MAPE-ANTIQUE INTONACO NHL

Transpirant base render based on natural hydraulic lime and Eco-Pozzolan, for application on existing masonry, including that of historical interest, and on new construction

WHERE TO USE

Rendering old stone, brick, tuff and mixed walls using a rendering machine or trowel, including decorative walls and those of historical interest, before applying paint or thin layers of coloured coating.
Rendering down to the level of the stone on walls not subject to capillary rising damp.
Rebuilding old lime-based render deteriorated by the action of atmospheric agents and environmental conditions or by ageing.

Some application examples

· New layers of internal and external transpirant render applied with a rendering machine or by trowel on stone, brick, tuff and mixed walls without capillary rising damp.
· New render or rebuilding old lime-based and/or weak render on stone, brick, tuff and mixed walls, including those of historical and artistic interest with a conservation order or under the protection of the National Trust.
· Touching-up and plumbing facing walls with gaps and/or uneven surfaces.
· Pointing between layers of stone, brick and tuff on masonry with a natural-finish.

TECHNICAL CHARACTERISTICS

Mape-Antique Intonaco NHL is a cement-free, pre-blended mortar in powder form for render based on natural hydraulic lime (NHL), Eco-Pozzolan, natural sand, special admixtures and micro-fibres, with very low emission of volatile organic compounds (EMICODE EC1 R Plus) according to a formulation developed in MAPEI's research laboratories. This product is classified as GP according to EN 998-1 Standards: "*General purpose mortar for internal/external render*", Category CS II.
When **Mape-Antique Intonaco NHL** is mixed with water using a continuous mixing rendering machine or a cement mixer, it forms a transpirant rendering or masonry mortar with a plastic-thixotropic consistency which is easy to apply by spraying or with a trowel on both vertical surfaces and on ceilings.
The properties of mortar made using **Mape-Antique Intonaco NHL**, such as mechanical strength, modulus of elasticity and porosity, are very similar to the ones of a mortar made using lime, lime-pozzolan and hydraulic lime originally used in the construction of buildings. Compared with these types of mortar, however, **Mape-Antique Intonaco NHL** also contains properties which make the product resistant to various aggressive chemical-physical phenomena, such as freeze-thaw cycles, the leaching action of rainwater, alkali-aggregate reactions and the formation of cracks caused by plastic shrinkage.
Typical values are shown in the Technical Data table (see Application Data and Final Performance sections) which refer to the main characteristics of **Mape-Antique Intonaco NHL** at both the fresh and hardened states.

RECOMMENDATIONS

· If capillary rising damp or sulphate salts are present, apply a restoration and dehumidifying treatment cycle comprising **Mape-Antique Rinzaffo** and **Mape-Antique MC**, **Mape-Antique CC** or **Mape-Antique LC** mixed with aggregates with a

suitable grain size.
- If it is difficult to thoroughly clean the masonry (internal walls for example) or if applied on mixed walls, wet the surface and apply a layer of **Mape-Antique Rinzaffo** before applying the **Mape-Antique Intonaco NHL** to guarantee a good bond of the render.
- **Mape-Antique Intonaco NHL** must be applied in layers at least 10 mm thick.
- Do not use **Mape-Antique Intonaco NHL** for casting into formwork (in such cases use **Mape-Antique LC** mixed with aggregates with a suitable grain size).
- Do not use **Mape-Antique Intonaco NHL** to make consolidating grout for injection into the structure (in such cases use **Mape-Antique I** or **Mape-Antique F21**).
- Do not use **Mape-Antique Intonaco NHL** for "reinforced" or installation render (use **Mape-Antique Strutturale NHL**).
- Do not use **Mape-Antique Intonaco NHL** as installation mortar (use **Mape-Antique Strutturale NHL** or **Mape-Antique Allettamento**).
- Never mix admixtures, cement or other binders (lime and gypsum) to **Mape-Antique Intonaco NHL**.
- Do not apply paint or thin layers of coloured coating products, the transpiration properties of **Mape-Antique Intonaco NHL** could be compromised. Use products from the **Silexcolor** or **Silancolor** ranges, lime-based paint and water-repelling products such as **Antipluviol S** or **Antipluviol W**.
- Do not apply **Mape-Antique Intonaco NHL** if the temperature is lower than +5°C.

APPLICATION PROCEDURE

Preparation of the substrate

Mape-Antique Intonaco NHL may be applied directly on old walls, including those of historical and artistic interest, or new stone, brick, tuff and mixed constructions as long as they are clean and solid and free of loose parts, dust, dirt, mould and soluble salts. If not, remove all loose parts and foreign bodies which could compromise the bond of **Mape-Antique Intonaco NHL** either manually or mechanically. Then clean the wall with low-pressure water jets to remove any efflorescence or salts present on the surface. Repeat this operation several times if necessary.
If weak substrates need to be consolidated, apply a number of coats of **Consolidante 8020** or **Primer 3296** (refer to the relevant Technical Data Sheets).
Voids and uneven areas in the masonry must be repaired by patching or tacking with **Mape-Antique Intonaco NHL**, **Mape-Antique Strutturale NHL** or **Mape-Antique Allettamento** as a base mortar, with pieces of stone, brick or tuff with similar characteristics as possible to the original material.
In the case of particularly difficult walls, such as stone and mixed or porous or mechanically weak walls, we recommend applying an initial 5 mm thick layer of semi-fluid **Mape-Antique Intonaco NHL** or **Mape-Antique Rinzaffo** in order to even out the absorbency of the substrate and improve the bond of the render.
If large surfaces need to be rendered, we recommend applying the product with a continuous-feed rendering machine and to place vertical shims on the walls to check that the render is even and flat.
On masonry work where rebuilding work is required, the substrate must be wetted with water before applying **Mape-Antique Intonaco NHL**, while old walls must be saturated to avoid particularly absorbent substrates drawing water from the render and compromising its final performance characteristics. Excess water must be left to evaporate off, so that the masonry is saturated and the surface is dry. Compressed air may be used to speed up this process.
If it is not possible to saturate the substrate with water, we recommend that it is dampened in all cases to permit **Mape-Antique Intonaco NHL** to bond correctly.
On mixed walls or on walls out of plumb by more than 4-5 cm, which would lead to the layer of render having an irregular thickness, we recommend inserting Ø 2 mm zinc-plated metallic mesh with a mesh size of 5 x 5 cm. The mesh must be fixed in place to the wall with nails, chemical anchoring (such as **Mapefix PE SF**) or plugs with a small gap between the wall so that it becomes embedded in the middle of the layer of render.

Preparation of the product

Mape-Antique Intonaco NHL must be prepared in a cement mixer if it is to be applied by trowel or in a continuous-feed rendering machine if mechanical application is preferred. The product is also suitable for application using manual techniques, but we recommend using a rendering machine to apply the product on large surfaces to obtain a better yield. Small amounts of the product may be prepared using a low-speed electric drill with a mixing attachment. Mixing by hand of the product is not recommended.

Application of the product

Application with rendering machine
Pour the content of the bags of **Mape-Antique Intonaco NHL** into the hopper of a continuous-feed rendering machine (such as a PFT G4 or G5, Putzmeister MP 25, Turbosol or similar) and set the flow-rate at approximately 330 l/h, according to the type of machine used, until a "plastic" consistency is obtained. Tests to validate the product were carried out using a Putzmeister MP 25 with the following fittings:

Stator Rotor	Mixer	Tube	Lance
D6 Power	Standard	Ø 25 mm, length 15 m	Standard, 14 mm nozzle
D6 - 3			

If an initial 5 mm thick layer of semi-fluid **Mape-Antique Intonaco NHL** or **Mape-Antique Rinzaffo** have been applied, wait until the product starts to set and then apply a single product of **Mape-Antique Intonaco NHL** (max 30 mm) starting from the lower part of the wall and working upwards.
If the thickness required is more than 30 mm, **Mape-Antique Intonaco NHL** must be applied in several layers. Each layer must be applied without tamping the previous layer.
We recommend applying the render from a distance of approximately 20 cm so that the product is applied evenly. After applying the mortar, wait a few minutes and level off using an aluminium H-type or blade-type straight edge by passing over the surface horizontally and vertically until it is flat.
Remove the vertical shims which were previously attached to the wall and fill the spaces with the same mortar.
Finish off the surface of **Mape-Antique Intonaco NHL** with a plastic, wooden or sponge float a few hours after application, according to the surrounding temperature and conditions.
Even though **Mape-Antique Intonaco NHL** contains products which constrict 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 36-48 hours. Spray water on the surface or employ other systems to prevent the mixing water evaporating off too quickly.
Application by trowel
The product is particularly recommended for mixing and application using a rendering machine, although it may also be mixed in a cement mixer and applied by trowel. In this case, it is more difficult to apply the mortar because of the cohesive nature of the blend.
After pouring a minimum amount of water in the mixer (approximately 4.75 litres per 25 kg bag of **Mape-Antique Intonaco NHL**), slowly pour the powder in a continuous flow. Mix for approximately 2 minutes and check that the blend is well mixed, even and free of lumps and remove all the material which has stuck to the walls of the mixer. Add a further amount of water if required up to a maximum total of 5.25 litres per bag of product, including the water added at the start of mixing. Then complete preparation of the **Mape-Antique Intonaco NHL** by mixing for a further 1-2 minutes, according to the efficiency of the mixer, to obtain an even, “plastic” and thixotropic blend.
Apply **Mape-Antique Intonaco NHL** in layers of up to 30 mm thick per layer, starting from the lower part of the wall.

Squaring the render

Levelling the render

FINISHING

If a finer-grained surface finish than the normal tamped finish of **Mape-Antique Intonaco NHL** is required, apply a layer of **Mape-Antique FC Ultrafine** or **Mape-Antique FC Civile** or **Mape-Antique FC Grosso**, fine-grained smoothing and levelling mortars with different granulometries with lime and Eco-Pozzolan. If the surface of the render is to be smoothed off and then decorated or protected, use thin layers of a coloured coating product such as **Silexcolor Tonachino** silicate finish or **Silancolor Tonachino** silixane finish after priming the surface with a primer from the corresponding ranges of products (**Silexcolor Primer** or **Silancolor Primer**).
As an alternative to the products mentioned above, if the surface of the render is to be painted, use **Silexcolor Paint** or **Silancolor Paint** after applying their corresponding primers.
Always wait until the render is completely cured, usually approximately 7 days per cm of thickness, before applying any type of thin-layered coloured coating product or paint.
For constructions particularly exposed to rain, if the render does not require any dressing coat, it may be protected with a transpirant product such as **Antipluviol S** transparent, water-repellent siloxane resin-based impregnator in solvent or **Antipluviol W** transparent, water-repellent siloxane resin-based impregnator in water dispersion.

CLEANING

Mortar which has not yet hardened may be washed from tools using water. Once hardened, cleaning is much more difficult, and must be carried out mechanically.

PACKAGING

25 kg bags.

CONSUMPTION

Approx. 14.5 kg/m² (per cm of thickness).

STORAGE

12 months in its original sealed packaging.
Mape-Antique Intonaco NHL is available in special vacuum-packed polyethylene sacks which may be stored outside for the entire construction phase of the site. Rain has no effect on its characteristics.

SAFETY INSTRUCTIONS FOR PREPARATION AND INSTALLATION

Mape-Antique Intonaco NHL is irritant and may cause serious damage to the eyes. If the product comes into contact with the eyes, wash well immediately with plenty of clean water and seek medical attention. We recommend using protective gloves and goggles, and to take the usual precautions for handling chemical products.
For further and complete information about the safe use of our product please refer to our latest version of the Material Safety Data Sheet.
PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)	
PRODUCT IDENTITY	
Type of mortar (EN 998-1):	GP - General purpose mortar for internal/external render
Appearance:	powder
Colour:	light hazel
Type of hydraulic binder (EN 459-1):	NHL 3.5 and NHL 5
Maximum size of aggregate (EN 1015-1) (mm):	1.4
Bulk density (kg/m³):	1,350
EMICODE:	EC1 R Plus - very low emission
APPLICATION DATA (at +20°C - 50% R.H.)	
Mixing ratio:	100 parts of **Mape-Antique Intonaco NHL** with 19-21 parts of water (4.75-5.25 litres of water per 25 kg bag of the product)
Appearance of mix:	thixotropic
Consistency of fresh mortar (EN 1015-3) (mm):	175
Bulk density of fresh mortar (EN 1015-6) (kg/m³):	1,750
Porosity of the mix while still fresh (EN 1015-7) (%):	20
Application temperature range:	from +5°C to +35°C
Workability time of fresh mortar (EN 1015-9):	approx. 60 minutes

Minimum applicable thickness (mm):	10
Maximum applicable thickness per layer (mm):	30

FINAL PERFORMANCE (20% mixing water)			
Performance characteristic	**Test method**	**Requirements according to EN 998-1**	**Performance of product**
Compressive strength after 28 days (N/mm^2):	EN 1015-11	CS I (from 0.4 to 2.5)	Category CS II
		CS II (from 1.5 to 5.0)	
		CS III (from 3.5 to 7.5)	
		CS IV (≥ 6)	
Bond strength to substrate (N/mm^2):	EN 1015-12	declared value and failure type (FP)	≥ 0.3 Failure mode (FP) = B
Capillary action water absorption [$kg/(m^2 \cdot min^{0.5})$]:	EN 1015-18	from Category W 0 to Category W 2	Category W 0
Coefficient of permeability to water vapour (μ):	EN 1015-19	declared value	≤ 12
Thermal conductivity ($\lambda_{10,dry}$) (W/m·K):	EN 1745	chart value	0.57
Reaction to fire:	EN 13501-1	value declared by manufacturer	Class A1

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