), or until a runny paste is obtained (Marsh cone test on the first litre of slurry: less than 30" with hole 4 mm - I.C.R. specification). The **Mape-Antique F21** slurry must be used for consolidation within 30-40 minutes after mixing.

It is strongly recommended not to add any other material in the form of binders, additives, fillers etc. to **Mape-Antique F21** without consulting the Mapei technical assistance.

The mixer used for preparing the **Mape-Antique F21** slurry must first be washed with water to remove all residues of previous mixes containing binders.

CONSUMPTION

1.04 kg/l of cavity to be filled.

Cleaning

Before hardening, the slurry can be removed from tools with water. Afterwards cleaning is very difficult and can only be done mechanically.

PACKAGING

17 kg bags.

SAFETY INSTRUCTIONS FOR THE PREPARATION AND APPLICATION

It contains special hydraulic binders that, when in contact with sweat or any other bodily fluids, produce an alkaline reaction. Irritant to the eyes and skin.

Use protective gloves and goggles.

For further information consult the safety data sheet.

TECHNICAL DATA (typical values)**PRODUCT IDENTITY**

Consistency:	powder
Colour:	white
Bulk density (kg/dm³):	1.25
Maximum diameter of sand (µm):	100
Storage:	12 months in original sealed packaging in a dry place
Hazard classification according to EC 99/45:	irritant. Before using refer to the "Safety Instructions for the preparation and application" paragraph and the information on the packing and safety data sheet
Customs class:	3824 50 90

FINAL PERFORMANCES IN SLURRY

Composition (kg/m³): – Mape-Antique F21: – Water:	1040 624
Colour:	white
Specific weight (kg/dm³):	1.66
Marsh cone emptying time for one litre of slurry (min.):	< 3
Mechanical strength to compression (MPa) – 1 day: – 7 days: – 28 days:	1.0 7.0 10.0
Setting time (at +23°C): – initial: – final:	10 hours 14 hours
Water retention (%):	0.5
Hygrometric retention after 28 days (µm/m):	< 1000
Efflorescences (semi-immersion in water):	none

STORAGE

12 months in a dry and sheltered place in original sealed packaging.

FOR PROFESSIONALS.

WARNING

N.B. - Although the technical details and recommendations contained in this product report 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 applications: 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.

All relevant references of the product are available upon request



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