

Use

CALRIO lime mortar is a ready-to-use **traditional coarse lime mortar** made with **matured high calcium lime putty** and **0-4mm calibrated quality river sand**. **CALRIO lime mortar** is used for base coats in **traditional masonry rendering** (*base layer and rendering coat*) for indoor use or on facades applied by manual application or by spraying. **CALRIO lime mortar** is ideal for the renovation and restoration of old buildings as well as for new eco-friendly buildings. A **Pozzolanic additive** called **AM mortar additive** is added to **CALRIO lime mortar** during the mixing phase to strengthen the mortar by giving it extra hydraulic qualities. **Pozzolans are mineral additives** known since antiquity. Our **AM mortar additive** reduces the presence of **free lime**, thereby limiting the risk of efflorescence. **AM mortar additive** considerably increases the mechanical and long-lasting properties of the plaster render finish by allowing obtaining after 28 days the same resistance to that obtained after total carbonation (*see table overleaf*). **AM mortar additive** is natural and eco-friendly and does not interfere into the carbonation process and into the properties of **lime** (*reduced risk of cracks appearing, high permeability and elasticity, excellent bonding to the support surface and naturally anti-bacterial*). Because **CALRIO lime mortar** is natural and eco-friendly and is produced in a traditional manner with no chemical, organic or cement based additives, this **lime mortar** exhibits excellent chemical and physical properties (*see table overleaf*). **CALRIO lime mortar** is unique on today's market and is perfectly in line with the current philosophy of **eco-friendly construction** and **sustainable development** for a cost that is equivalent to that of most **cement or lime mortar** currently on the market.



Composition

Fat lime putty (*high calcium non-hydraulic lime obtained by wood firing after having matured for at least 8 months*), **calibrated river sand** with a 0-4mm grain size. Free from chemical, organic and cement based additives.

Features

- Eco-friendly, ready-mix, ready to go **lime mortar**.
 - Excellent bonding with support surface.
 - Highly permeable and elastic ("surfaces can breathe").
 - Naturally antibacterial.
 - Ideal for **eco-friendly construction**.
 - Free from additives, resins, cellulose ethers, thinners and any substances used in dry mortars.
 - VOC free.
 - Clinker free (*CEM OPC base obtained by heating a mixture of limestone and clay to 1300°-1500°C*).
 - Zero hygroscopicity, water does not settle inside the plaster.
 - Absorbs CO₂ (*lime absorbs half its weight in CO₂ during carbonation*).
 - Inexpensive, safe with an excellent track record.
- **E.U. Classification:** category A/c VOC limit 40 g/l (2010). This product contains 0 g/liter of VOC.

Application

Surface preparation

For outdoor and indoor wall surfaces that respect current practise and regulations. Support surfaces must be clean, sound, hard, bonding and dust free. **CALRIO lime mortar** may be used on various support surfaces: bricks, natural stone, breeze blocks, lightweight concrete blocks. Check the surface is clean before application. In case of efflorescence, mould or grease stains, clean by brushing followed by washing with water, preferably a pressure cleaner.

The support surface must be damp but not streaming with water when the **base layer** is applied.

For any other support type or delicate surface please contact us.

Mixing

CALRIO lime mortar is in paste form, **ready to use**. Due to storage, **CALRIO lime mortar** may appear very dense due to the delicate mixture of **lime putty and river sand**. It will take on a more fluid aspect after it has been thoroughly mixed in a mortar trough, cement mixer or spraying machine. The following recommendations should be followed:

- **Base layer:** here the paste must be more liquid. **Add 5 % of the mortar weight in water (1.5 Litre / 30 Kg) and 2% of mortar weight of our AM mortar additive (600g / 30 Kg)**. This will improve results and bonding (*contact our sales staff*).

- **Rendering coat:** mix the paste thoroughly. Do not add any water. **Add 1 % of mortar weight of our AM mortar additive (300g / 30 Kg)** to improve results and bonding (*contact our sales staff*).

Our AM mortar additive gives extra hydraulic qualities to the mortar. It reduces the presence of free lime, thereby limiting the risk of efflorescence. It considerably increases the mechanical and long-lasting properties of the plaster render finish. After the additive has been incorporated, CALRIO must be used before it begins to set.

Application

- **Tools and equipment:** applied **manually** (*trowel, plastering trowel, or float*) or **by spraying** with a suitable spraying machine (*we recommend the use of a piston powered machine with a 10 mm nozzle hose and with 2,5 to 3 bar pressure*).

- **Base or scratch layer:** apply the **base layer** to the entire surface to be plastered. Dampen the support surface beforehand.

- **Rendering coat:** after 24/36 hours, dampen the **base layer** and apply the **rendering coat** in as many coats as required by the surface. **DO NOT APPLY** over 6-7 cm total thickness, and over 2 cm per layer (*commonly, the thickness applied to obtain good waterproofing is 1.5 cm minimum*). Wait until each layer has dried before proceeding to the next (*24/36 hours approx*). Dampen the previous layer before beginning the following one (*drying time will vary depending on the type of support, humidity, the time of year, the place - indoor/outdoor -, and on the ventilation of the room*). Finish by levelling off the surface with a float or rule.

- **Finishing coat:** after a sufficient drying period (*maximum 24/36 hours*), apply the **finishing coat**. Dampen the support surface

beforehand. If the **finishing coat** is not or can not be applied within 7 days, we recommend that you apply a primer undercoat to ensure bonding and a homogeneous colour over the entire surface. Recommended finishing renders are: **CALFINO**, **MINERAL 000**, **MARBREX R...** (See technical data and contact our sales staff).

• Curing - Carbonation

- Time lapse between coats: 24 to 36 hours. Apply a primer undercoat if the **finishing coat** is not applied within 7 days.

- Hardening: • Approx. 1 month (depending on thickness) when the **AM mortar additive** is present in the mortar.
• Several months (depending on thickness) when the **AM mortar additive** is not present in the mortar.

- Carbonation: **non-hydraulic lime** sets by absorbing carbon dioxide (CO₂) present in the atmosphere. During this reaction which can take place over several months, efflorescence, whitening, variations in colour or colour fading may affect the surfaces that have not completely carbonated due to humidity, condensation or fog/mist. The surfaces treated must be protected from the rain for several days. We RECOMMEND that the **AM mortar additive** be used with **CALRIO lime mortar** to reduce the presence of **free lime** and thereby to limit risk of efflorescence.

Drying time will vary depending on the type of support, humidity, the time of year, the place (indoor/outdoor) and on the ventilation of the room.

• Coverage

- Base or scratch layer: • 5 mm thick = approx. 10 Kg / m². - • 3 mm thick = approx. 6 Kg / m².
- Rendering coat: • 10 mm thick = approx. 20 Kg / m². - • 15 mm thick = approx. 30 Kg / m².
• 20 mm thick = approx. 40 Kg / m².

Generally, the average consumption for the **base layer** and the **rendering coat** is about 2 Kg / mm thick / m².

• Practical advice

In the case of material with differing dilation ratios (e.g. bricks and concrete), it is IMPERATIVE that our **fibreglass mesh TRAMEX** be used in order to eliminate any stresses that may give rise to cracks in the **plaster finishing coat**, causing water seepage, as well as flaws on the walls themselves. The mesh strips should be overlapped by at least 20 cm.

We recommend that you protect facades with a **water repellent product** such as our **HYDRO R** and **HYDROMAT**.

The necessary precautions should be taken to prevent any capillary action at the base of the plaster.

Temperature for use: from + 5°C to + 30°C (40°F or 85°F). Do not use on hot surfaces or on surfaces directly exposed to the sun, or in windy or rainy conditions.

Each section of wall should be finished within the day. All joints should be in corners or around doors.

Protect surrounding areas from any projections or clean immediately with clean water.

Clean all tools with water immediately after use.

■ Health Caution

CALRIO lime mortar contains **lime putty**. Irritating to the eyes and skin. During mixing and application avoid contact with eyes. In case of contact, flood eyes repeatedly with clean water and CALL A PHYSICIAN. Avoid prolonged contact with skin. Use appropriate gloves. Protect the eyes and the face. Keep out of the reach of children.

■ Storage

CALRIO lime mortar paste will keep for 2 to 3 months in its original closed packaging away from frost and high temperatures.

However, as **CALRIO lime mortar** is **non hydraulic lime based**, it will keep for several days after opening in a plastic container. Protect it from the action of the air by placing a thin layer of clean, fresh water over the surface (providing our **AM mortar additive** has not been added to the mortar!!).

■ Packaging

CALRIO lime mortar comes in recyclable plastic bags of 30 Kg. It is also available in a big bag, the equivalent of 40 bags (1200 Kg).

Lime mortar for indoor and outdoor use with 1% AM mortar additive TEST CARRIED OUT ACCORDING TO UNI STANDARD EN 998-1:2004

Volume mass of fresh mortar (specific weight)	2000/2100 kg/m ³	UNI EN 1015-6
Volume mass of dry mortar after 28 days	1700/1800 kg/m ³	UNI EN 1015-10
Air contained in fresh mortar	2/3%	UNI EN 1015-7
Flexural strength after 28 days	0,6/0,7 N/mm ²	UNI EN 1015-11
Compressive strength after 28 days	2/2,2 N/mm ² - CLASS CS II	UNI EN 1015-11
Dynamic elastic module after 28 days	4000/5000 N/mm ²	
Thermal conductivity	0,82 W/m • k - CLASS T1	UNI 7745
Absorption of water by capillarity at 90mn (the lower the coefficient, the lower the absorption and retention of water)	0,07 kg/m ² • min ^{0,5} - CLASS W2 W2 = 0 à 200, W1 = 200 à 400, W0 = > 400	UNI EN 1015-18
Reaction to fire	EUROCLASS A1	
Bonding to support	0,25 N/mm ²	UNI EN 1015-12

CALRIO

Traditional lime mortar ready-mix for base coats for indoor/outdoor use

TECHNICAL DATA SHEET



Durability or compatibility with support (after a freezing/defrosting cycle)	0,17 N/mm ²		UNI EN 1015-21
Permeability to water vapour (the lower the value , the better the distribution of	$\mu = 7-8$	Scale 1 to 20	UNI EN 1015-19

The information contained in this sheet are the expression of our knowledge and of test results. They can in no case be regarded as bringing a guarantee, or engaging our responsibility in the event of defective application. We recommend making a sample.