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HEIDELBERGCEMENT Group

LIME

& PERSPECTIVES

HERITAGE

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LIME & PERSPECTIVES HERITAGE



LIME- MAYOR

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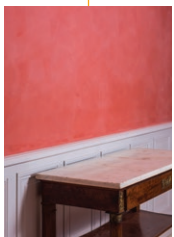


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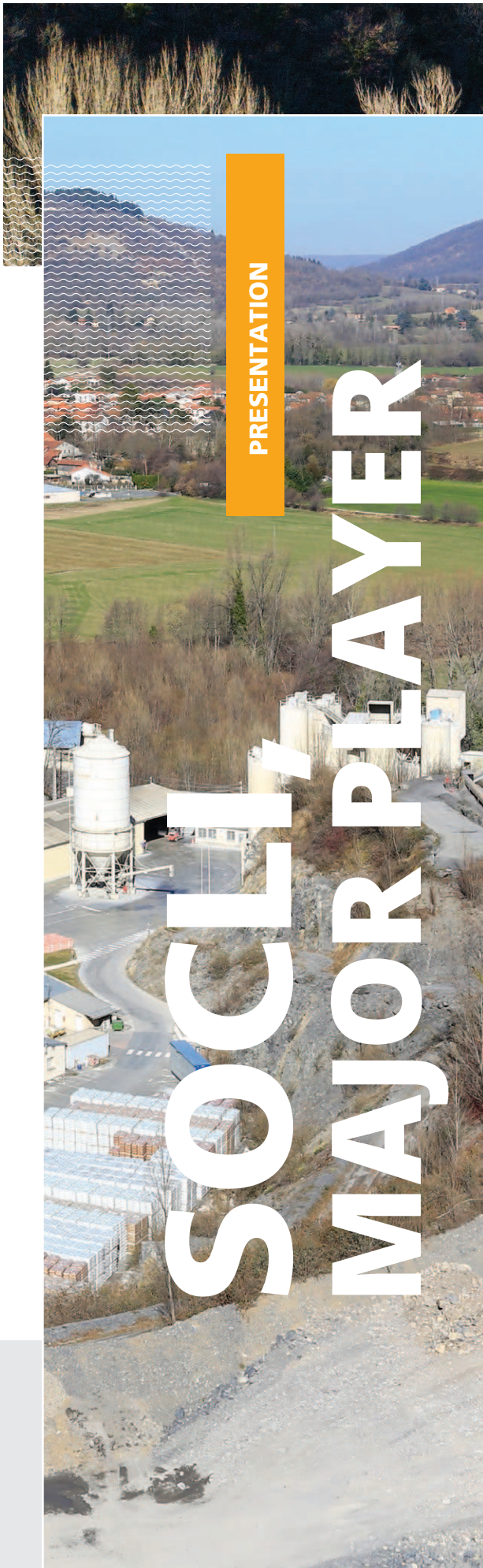
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PRESENTATION

SOCLI, MAJOR PLAYER



SOCLI, A MAJOR PLAYER IN THE PRODUCTION OF NATURAL HYDRAULIC LIME

SOCLI has been a subsidiary of Ciments Calcia since 1988, within HeidelbergCementGroup, and obtained the EPV Label in June 2019. The Entreprise du Patrimoine Vivant (EPV) label is a state recognition mark established to distinguish French companies with exceptional artisanal and industrial know-how.



It offers a wide range of natural limes, decorative products, binders, mortars, and a variety of finished products, particularly based on lime. The company benefits from the support of the two laboratories of the Group located respectively in Bergamo, Italy, and Leimen, Germany, as well as the laboratory at its industrial site in Izaourt for the development of numerous formulations, often 'custom-made'. Dynamic and innovative, SOCLI provides a local service to its clients by offering high-tech products.

In support of the Group's innovation, the company applies fundamental research for the creation and manufacturing of inventive and technical products, such as photocatalytic formulations, promoted internationally.

While innovation and performance are the two objectives of SOCLI, environmental respect is one of the central concerns of the teams, easily sensitized by the production of a natural and ecological material: natural hydraulic lime, SOCLI's primary business. Reducing noise pollution and impacts on soils or subsoils, considering air quality by controlling atmospheric emissions and dust, are part of SOCLI's commitment to the environment. Thus, the entire production system of Izaourt has been ISO 14001 certified for many years, a first in the refractory industry in France. All of these facilities therefore comply with the ISO 9001 and ISO 14001 standards.



MANUFACTURING PROCESS

1. TREATMENT OF LIMESTONE

In accordance with a precise blasting plan, drill holes are made in the face of the quarry. They cause the controlled extraction of a quantity of limestone rocks.

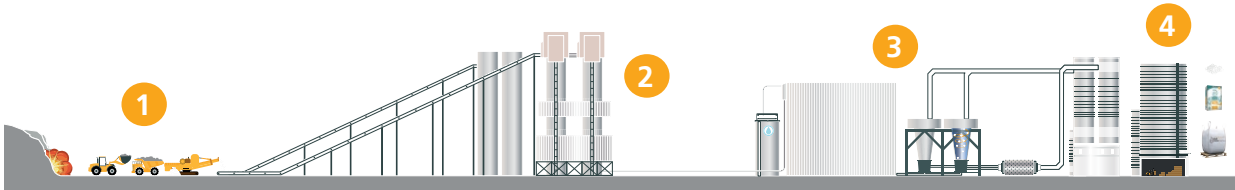
The stones are transported to the treatment station to be crushed and then graded in screens. They are then sent to a stockpile that allows for perfect homogenization of the limestone.

2. CALCINATION

The calcination of the rock takes place in vertical kilns. The feeding of stone and fuel is done from the top of the kilns.

Slowly, very slowly, the stone passes through the preheating zone to enter the calcination zone, where the chemistry occurs, at a temperature between 900 and 1200 °C. This is where decarbonization occurs and the rock becomes quicklime.

The quicklime then progresses down the furnaces and cools before being extracted onto conveyor belts.



3. HYDRATION AND GRINDING

The transition from quicklime to slaked lime occurs after leaving the kiln.

The slaking of lime is done in a hydrator, by introducing water. This causes an exothermic chemical reaction, resulting in the release of intense heat.

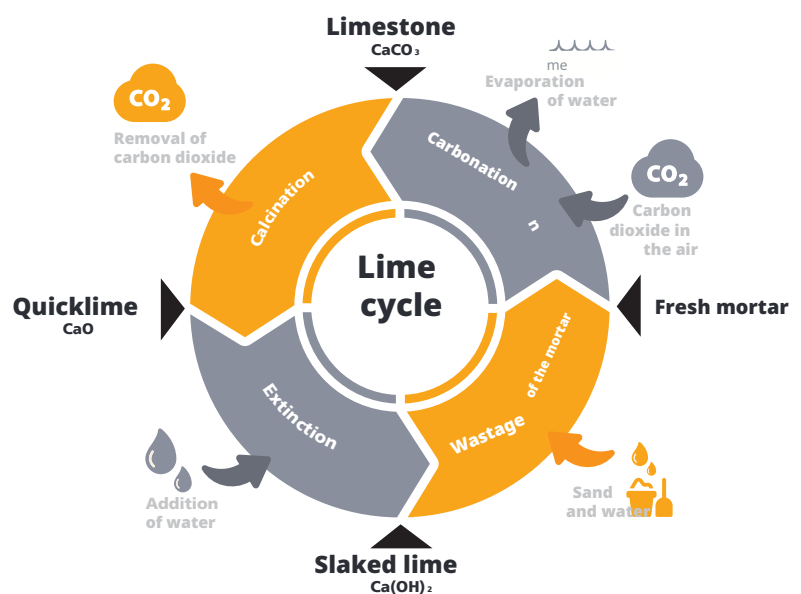
Grinding then allows for the production of a fine, natural, and pure powder: natural hydraulic lime.

4. PACKAGING

SOCLI limes are then packaged pure, in bulk in storage silos or in bags in large storage warehouses.

They are also used in the composition of products such as MONOLYS, RÉNOCAL, CALIX... The consistency of the products and their performance is made possible by numerous laboratory analyses conducted on material samples at all stages of production.

At any time, this can be adjusted thanks to the complete automation of the manufacturing process.



PRESENTATION

THE CHOICE



ECOLOGICAL PRODUCT, RESPECTFUL OF OUR ENVIRONMENT.

Known and recognized for its purifying properties and for the comfort and habitability it offers to buildings, lime is the noble material par excellence, natural and healthy, used for millennia. Valued for its multiple properties, it participates in the various stages of construction or restoration of a building. It adorns and protects our living spaces and thus greatly contributes to the aesthetics and conviviality of the living environment.

If lime, this ancient material, has accompanied humanity for millennia and withstands all technical evolutions, it is also the material of the future. Its local production has remained unchanged since its origin, accompanied only by developments in terms of safety and environmental protection.

TRADITION AND MODERNITY

At a time when health, the preservation of species, and the need to find a gentle and comfortable living environment are becoming priorities, lime and natural products made from this material meet expectations more than ever.

It can indeed be involved at all stages of the construction of a building and its restoration: from the foundations, through the roofing, to the final decoration; which implies a great number of gathered properties.

Its qualities are not only exploited in construction, restoration, or decoration but also in the treatment or recycling of roadways and even in civil engineering for certain technical applications.

HEALTHY
BREATHABLE
PURIFYING
AESTHETIC



NATURAL
DELICATE
REVERSIBLE

Insulating

Natural lime directly contributes to the thermal and acoustic insulation of built spaces. It envelops homes and restores the needs for warmth or coolness throughout the seasons for greater comfort. Insensitive to frost, it is also very resistant to fire and temperature variations.

Flexible and durable

Very flexible yet highly durable, it degrades little over time and does not crack. Lime respects soft materials that have been weakened by time.

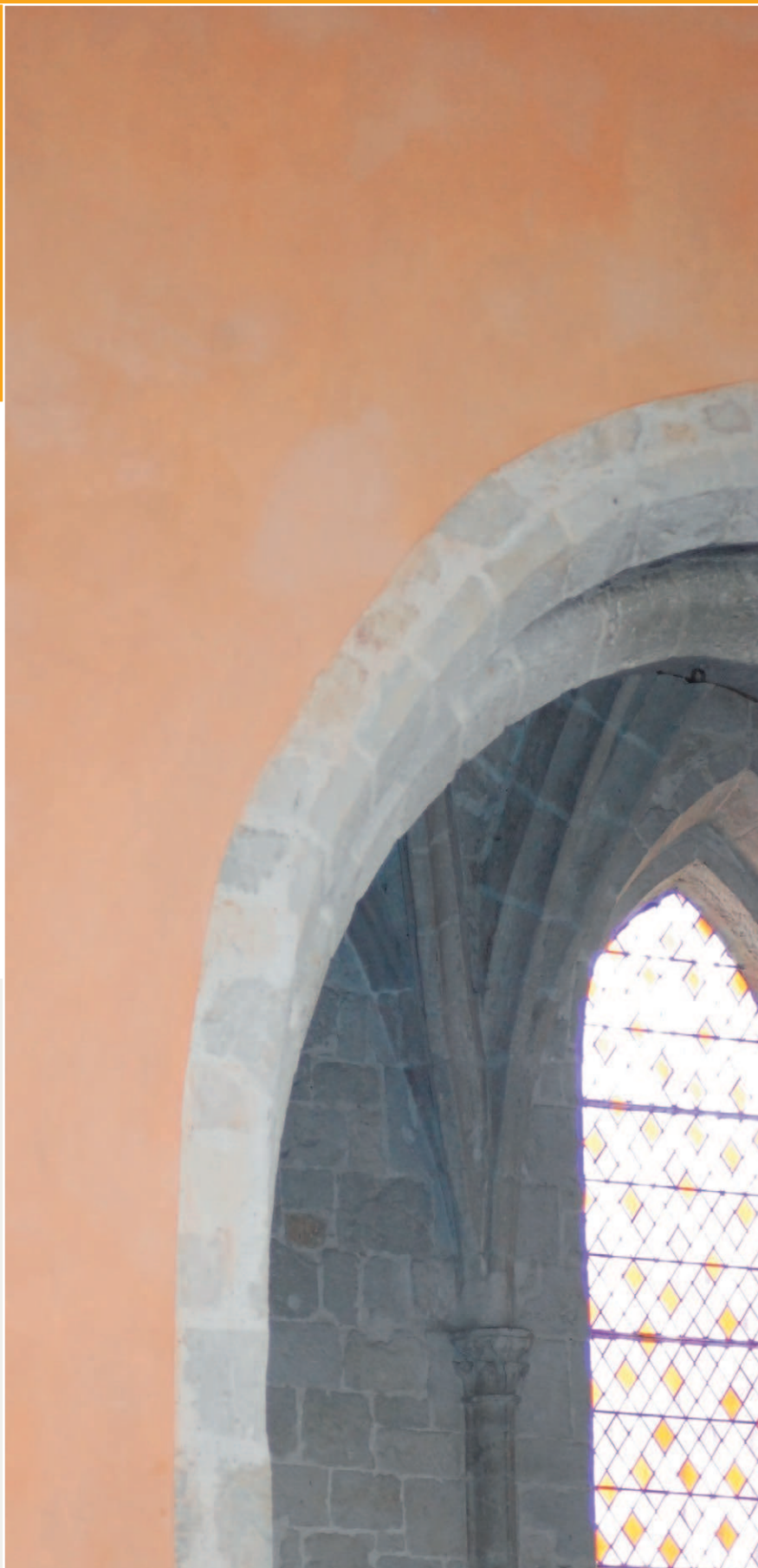
Aesthetic and eternal

Natural, it preserves and enhances the color and appearance of local sands. When combined with pigments, ochres, or earths, it allows for durable coloring.

COLOR CHART

LIME MORTARS

PRESENTATION



The colors presented in this color chart may vary according to the finish and grain size.

They are provided for purely indicative purposes. The color chart does not replace the need for conducting a test.



☼ **Specific nuances to CENT% FINISH.** Mortars made by mixing lime and natural sands.

☼ Super White (0/1.5 mm) is an exclusive shade of RÉNOCOLOR FINISH.



HERITAGE

ANCIEN

PRESENTATION



THE BUILT HERITAGE

It is derived from ancestral practices that need to be rediscovered and adapted to the modern world...

Old houses were, by nature, ecological, as they were in perfect harmony between man and his landscape environment:

- orientation of openings of varying sizes, primarily to the south and secondarily to the north;
- placement in the bottoms of valleys to protect against climatic aggressions;
- plantings consisting of hedges against prevailing winds;
- utility gardens with vegetable patches and orchards;
- grouping of outbuildings around a courtyard for the sake of reducing movement, providing barriers against insecurity and climatic aggressions;
- constructive rationality with the use of cut stones in the most vulnerable areas, and filling with rubble from the surrounding fields...

However, the brutal societal and technological transformations of the late 19th century (changes in agricultural /domestic use, secondary residences/principal residences, energy sources wood/coal/gas/oil...) led to transformations that were sometimes detrimental in terms of habitability, comfort, and insulation.

It is therefore essential to integrate only non-aggressive techniques and materials that respect the existing structure, namely, among other things:

- take advantage of the high thermal mass of walls and avoid using insulators or coatings that hinder the breathing of hygro-metric exchanges; plant-based insulators (hemp, flax, cellulose wadding, recycled textiles, expanded cork, wood fiber...) are found to be more 'breathable' than some other insulators;
- ventilate the spaces to evacuate latent humidity;
- drain the peripheral walls to prevent rising damp while evacuating rainwater, use highly permeable coatings to water vapor that are not sensitive to frost;

- heat using boilers, stoves that utilize wood residues, heat recovery fireplaces, heat pumps, or take advantage of the natural geothermal energy of the soil, or the sun through the use of solar thermal or photovoltaic panels, provided there is perfect integration;
- adopt new concepts of habitat and lifestyles, with the presence of climate transition spaces (patios, closed or open porches, partitioned blocks serving living spaces adapted to the rhythm of the seasons) while preserving the scale of the original volumes.

In a way, it is important not to stray from the natural environment to the point of ignoring it, by creating a passive house that is completely airtight and waterproof, or by striving to meet normative diagnostics that are often poorly suited to older houses, but rather to understand the inherent qualities of traditional buildings and find the right compromise by using the best ecological techniques with economy and rationality.



PRESCRIPTION LIME

PRESENTATION



LIME

THE CHOICE OF MATERIAL

Often collaborative, the choice of a product or technical solution involves the project owner, the project manager, and the companies. The project owner is increasingly involved through detailed specifications.

Responsibilities are often shared: aesthetics, such as the building envelope or interior decoration, are primarily the architect's concern. On the other hand, the finishing work and technical equipment are more the responsibility of the design office, the company, or even the construction economist. As for the project owner, their role is becoming increasingly important given the detailed specifications.

The special technical specifications document (CCTP), newly named DTMO, is a contractual document drafted by the public or private buyer that encompasses all technical clauses governing the contract. It may include plans, technical notices, diagrams, and refer to standards or general documents without necessarily reproducing them.

Once signed, the Special Technical Specifications Document (CCTP) becomes the 'law of the parties' and holds legal value.

It is enforceable in case of disputes.

Socli offers a very wide range of lime that allows for all types of interior or exterior work and meets the requirements of a CCTP.

Why choose lime?

- **a purifying and disinfecting power**,
- an aesthetic that cannot be achieved with any other binder,
- **a very interesting material cost** today,
- a first-rate contribution to the **breathability of structures**,
- an elasticity and an ability to adapt superior to other binders,
- **a durability over time** that remains unmatched,
- **an absorption of CO2 emissions** from the atmosphere during its carbonation,
- **a mitigation of the harmful effects** of efflorescence,
- an excellent **fire performance**.





PRESENTATION

FAÇADES LIME

PRESENTATION

Lime, a millennia-old material for some, ancestral for others... Lime is above all timeless. It has traversed the decades without flinching, retaining its splendor even when it was once shunned in favor of cement, and today it returns elegantly to the forefront. It is everywhere and even more visible on the façades of our heritage architecture.

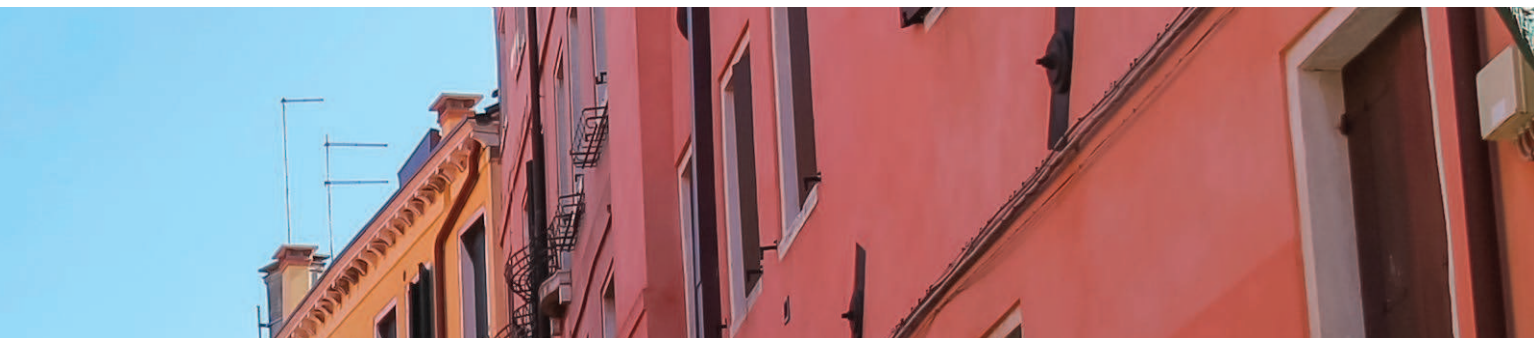
LIME RENDER CONTRIBUTES TO THE DECOR OF FAÇADES AND PLAYS WITH THEIR ARCHITECTURE

Natural lime renders ensure a role of insulation and filtration in the hygro-metric exchanges between the interior and exterior: they are breathable, allowing water vapor to escape through the walls while being waterproof, particularly to rainwater. But these renders also have a decorative role: their diversity and harmony bring life to the landscape of towns and villages. Their moldings contribute to enlivening the façade.

Lime renders allow for the realization of all historical structures and aspects. The variety of local aggregates used allows for the exact reconstruction of character facades; the addition of natural mineral pigments further enhances the authenticity of the building. Hand-applied renders are made in three layers: a scratch coat, a body coat, and finally a finishing coat that may contain a natural mineral colorant to tint the façade.

THE TEXTURE AND COLOR OF LIME RENDER EXPRESS ITS CONNECTION TO THE LOCALITY

Lime wash is an ancient technique. It can be applied either a secco or a fresco on most mineral substrates. It serves to protect and color the final layer of plaster, giving various buildings a regional and authentic character. On solid plasters, the lime wash applied over the plaster will be tinted; it then replaces paint. A wide variety of colors exists: they can range from ochre to sky blue, including orange. These unique shades are more often found in urban areas or specific buildings such as cafés and restaurants. The shades in more rural areas are often more subdued. In the case of a visible stone render, the color of the render will be that of the quarry sands used, most often a light ochre.



FOR EACH TYPE OF FAÇADE WALL, ITS DEDICATED LIME



RÉNOCOLOR UNDERCOAT, RENOCOLOR FINISH S OR M RÉNOCOLOR UNDERCOAT

is an exterior plaster mortar based on natural hydraulic lime, specially designed for supports Rt1, Rt2, and Rt3 (bricks, concrete blocks, or cellular concrete, pumice stone...) or hard stone. It is dedicated to the realization of undercoats and is associated with RÉNOCOLOR FINISH for the second layer of the plaster.

RÉNOCOLOR FINISH is a plaster mortar based on natural hydraulic lime. It is available in 2 versions: Sand (made from naturally colored sands) and M (pigmented) in 32 shades. Dedicated to the finishing of plasters, it can be applied mechanically or manually, on a wall prepared with RÉNOCOLOR UNDERCOAT or CALIX.

These three products comply with Standard NF EN 998-1.



CENT 100% UNDERCOAT AND 100% FINISH

CENT% UNDERCOAT and CENT% FINISH are exterior plaster mortars made from natural hydraulic lime, specially designed for old or natural walls (stones, common bricks, cob). CENT% BASE COAT is dedicated to base coats and is associated with CENT% FINISH for the second layer of the plaster.

This can cover a base coat of GRAY-BEIGE LIME or SOCLI LIME or RABOT LIME.

CENT% FINISH is available in 2 different versions: Sand (made from natural sands), and a pigmented finish (M). It is available in 31 shades. These two products comply with Standard NF EN 998-1.



RESTONE

Formerly known as RÉNOPIERRE, RESTONE is a natural lime stone repair mortar.

Its special formulation (natural hydraulic lime, special sands, and additives) allows it to be used on soft substrates. It is a white mortar that can be colored using pigments and patinas.

It complies with Standard NF EN 998-1.



HISTORICAL CENTERS

HISTORICAL CENTERS is a ready-to-use, natural and unfiltered (with grains) wash whose characteristics include a white base with factory coloring available upon request. It adapts to interior and exterior wall surfaces, on all lime or lime/cement substrates, sound plaster, or absorbent paint.

LIME: THE MODERNITY OF AN ANCESTRAL PRODUCT

Lime plaster and the subtle interplay of façade graphics constitute the architectural decor; the plaster is a factor of regional identification through its color, texture, and thus also a revealer of the architectural history of a region.

NOTEBOOKS

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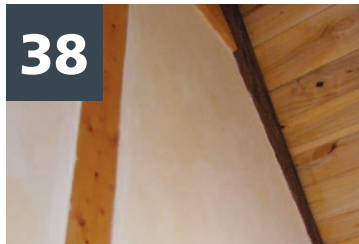
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Tadelakt

LIME CONCRETE

PRESENTATION

Lime concrete uses aggregates as mineral filler. It is a much more robust material than lime mortar, not intended for coatings but for heavy masonry work, particularly for ground structures: slabs, screeds... Long perceived as largely superior for floor coverings due to its higher strength, cement is now giving way to lime concretes in certain cases. It has indeed been realized that cement is rather impermeable and retains moisture in the ground, leaving walls as the only outlet for water.

Lime, on the other hand, being a relatively fragile material, is poorly suited for floor coverings, which must support the weight of furniture and structures. While lime concrete is suitable for a new individual dwelling or an old house to be renovated, it is not feasible when there is a particular weight to support (greater than 35-50 kg per cm²).

Lime concrete pushes lime to its limits. Where conventional mortars use a lime-sand mixture to create wall coatings, your lime floor requires more. The binder will be exclusively a natural hydraulic lime, of type NHL 3.5 or even 5 for even greater strength. This implies particularly long drying times, up to 45 days for the core setting of lime concrete.

That is why drying systems are often planned for slabs and screeds to accelerate the process. Lime concrete cannot be used to create structural elements.

The strength of a lime concrete slab is lower than that of a cement concrete slab; however, in contact with air and moisture, this strength continues to improve and doubles after just 2 to 3 months.

TECHNIQUE

MORTAR MIXING

Lime concrete must be made with natural hydraulic lime, aggregates, and clean water. It can be produced using a concrete mixer or can be delivered ready to use by a concrete truck (mixer).

- The slab is made with a limestone or silico-limestone aggregate 0/16 mm and clean water. The lime dosage should be between 350 and 400 kg/m³ of dry aggregates. The proposed formulation provides for three granular cuts at the plant:
 - Sand: 0/3 R or C
 - Gravel: 3/8 R or C
 - Crushed stone: 8/16 R or C
- For a 35 kg bag of lime, take 8.5 to 9 buckets of 10 liters of aggregates. The incorporation of fibers can strengthen lime concrete and reduce cracking. n Mixing, in a concrete mixer or central mixer, is a minimum of 55 seconds up to 2 to 5 minutes. n For the concrete mixer: Introduce a small amount of water into the drum to clean it from the previous batch. The total amount of water should be between approximately 16 and 18 liters per 35 kg bag of lime, depending on the moisture content of the aggregates. This water dosage results in a low workability concrete but of much better quality. An excess of water facilitates the implementation but leads to cracking during drying.



- Bring half of the aggregates
- Incorporate the necessary amount of lime
- Add the remaining aggregates and adjust the water to achieve a dry concrete
- Allow mixing for 2 to 5 minutes
- For pump placement, the lime concrete should be dosed at 400 kg/m^3 , with a water dosage to achieve a slump test of 13 cm at the start (which is a very plastic consistency)
- In certain specific cases, such as lime concretes in cellars, limestone aggregates can be included in 0/10 and 1/15 for increasing water retention by capillarity

PREPARATION OF THE SUPPORT

- The ground must be leveled by stripping and cleaning

If the moisture content of the soil is too high, it can be reduced by adding natural hydraulic lime, which is mixed with the soil to a thickness of about 15 cm (15 kg/m^2). Finally, the soil must be compacted before laying the slab. When the soil is too loose (clayey or silty), the installation of a limestone aggregate layer is recommended.

For untreated in-situ soil, a spreading of 1 to 2 cm of NHL lime is necessary to ensure proper drainage.

As a general rule, a layer of stone (aggregates 40/60 or 60/80 cm) is placed under the slab, with a thickness of 10 to 20 cm. This practice is not necessary for laying a slab in a basement or a wine cellar.

According to the nature of the building, the installation of a ventilated drain with a diameter of 100 will be arranged in an S shape to facilitate the setting of the concrete and to combat radon gas.

Once the ground is prepared, it is imperative to moisten it before pouring the lime concrete, 1 to 2 times a day, for one week.

EXECUTION OF THE SLAB

A layout (grid) of the ground is carried out before the installation of the slab using natural stones or terracotta.

In all cases, it is necessary to provide for expansion joints for large surfaces, to prevent the formation of cracks (every 16 m^2 maximum). The depth of the joints will be between a quarter and a third of the thickness of the covering, and for a width between 3 and 5 mm.

- In the case of a very damp floor, the addition of pozzolanic aggregate is ideal for combating humidity.
- The concrete is poured onto the ground, at a thickness of approximately 20 cm, then leveled and finally compacted using a roller or a tamper. In the case of silico-calcareous concrete, the placement is carried out using a vibrating screed, without compaction.
- Never place a polyethylene film, in order to allow for the regulation of humidity.
- Moisten the slab 1 to 2 times a day to promote the carbonation of the lime, for about 3 weeks. (with a garden hose using a mist nozzle, without the water running off.)

When a stone hedgehog has been created under the slab, it is necessary to ventilate it, through a hole in the wall, or through high ventilation to prevent the formation of radon.

EXECUTION OF THE FINISH

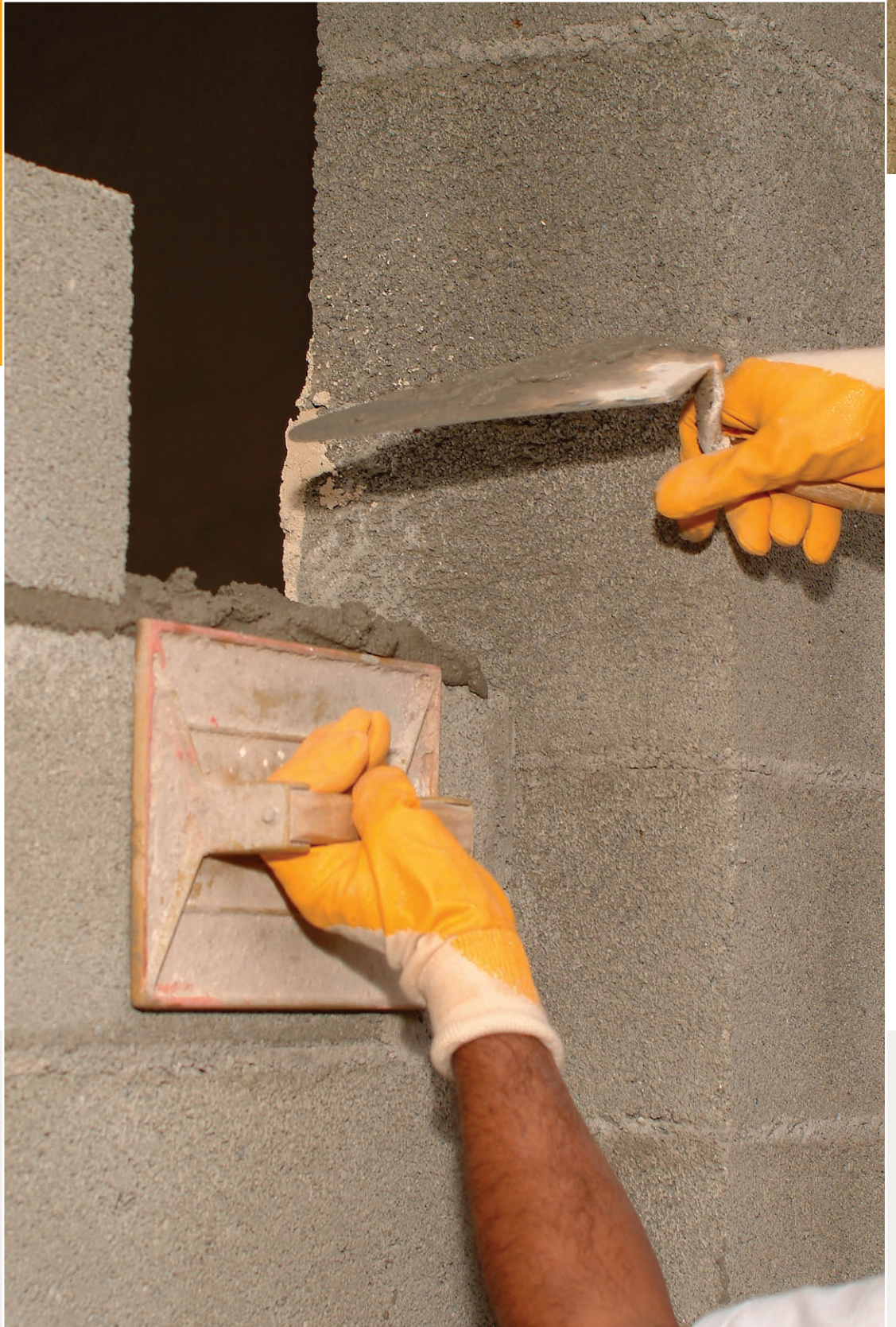
A surface treatment of the slab can be carried out as soon as the lime concrete begins to set, by sprinkling a mixture of lime, silica sand (0/1 to 0/2 mm), and colorants. This will harden the surface of the concrete. The dosage of the mixture is as follows:

- 1 volume of NHL 5 lime
- 1 volume of sand
- Colorants (perform a test to determine the final shade)

This mortar is smoothed and compacted with a trowel or passed with a helicopter, then kept moist by spraying water for about 3 weeks.

For the installation of tiles, wait at least 3 weeks after the concrete has been placed. It is necessary for the concrete to remain raw and to be just leveled with a screed to prepare for the tile installation.

Waterproofing is possible. It only comes into play 3 months after the placement of the lime concrete. It helps facilitate cleaning and maintenance work, and prevents most stains. It is possible to apply a sodium silicate solution or a hard oil.



PRESENTATION

The purpose of traditional masonry construction is primarily to erect walls by stacking layers of solid elements (rubble, stones, bricks, concrete blocks...) bound together by a binder. This essentially results in vertical structures.

We distinguish between:

- **Load-bearing walls** which serve to transfer loads to the foundations. The stability of the structure depends on the proper execution of these elements. They are sufficiently strong to support their own weight, additional loads, and the effects of wind...
- **Non-load-bearing walls** which consist of interior walls and represent partitions. These also include exterior walls that are infill walls whose functions are insulation and waterproofing. They are not actors in the stability of the structure.
- **Load-bearing walls** which are elevations, unlike non-load-bearing walls, of greater extent, where their own weight is no longer negligible. They are generally used in double walls and ensure, in particular, the architectural homogeneity of the facades.
- **Simple walls** which are walls that consist of only one masonry layer, plastered or unplastered, and made from a single material.

The materials used for constructing a wall must be homogeneous, meaning they are of similar category and strength. The composition of the mortar is diverse and must adapt to the hardness and strength of the materials to be assembled. Depending on its destination, the dosages and the participants change. Cement-based mortars provide great strength; however, they offer low plasticity and therefore crack quickly. They are primarily used for sealing the various blocks together. In contrast, lime-based mortars provide greater plasticity. They are used for small works and solid brick masonry. For stone, common brick, and raw earth, it is even recommended to use only pure lime mortar. To optimize adhesion and the performance of the joints, an intermediate mortar between the two previous types exists. This is known as bastard mortar: a mixture of lime and cement that improves both strength and plasticity.

TECHNIQUE

MORTAR MANUFACTURE

A mortar must necessarily consist of a mixture of one or more binders, clean sand, pure water, and possibly additives. Introduce a small amount of water into the mixer to clean it from the previous batch. Add the sand and the binder, then the remaining water. Lock the mixer in the mixing position for 3 to 5 minutes to obtain a homogeneous mortar.

SUPPORT PREPARATION

- Each element to be assembled must be moistened before installation to facilitate adhesion.
- The supports must be free of any traces of dirt before assembly.

EXECUTION OF WALLS (see DTU 20.1)

- The assembly of the lower course (of the 1st laying bed) must be more heavily dosed and water-repellent, according to DTU 20-1.
- This first course of elements is leveled. The assembly is carried out with staggered joints. The offset of the vertical joints must be at least equal to one third of the length of the element.
- The installation is carried out on wooden battens or wedges, adjusted to the thickness of the joint (only for dressed stone). The average thickness of the joints between the elements to be assembled should be between 10 and 15 mm. They must be perpendicular to the exterior facing to a depth of about 10 cm inside the wall. The excess mortar must be removed promptly as the assembly progresses. The finishing joints, intended to remain visible, can be made at the same time as the assembly. Otherwise, they will later require repointing.

LIME
SOCLI

LIME
PLANER

BATILIAN

RÉNOCHAUX

LM PLUS

The Handy
BATICEM

The Handy
BATIDUR

CALIX

REPAIR

FROM STONE TO NATURAL LIME

TECHNICAL NOTEBOOK



PRESENTATION

Due to various aggressions (chemical or physical, for example), stone deteriorates over time. Its hardness and composition, in general, either promote or hinder this wear phenomenon. While it is sometimes essential to remove stones damaged by time, they can sometimes be repaired.

RESTONE is a lime mortar, specially designed for the repair of stones or terracotta. It can be applied directly to the stone or molded.

TECHNIQUE

MIXING THE COMPOUND

- Introduce the product and water into a suitable container
- Mix with a spiral mixer (300 to 600 rpm) for a few minutes to obtain a homogeneous mortar

SUPPORT PREPARATION

- All supports must be clean, dust-free and free of grease stains, moss, or any other non-adhering substance
- Regarding the stone, it is recommended to scrape the surface to make it rough (if necessary, break off small parts or sand), before repairing it. It is essential to reach the sound stone
- Thoroughly humidify the support, allowing the water to penetrate and wipe it dry on the surface
- Before any application of RESTONE, apply PRIMER PLUS (1 part Primer Plus to 2.5 parts water)
- For any repair with a thickness greater than 3 cm, it is necessary to fix a metal wire mesh (brass or stainless steel wire mesh) onto the support over the entire shape to be created, in order to support the weight of the mortar

EXECUTION OF THE COATING

- RESTONE F is applied to the required thickness of 0.5 to 1 cm in thickness
- RESTONE M is applied to the required thickness in one or several passes of 2 to 3 cm in thickness (fresh on fresh) until the required thickness is achieved
- Tighten, level, and work it according to the desired finish
- A template can be used to draw the desired shape (cornice for example)
- In the case of creating a corner chain, it is desirable to mix the amount of RESTONE necessary to create a stone 'from joint to joint'
- Once the mortar has hardened (between 10 and 24 hours), it is possible to work on the created part with stone mason tools (railway for example)
- It is also possible to patina the RESTONE mortar as well as the adjacent stones to give the whole a more natural appearance. The patina (like lime milk) also promotes the reformation of calcined material. The use of a surface water repellent that allows the wall to breathe can also be applied.

APPLICATION THICKNESS

- RESTONE F: 0.5 cm to 1 cm
- RESTONE M: from 1 cm to 6 cm



RESTONE

FIXING OF SMALL ELEMENTS OF COVERING

TECHNICAL NOTEBOOK



PRESENTATION

Sealing is an operation that consists of fixing ridge tiles, hip tiles, and roof edge tiles. Only the use of a natural hydraulic lime mortar allows for the removal of a tile and its replacement. A natural and fragile material, terracotta should not break during the movements of the roof, inherent to any construction. Certain tiles must be easily removable without altering their neighbors. Only lime guarantees perfect protection for terracotta tiles. The sealing of tiles with pure cement is prohibited.

TECHNIQUE

MORTAR MANUFACTURE

- The mortar must necessarily consist of a mixture natural hydraulic lime, clean sand, and pure water
- Introduce a small part of it into the drum of the concrete mixer water to clean it from the previous mix
- Introduce the sand and the lime, then the rest of the water
- Block the concrete mixer in the mixing position for 3 to 5 minutes to obtain a homogeneous mortar

SUPPORT PREPARATION

- Moisten the tiles before installation

EXECUTION OF THE COATING

- The overlap of the ridge tiles must be done in the direction unfavorable to the penetration of water under the prevailing rain winds. The joint between ridge tiles is made by an overlap of at least 10 cm. The joint between ridge tiles and tiles is sealed with mortar.
- The tiles of the hips are fixed and sealed with mortar.

- In the case of a head ridge with an overhang of the wall, the last row of the head is covered with a mortar filling, protected by a metal covering and a flashing strip.
- In the case of a head ridge without wall overhang, the last row will be covered with tiles sealed with lime mortar.
- In the case of continuous penetrations (party walls, for example), or discontinuous ones (chimney stacks), the use of lime mortar is recommended.
- Caution: the use of lime mortar requires special precautions during application to prevent drips from staining the tiles.



LIME
SOCLI

LIME
PLANER

RÉNOBLANCHE

TILING

& SEALED FLOORS

TECHNICAL NOTEBOOK



Note

PRESENTATION

Sealed lime floors prepare for the installation of stone or terracotta tiles. For all other tiles or for the installation of carpet, a bastard mortar, a mixture of lime and cement, is preferred. The choice of tiling installation technique depends on the condition of the floor on which the tiles will be laid. The advantage of applying mortar is to compensate for level differences on an uneven or very damaged floor.

The screed has, in the case of a sealed installation, a dual function: it provides a smooth and perfectly level surface for laying the tiles (which explains its utility for installation with tile adhesive as well); The layer ensures the connection between the tiling and the floor and solidifies it with the slab; it is the mortar of the screed that seals the tiles to the floor.

The sealed installation technique involves fixing the tiling directly into a fresh lime or mixed mortar that rests on a screed that will be powdered to allow for sealing. It is particularly suitable in two specific cases: for surfaces that are not flat at the base and have numerous level irregularities on one hand, and for the installation of large tiles on the other hand. However, it is not recommended for heated floors. Indeed, the heat could increase the risks of expansion.

While this installation method was the most commonly used until the 1990s, it is now less utilized because, although it ensures the strength of the tiled structure, it is tedious and complex to implement.

TECHNIQUE

LIME STUCCO MANUFACTURE

- The mortar must necessarily consist of a mixture of natural hydraulic lime, clean sand, and pure water n Introduce a small amount of water into the concrete mixer to clean it from the previous batch n Add the sand and lime, then the remaining water n Lock the concrete mixer in the mixing position for 3 to 5 minutes to obtain a homogeneous mortar

SUBSTRATE PREPARATION

- The slab must be moistened

EXECUTION OF THE SEALED FLOOR (see DTU 52.1)

In traditional laying

- The mortar is poured onto the floor, then leveled n When water rises to the surface of the mortar, sprinkle with natural hydraulic lime and lay the terracotta or stone tiles In new work
- To increase the surface strength of the floor and make it smooth, sprinkle with LM PLUS or BATICEM Workable or BATIDUR Workable, then smooth with a trowel or float



LIME
SOCLI

LIME
PLANER

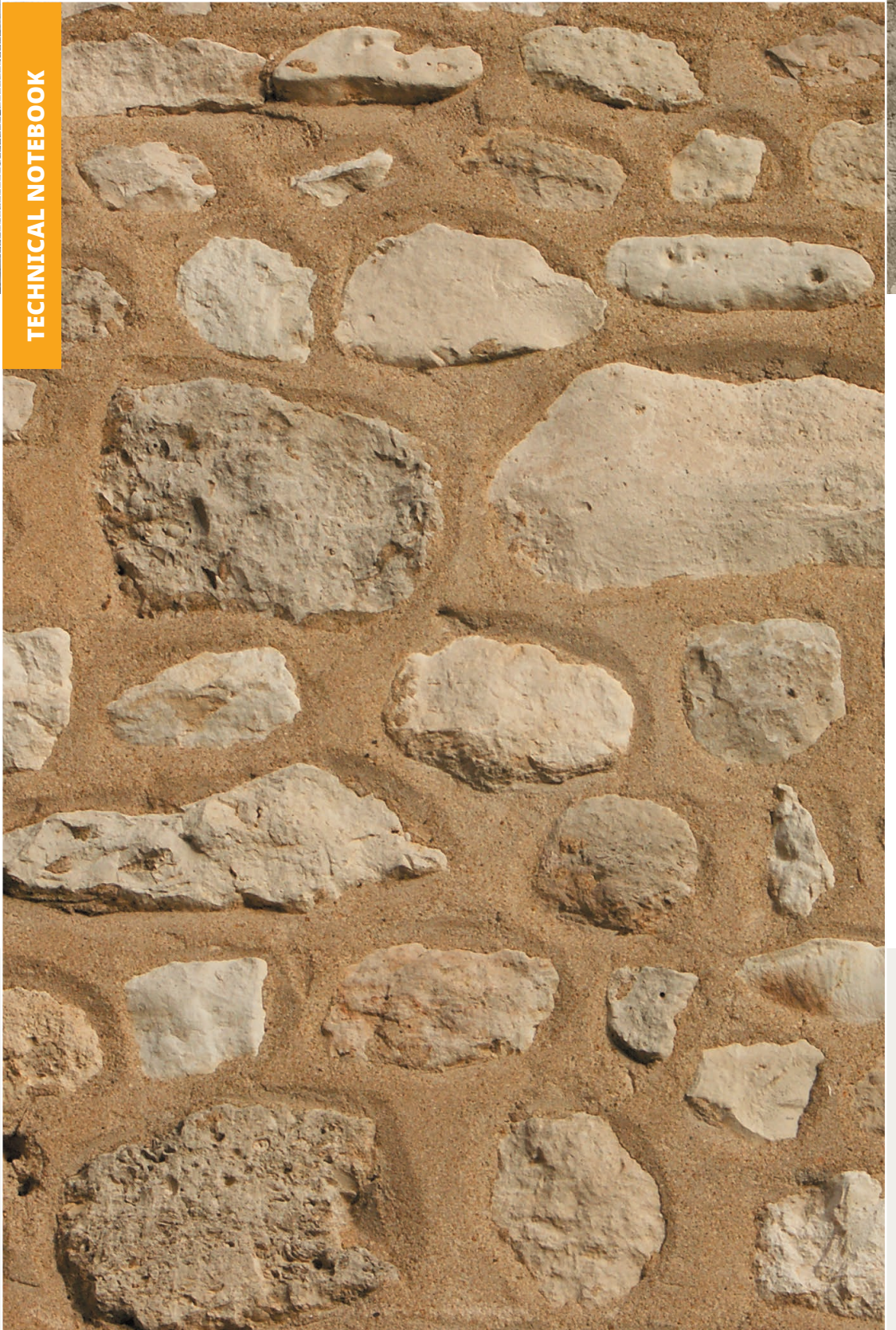
LM PLUS

The Workable
BATICEM

The Workable
BATIDUR

REJOINTING

TECHNICAL NOTEBOOK



PRESENTATION

Masonry works are recognized for their aesthetics, but primarily for their durability against the elements. The deterioration of mortar joints often represents the main source of issues observed in a masonry wall. A deteriorated joint will allow rainwater to penetrate inside the walls. During freeze-thaw cycles, any water contained in the materials that could not evaporate will freeze and cause damage to the masonry. The bedding mortar ensures the connection between stones, rubble, and bricks. It must fill all the space and transmit the forces. On the surface, it is complemented by the joint, which has a richer mortar mix. The joint, in addition to homogenizing the entire masonry, allows for the mechanical continuity of the forces transmitted by protecting the backing and ensures a certain waterproofing of the facing.

There is no universal mortar. Generally speaking, lime-based mortars are recognized as being more effective because the popular belief that the harder the mortar, the more resistant it is, is false. The choice of mortar depends, among other things, on climatic conditions (rain, freeze-thaw cycles...) as well as constraints imposed by external agents such as de-icing salts.

The main criteria to consider when choosing a mortar are:

- **The compressive strength of a pointing mortar** must always be lower than that of the masonry elements to be bonded.
- **The compatibility with masonry elements** to be bonded must be verified by ensuring that the new pointing mortar is compatible (adhesion, permeability, and chemical reactivity) with the existing mortar, brick, block, or stone.
- The pointing mortar must have **a low water absorption rate and a high vapor permeability**. The permeability of the mortar must be greater than that of the masonry elements. A more permeable mortar promotes, among other things, drying, which reduces moisture accumulation in masonry joints.
- The choice of mortar directly affects the risk of joint cracking, that is, its ability **to adhere to masonry elements**. To reduce shrinkage and cracking, it is necessary to choose a mortar with an adjusted water/binder ratio as well as a low cement content. Mortars containing a high percentage of lime have lower compressive strength. As a result, they are more flexible and resistant to cracking. Good adhesion of the joint mortar depends on the moisture contained in the elements and the mortar during its application, the quality of the cleaning, the compaction, as well as adherence to curing conditions.

TECHNIQUE

MORTAR PREPARATION: ON-SITE MIXING

- The mortar must consist of a mixture of one or more binders, clean sand, pure water, and possibly additives.
- Introduce a small amount of water into the drum of the concrete mixer to clean it from the previous mix
- Introduce the sand and the binder, then the rest of the water
- Lock the concrete mixer in the mixing position for 3 to 5 minutes to obtain a homogeneous mortar

MORTAR PREPARATION: READY-MIX MORTAR

- Introduce a small amount of water into the concrete mixer to clean it from the previous mix of the previous mix
- Introduce the mortar, then the rest of the water
- Lock the concrete mixer in the mixing position for about 5 minutes to obtain a homogeneous mortar

SURFACE PREPARATION

On new wall

- Water the joints to refusal the day before application

On old wall

- Remove the joints to a depth of 1 to 3 cm and remove the damaged stones or bricks
- Clean the wall using a sandblaster or a brush
- Replace the missing stones or bricks. Wait 3 days before repointing
- Water the joints to refusal the day before application
- Supply the lime and sand all at once to ensure a consistent color throughout the project
- Cover the sand outdoors to prevent fine elements from falling to the bottom of the sand pile. They must be evenly distributed in the sand stock to ensure color regulation

EXECUTION OF REPOINTING (see DTU 20.1)

- Fill the mortar joints
- Remove excess mortar as you go
- Achieve the desired finish
- If necessary, clean the wall after pointing

RÉNOCHAUX

RÉNOBLANCHE

CHAULYS
WHITE

RÉNOCAL

RÉNOCOLOR
FINISH S OR M

TRADITIONAL RENDERS INTERIOR / EXTERIOR

TECHNICAL NOTEBOOK

PRESENTATION

The role of the render is to protect the building from moisture and cold. The render, composed of a fat binder (air lime) and sands, primarily serves as protection for stone walls and acts as an insulator and filter between internal and external hygrometric exchanges. It allows condensation generated by heating and human respiration to escape through the walls; it is also impermeable to rain-water.

The use of air lime makes the renders sufficiently flexible to neutralize deformations and settling of walls and foundations. The part of the wall in the plinth, treated with lime, facilitates the evaporation of capillary rise from the ground through the foundations. The molded cornice protects the façade from roof runoff. On an old rubble wall, which is therefore moisture-laden, air lime or natural hydraulic lime should be used to avoid cracking, efflorescence, mold...

Renders have excellent durability over time. They dry in the air and therefore take quite a long time to carbonate. Composed of binding agents (air lime*), river sand, and clay quarry sand (or rabbit sand) and water, they give facades a coloration in the mass, characteristic of the local features for better integration into the landscapes. Their flexibility allows the walls to facilitate hygrometric exchanges and provides good protection against humidity.

In rural or urban architecture, if the wall of a dwelling is not made of well-fitted stone, it is treated with render, a sign of careful, quality construction for a building of noble use (the dwelling). This is why it is encountered less frequently on secondary rural constructions, such as barns and stables, where exposed rubble masonry is the norm, as it is more economical and corresponds to a hierarchy in the value attributed to rural buildings.

- Facade renders can present different finishing aspects:
- **The troweled render:** the render is applied to the surface with a trowel, resulting in a smooth surface;
- **The scraped render:** here too, the render is applied using a trowel, then scratched with a scratcher;
- **The ribbed render:** after application with a trowel, aggregate is added to the render, which is revealed by the trowel;
- **The smoothed render:** as its name indicates, it is tightened with a smoother for a very smooth result;
- **The sprayed render:** after being mechanically sprayed, the render is left raw.

* air-drying: which dries only in the air, unlike hydraulic which hardens in water.

TECHNIQUE

MORTAR PREPARATION

- The mortar must consist of a mixture of one or more binders, clean sand, pure water, and possibly additives
- Introduce a small amount of water into the concrete mixer to clean it from the previous batch
- Add the sand and binder, then the remaining water
- Block the concrete mixer in the mixing position for 3 to 5 minutes to obtain a homogeneous mortar

SURFACE PREPARATION

- Chisel (pick) the joints or the old coating. On an old coating, it is also possible to apply a bonding resin. bonding. The wall must be clean, sound, and free of dust. Water the substrate to refusal the day before application.
- If the wall is very crumbly, apply a wash to harden the surface of the joints without soaking the wall if it is made of earth, then, place a glass mesh or galvanized wire mesh on the substrate before spraying the coating.

EXECUTION OF THE COATING (see DTU 26.1)

For manual application

- It is carried out according to the traditional method in 3 layers.
- The Gobetis or 1st layer: thickness of 1 to 5 mm. Its main function is to anchor the coating to the substrate. The applied mortar is highly dosed with binder. After spraying, level the wall with a straightedge but do not float. The surface of the gobetis must be rough to facilitate the adhesion of the 2nd layer.
- The body of the coating or 2nd layer: thickness of 15 to 20 mm (scratch coat included). It ensures the waterproofing of the wall and its flatness. It is applied after a waiting period of at least 48 hours (7 days in cool and humid weather). The body of the coating is applied on a scratch coat that was moistened the day before application. It is less strongly dosed with binder than the scratch coat. After projection, the wall is leveled but should not be troweled to keep the surface of the body of the coating rough and improve the adhesion of the final layer. The finishing layer: thickness of 5 to 8 mm. It decorates while also contributing to the protection of the wall and the two previous layers. It is applied after a waiting period of 4 to 7 days minimum (15 days for a pure lime coating), on a substrate that has been moistened the day before. The binder dosage is less rich than that of the other layers. After projection, level the wall with a straightedge, then work the fresh or drying mortar to achieve the desired finish. The finishing layer of the coating must be regularly maintained, particularly through the application of washes for mechanical

application.

- It is carried out in only 2 layers using a bucket or a spraying machine. 1st layer: thickness of 12 to 15 mm. It ensures the adhesion of the coating to the substrate and the waterproofing of the wall.

It is set but not troweled. It must remain rough to allow for the adhesion of the 2nd layer. This first layer is heavily dosed with binder.

- 2nd layer: thickness between 20 and 25 mm (1st and 2nd layers combined). It decorates the wall while protecting it from external aggressions. It is less heavily dosed with binder than the 1st layer. It is set and then smoothed with a trowel. Smoothing with a trowel is prohibited to avoid the rise of laitance, but all other finishes are permitted.

LIME
SOCLI

LIME
PLANER

RENOCHAUX

CHAULYS
GRAY-BEIGE

CHAULYS
WHITE

CENT%
UNDERCOAT

CENT%
FINISH S OR M

COATINGS

THIN INTERNALS

TECHNICAL NOTEBOOK



PRESENTATION

Natural hydraulic lime promotes hygrometric exchanges within the walls and limits moisture rising. It is highly recommended to ensure better habitability inside homes. MONOLYS is perfectly suited for indoor use.

TECHNIQUE

MORTAR PREPARATION

- Introduce water into the concrete mixer, then the lime
- Introduce the mortar, then the rest of the water
- Lock the concrete mixer in the mixing position, for 5 to 7 minutes to obtain a homogeneous mortar

SURFACE PREPARATION

- The supports must have been completed for at least one month
- Dust, wash, and sanitize the supports
- Optionally fill the wall holes with mortar of lime, ALI FLASH or bastard mortar
- On the grooves, apply the PRIMER SAN TOMMASO and mesh the support, as well as on the roller shutter boxes and all connections between two materials of different porosity
- Moisten the support without excess
- For plaster grooves and bricks bonded with plaster: apply a layer of PRIMER SAN TOMMASO 24 hours before the mortar application
- Connections between two materials, openings, grooves: install a reinforced or non-reinforced joint tape

IMPLEMENTATION

Machine greasing

- For mechanical application with the machine, grease the pipes with the prepared product like a slurry

Mechanical application MONOLYS

- Spray MONOLYS in two successive passes of a total thickness of 10 to 15 mm
- At the junction between the masonry and a plasterboard ceiling embed a fine polyester mesh for bridging cracks with MONOLYS using a trowel

Manual application MONOLYS

- At the junction between the masonry and a plasterboard ceiling of plaster, embed a fine polyester mesh for bridging cracks in MONOLYS using a trowel

- Apply MONOLYS with the trowel or Swiss float

Adjustment and leveling

- Level with the rule and go over to fill in the gaps immediately then go over the rule
- Level and smooth with the putty knife or the float Swiss

Creating angles

- The internal angle will be made with the corner trowel or the guillaume

Coverage time

- Minimum of 3 days

TECHNICAL NOTEBOOK

LIME & HEMP



PRESENTATION

Completely natural, hemp is grown without treatment (neither fertilizers nor pesticides). Not very difficult, this annual plant grows quickly in all soils and is resistant to pests.

The stem of the hemp decomposes into two parts:

- the fiber, forming the bark of the plant, used for wools, fabrics, and ropes
- the wood or hemp shiv, used in bulk or in concrete.

The hemp shiv used in construction corresponds to the inner part of the stem, separated from the fiber by decortication. It is used in the production of tiles, formwork walls, half-timbered walls, insulating and decorative coatings, and for the insulation of roofs. The fiber of the plant, the outer part of the stem, is also used in insulation.

The hemp shiv consists of numerous channels containing air when the stem is dry, which strongly regulates the humidity of the ambient air inside a dwelling. Hemp concrete and mortars are composed of hemp aggregates mixed with binders made of natural lime. The choice of binder is crucial to ensure the cohesion of the material, with hemp shiv having the particularity of absorbing 5 times its weight in water during mixing.

The lime/hemp material creates a 'buffer zone' capable of largely countering the disruptive effects of electromagnetic fields and other vibrational pollution, as well as natural disturbances from the subsoil. In addition to being a good sound insulator, it has qualities of natural thermal regulation, is breathable, and regulates the level of humidity.

Plants have always been used in construction, except for hemp. Before the industrialization of decortication, the stalk underwent a retting phase which involved allowing the hemp shiv to decompose in streams to facilitate the separation of the fiber from the stalk. Thus, this part of the plant was only usable in the form of compost. The fiber was too valuable to be used in construction.

These mixtures are used in new construction to achieve:

- tiles, walls, and roofs in the form of **lightweight concrete**, non-load-bearing and structural, as infill for frameworks.

In old construction, they are used:

- in **interior coatings on existing walls**, they provide remarkable comfort.
- in **floor leveling**, they allow for leveling (screeding) and can contribute to thermal, acoustic, or sound insulation, and in **lightweight concrete under roofs** for winter and summer comfort.





CONCRETE LIME-HEMP

TECHNICAL NOTE



PRESENTATION

The slab is a floor covering that levels the ground and provides mechanical resistance. It will receive a screed if necessary. Lime and hemp mixtures in floor concrete also ensure insulation; which is interesting for both restoration and new construction.

TECHNIQUE

MORTAR MANUFACTURE

Concrete mixer

- Introduce water into the concrete mixer, then the lime
- Mix until homogeneous and finally add the hemp into the concrete mixer
- Mix for 3 to 5 minutes until a mixture is obtained that is perfectly homogeneous and free of lumps or clumps
- When the concrete is ready, remove it immediately from the mixer

Vertical axis mixer

- Introduce the decoupled hemp and lime, then mix
- Pour in the water and mix until the desired consistency is achieved final, 3 to 5 minutes

SUPPORT PREPARATION

On ground fill

- To prevent capillary rise, create a drainage peripheral
- Create a rat slab (20/40) with a minimum thickness of 15 at 20 cm. If the soil is too clayey, loose, or saturated with moisture, perform a treatment with pure lime beforehand, which will act as a natural geotextile.
- Never place a waterproof film on or under the rat slab.
- Unroll the technical ducts.
- Make a reservation against the walls with a batten. or a ½ cm board, to promote ventilation after laying the hemp-lime screed.

- Create a slurry 3 cm thick to cover the heating pipes if necessary

On the upper floor

- The wooden floor (or possibly concrete) will be cleaned and dust-free
- Pour the hemp directly onto the floor and clean the joists in the concrete
- Hemp concretes are not compatible with floating floors, unless the complete evacuation of moisture contained in the concrete is awaited

EXECUTION OF THE SLAB

- The hemp screed will be placed in layers successively on the concrete
- Its total thickness will be about 15 cm in ground fill, and 3 to 8 cm in floor slab (including joists)
- Spread with a flat rake and tamp the surface (do not compact)
- Ventilate but do not heat
- Wait a few hours before walking on the screed, and about 1 month before applying the finish
- Do not apply floating parquet if the screed has not removed all its moisture
- Never apply glazed ceramic tiles, which would block the support's breathing



CALYX

LIME
SOCK

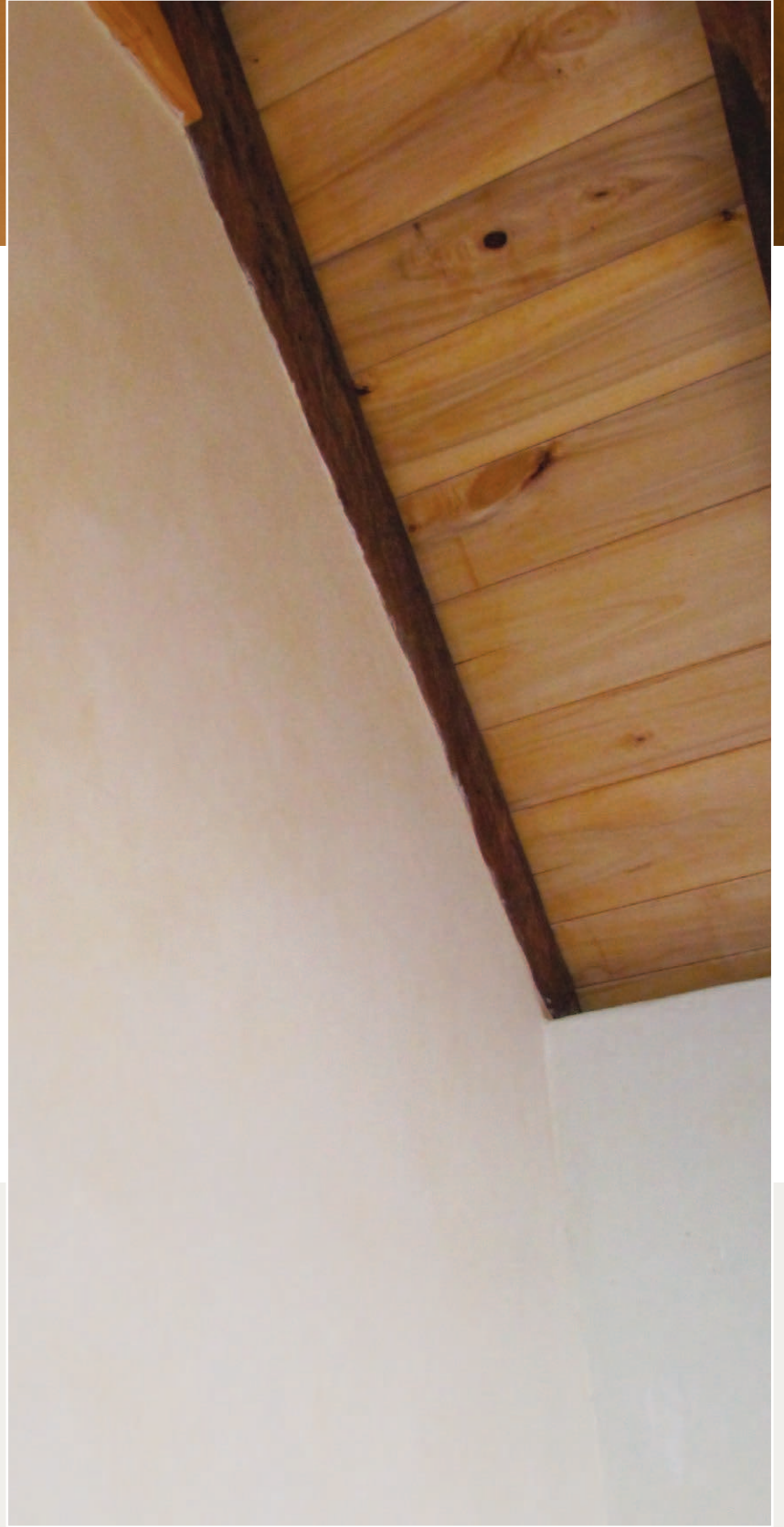
LIME
PLANER



TECHNICAL NOTE

INSULATION

LIME-HEMP ROOFING



PRESENTATION

The use of a hemp and lime mortar in roofing effectively addresses many insulation issues, particularly in summer during high heat. This natural solution is equivalent to or even superior to insulation using synthetic materials.

TECHNIQUE

INSULATOR MANUFACTURING

Concrete mixer

- Introduce water into the concrete mixer, then the lime
- Mix until homogeneous and finally add the hemp into the concrete mixer
- Mix for 3 to 5 minutes until a homogeneous mixture is obtained perfectly homogeneous and without lumps or clumps
- When the insulation is ready, remove it immediately from the mixer

Vertical axis mixer

- Introduce the decoupled hemp and lime, then mix
- Pour in the water and mix until the desired consistency is achieved final, 3 to 5 minutes

SUBSTRATE PREPARATION

- If the interior cladding is sensitive to moisture, provide a reduced water dosage, and possibly install a moisture barrier to prevent the formation of marks or stains.

APPLICATION

- Apply the hemp-lime mortar between the joists on the lower part, whether protected from moisture or not.
- Remember to apply a thickness of 1 to 2 cm greater than the final thickness (maximum of 15 to 25 cm), then compact to correct the thickness.
- Always maintain a space between the mortar and the rafters to allow for proper ventilation.
- Immediately install the roofing to protect the mortar from rain and wind.



CALYX

RENOCHAUX

TECHNICAL NOTE

Lime- Hemp Plasters



PRESENTATION

This is a work of homogenization, covering a facade or an interior wall. Lime-hemp plasters must, however, be covered with a lime render on the exterior to ensure their durability. Both indoors and outdoors, they contribute to the insulation of buildings.

TECHNIQUE

PREPARATION OF THE PLASTER

Concrete mixer

- Introduce water into the concrete mixer, then the lime
- Mix until homogeneous
- Pour the hemp into the concrete mixer
- Mix for 3 to 5 minutes until obtaining a mixture that is perfectly homogeneous and free of lumps or clumps
- When the mix is ready, remove it immediately from the mixer

Vertical axis mixer

- Introduce the loosened hemp and lime
- Mix
- Pour in the water and mix until the desired consistency is achieved final, 3 to 5 minutes

PREPARATION OF THE SUPPORT

- The support must be sound, clean, and breathable
- Do not work on a closed support that would encourage the development of fungi
- Create a scratch coat of LIME SOCLI or LIME RABOT before applying the hemp plaster (1 bag of lime + 60 l of sand + 20 l of water approximately)
- If the wall already has a coating, check the adhesion and the pull-off strength.
If necessary, roughen the substrate before applying the hemp and lime plaster.

APPLICATION

- Apply on a dry substrate with a trowel or by hand. in 2 layers (final thickness between approximately 2 and 5 cm)
- Wait for the mortar to begin setting before applying the next layer (approximately 1 hour)
- When the plaster starts to harden, apply a light pressure with the trowel, compact, then trowel or smooth
- Indoors, leave as is or apply a wash or a patina.
- Outdoors, a finish must be applied. lime
- Wait a minimum of 28 days before covering the plaster. lime-hemp with a lime wash or CENTRI STORICI or a lime plaster (1 bag of RÉNOCHAUX + 100 l of sand + approximately 20 l of water). Note that the moisture content of the hemp mortar must be less than 20% before any covering.



RÉNOCHAUX

RÉNOBLANCHE

LIME
SOCLI

LIME
PLANER

CALIX

RÉNOCAL

MONOLYS

TIMBER FRAME & FORMWORK

TECHNICAL NOTEBOOK



PRESENTATION

Formwork consists of creating a vertical wall by framing a mix of binder and aggregate. This technique is well-suited for filling the wooden frames of buildings. It can also be used for external wall insulation.

The lime-hemp formwork solution not only provides an interesting response in terms of insulation but also offers safety since the materials are healthy and natural. They contribute to the comfort of homes.

TECHNIQUE

MORTAR PREPARATION

Concrete mixer

- Introduce water into the concrete mixer, then the lime
- Mix until homogeneous and finally pour in the hemp into the concrete mixer
- Mix for 3 to 5 minutes until a perfectly homogeneous mixture without lumps or clumps is obtained. When the concrete is ready, remove it immediately from the vertical axis mixer.

- Introduce the loosened hemp and lime, then mix.
- Pour in the water and mix until the desired consistency is achieved final, 3 to 5 minutes

PREPARATION OF THE SUPPORT

In framing.

- Plan to place a batten or lath nailed at the center of the framing. The ideal gap between the wooden pieces is 60 cm. Beyond that, plan to slide a rafter in the center.
- Place a full formwork on one side, and a formwork of 60 cm to 1 m on the side where the filling will take place.
- Leave enough space between the framework and the formworks themselves (use a nail). The minimum width of the formwork will be 23 cm.
- Remember to leave a reservation of 15 to 20 mm at the exterior for the application of finishing plasters
- Minimum coating thicknesses for wooden elements must be adhered to according to the information in the table below:

Wood thickness	Overlap
4 cm	7 cm
5 cm	7.5 cm
6 cm	8 cm
7 cm	8.5 cm
8 cm	9 cm
10 cm	10 cm

In cast-in-place walls

- Install various wooden elements, which will be embedded in the formwork concrete
- Insert the technical conduits into the formwork before the placement of the hemp-lime concrete
- Install a complete formwork on one side and a formwork of 60 cm to 1 m on the side where the filling will take place. Leave enough space between the framework and the formworks themselves (use a point). The minimum width of the formwork will be 12 cm
- Remember to leave a gap of 15 to 20 mm, if the mortar needs to be covered with a coating after stripping

APPLICATION

- The hemp and lime mortar will be applied in successive layers of 15 to 20 cm
- Regularly compact the mortar using a comb (do not forget to properly compact the edges of the formwork and battens)
- When the first formwork is filled, secure the second formwork height, and continue filling
- The hard-to-reach areas or those located under the ceiling, will be filled manually. Only one formwork will be placed on the opposite side
- Strip one side the day after filling, and completely strip 3 or 4 days after application
- Wait about 2 months in summer and 3 in winter before applying the finish

LIME
SOCLI

LIME
PLANER

CALIX

RÉNOCAL

PAIN'T & LIME MILK

TECHNICAL NOTEBOOK



PRESENTATION

Making lime milk is a very old method that allows you to purify a room, decorate it ecologically, or hide the imperfections of a wall. While it is well-suited for renovation, it can also be used in new constructions. Lime milk is simply another way to refer to a lime wash. To speak of lime paint, the paint must consist, before dissolving in water, of 80% lime, pigments, and possibly very small amounts of products that allow for better adhesion, better fixation of pigments, and better carbonation... what is referred to as additives. The amount of water added depends on the desired result (transparent, semi-transparent, or opaque).

Depending on the proportion of water to lime, we will refer to:

- **Lime wash:** traditional paint used for the protection of lime milk coatings,
- **Patina:** this mix helps to uniform a coating and gives it an aged appearance over time. It is most often applied over a wash or a strong water solution.
- **Strong water solution:** it is a very diluted lime milk, the most fluid mixture. It is often applied over the wash or lime wash and allows for the creation of transparency effects and vibrant finishes. It allows for variation in the appearance of the undercoat.

Lime paint has several advantages:

- **Vapor-permeable,** it allows the walls to breathe well. Moreover, it promotes hygrometric exchanges and the evacuation of humidity. It prevents rising damp.
- **Waterproof,** it allows air to pass through, but not water. In other words, it prevents moisture from penetrating the walls.
- **Sound and thermal insulating,** it optimizes its performance by adding hemp and flax to the paint.
- **Healthy product,** it contains no volatile organic compounds, thus preventing the proliferation of mold.
- **Flexible, resistant, and elastic,** it can be applied to various substrates and easily adapts to changes in the structure.
- **Ultra-decorative,** it offers an immense choice of decoration for both façades and interior walls. When mixed with natural pigments, the range of colors is immense.

TECHNIQUE

PREPARATION OF LIME MILKS AND PAINTS

The coloring of lime milk or paint involves the use of mineral-based pigments.

The use of VELATURA, PITTURA VIVA, or CENTRI STORICI helps avoid the delicate mixing on site.

- Coloring is done after a meticulous weighing of the components or using the dosage grid for effervescent pigments SOCLI.
- The mix is made manually in a large container, or with a drill mixer. It is useful to have a whisk on hand to regularly mix the patina during application to avoid sedimentation of the pigments.

Before any application, it is important to conduct a test on a small area to control the coloration, as lime milks take on their color as they dry.

To quickly know the shade of the paint once dry, apply a small amount of lime milk without additives to the surface, then dry it with a hairdryer.

The future shade then appears, and it is possible to readjust the pigment dosages.

Depending on the desired finishes, a more or less significant addition of water is necessary. To prevent them from powdering and to ensure that lime milks and paints adhere properly to the surfaces, it is imperative to add additives such as ALUM SALT or latex resins to the composition.

- ALUM SALT (approximately 10% of the weight of the lime)
 - SOCLILATEX (from 1 to 3% of the weight of the lime)
- If you do not wish to prepare the paints yourself, you can refer to ready-to-use paints while adhering to the application guidelines.

PREPARATION OF THE SUPPORT FOR PAINTS AND LIME MILKS

- Moisten the support before any application, using a spray (indoors) or a jet (outdoors)

EXECUTION OF PAINTS AND LIME MILKS n Apply the 1st coat on a prepared, smooth, white, and dust-free surface, using a brush or roller (VELATURA can also be applied with a sponge) n Wait for the first coat to set (4 to 8 hours) before applying the second coat n Repeat the operation if you have a 3rd coat to apply (in the case of a product formulated on-site) n Do not heat the room to speed up the setting, to avoid the risk of powdering n Apply using cross movements

STUCO TO THE LIMES

TECHNICAL NOTEBOOK



PRESENTATION

Stucco (also called stucco or marmorino) is a very beautiful fine coating (also called film-like) in two or three (or more) layers (minimum of 3 layers of 1 to 2 mm thickness) based on air lime and marble powder. It allows for a transparency of shades over the different layers that blend together, resulting in moiré effects. They can be obtained with plaster, but the most beautiful stuccos are made with air lime.

Stucco was used in Roman times to imitate marble. It was first applied to moldings before being implemented on walls, often serving as a base for the creation of frescoes. This technique is once again widely used today in interior decoration, where it allows for the creation of very varied designs. Intensity of the finish, subtlety of the shading, variation of the iridescence... The decor is unique each time! The stucco can be smooth, transparent, veined, graffiti-like...

Lime provides a velvety finish to colors that will patina over time... The coloration is achieved using natural or artificial pigments (earths or metallic oxides that are miscible with each other) whose weight must not exceed 3% of the weight of the lime. With natural earths, the shades will be pastel, soft, and warm; with oxides, the final color will be more intense and vibrant.

To create it, each craftsman has their own know-how, their 'technique,' and their secrets for making the mix, which can be based on lime, plaster, or both... Before it becomes a matter of implementation and technical knowledge, stucco is primarily an artistic endeavor. Its consistent texture even allows it to be shaped to create relief patterns.

TECHNIQUE

Lime Plaster Preparation

The stucco must necessarily consist of air lime, a more or less significant addition of water, necessary to give the mix a "white cheese" consistency, one or more mineral aggregates, mandatory for the preparation of the mortar but also additives.

If you do not wish to prepare the stucco yourself, you can use the SOCLI stucco, ready to use, from the decoration range: LUSTRO STUCCO.

In the case of a mix made on site, the most commonly used implementation is as follows:

- Mix the air lime with very fine sand (0-0.5 mm) used for the first two layers, and with powdered marble, sometimes combined with talc for the finishing layer (for a glossy effect)
- Add mineral-based pigments to the mix
- Finally, to prevent the lime from powdering or flaking and to ensure it adheres properly to the substrate, it is imperative to add to the mix, additives such as Sodium Lauryl Sulfate, Methylcellulose, or Casein, knowing that these products can be replaced by Prédose Déco
- The mixing is done after a careful weighing of these components. It is carried out manually in a large container, or with a drill mixer, a festo
- Remember to wipe the edges of the container well to prevent dried product flakes from falling into the mix
- Let the paste rest for about an hour and mix again with the festo
- Before any application, it is important to conduct a test on a small area to control the coloration, because stuccos, like plasters or lime paints, take their color as they dry.

The future shade appears when the setting is complete. It is then possible to readjust the pigment dosages.

PREPARATION OF THE SUPPORT FOR STUCCOS

The support must be perfectly smooth, clean, and free of any imperfections or traces of other products (wallpaper glue, artificial paint...) It is advisable to apply a primer coat (acrylic or vinyl) on the plasterboard and a coat of PRIMER SAN TOMMASO on non-porous supports before proceeding with the application of the stucco. All supports must be thoroughly moistened before the application of the stucco, using a spray.

EXECUTION OF THE PLASTER

Application of a formulated plaster on site

- Apply to the wall using a trowel for the 1st coat and a small float or spatula for the subsequent coats
- Successive movements are made with the tool to achieve a perfectly smooth surface

Ready-to-use plaster

- Spread a layer of LUSTRO STUCCO evenly, with the float. Eventually, sand with abrasive paper, so that the surface is perfectly smooth. Apply the 2nd coat of stucco with a trowel or a putty knife, being careful to create a surface as smooth as glass

MONOLYS

CAEB

TADELLEAKT

PRESENTATION

Tadelakt creates a soft and chic atmosphere, less raw than polished concrete; it brings warmth, well-being, and color to a room, all with a lot of elegance and style. The word tadelakt comes from Arabic, specifically from the verb 'dalaka' which means 'to massage, rub, polish.' Tadelakt is a very common plastering technique in Morocco.

Valued for its waterproofing, tadelakt was originally used to protect the walls of hammams from humidity. It was also present in riads or pools, as well as for the making of Moroccan pottery and jars. Tadelakt is made from a natural hydraulic lime tinted with natural pigments and polished with pebbles to give it a smooth and shiny appearance.

Today, tadelakt has become popular and is generally composed of a mix of lime and marble powder, polished with a trowel. Interior decorators love to use it for its traditional and warm spirit, its many possible colors, and its integration into all styles of decoration: modern or rustic, in an apartment or a house.

Its advantages

This material is intended to be aesthetic and healthy (it is indeed, like concrete, an antibacterial, particularly due to the fungicidal and bactericidal properties of lime). It is a completely ecological coating. Another advantage:

Tadelakt **supports a very high humidity level**, which is why it is used in hammams, perfect for preventing latent humidity in a bathroom.

It also promotes hygrometry by allowing the walls to breathe.

Tadelakt also offers a **wide range of shades** to satisfy all your decorative desires and allows for different finishes depending on the desired appearance:

- black soap provides a very shiny appearance, makes the walls waterproof (perfect for wet areas), and reflects light;
- Carnauba wax gives a discreet satin finish, while silver shine wax adds a metallic veil.

The Savonite mixture (a blend of olive or linseed oil and Carnauba wax) provides shine and enhanced protection.

It is also important to mention the durability of tadelakt. Indeed, it has an **exceptional lifespan** and will not change for decades if well maintained.

TECHNIQUE

PREPARATION OF TADELAKT

Given the complexity of implementation from a mix on-site, it is advisable to use a ready-to-use product, guaranteed to be lime-based.

- Mix, using a paint mixer or drill, the TADELAKT powder and water for about 5 minutes.
- The consistency obtained should be firm and pasty.

PREPARATION OF THE SUPPORT FOR TADELAKT

- Acceptable supports: lime plasters, lime + cement and/or cement. For any other support, apply beforehand the PRIMER SAN TOMMASO
- On perfectly flat supports, a simple scratch coat may suffice
- In all other cases, create a base coat with 0/4 mm sand
- Leave the surface of the plaster rough to facilitate the adhesion of the tadelakt
- Always wet the support to refusal the day before application

EXECUTION OF THE TADELAKT

- For application, use the following tools: masonry trowel, plasterer's trowel (for the back of pipes), cat's tongue (for curved surfaces), wood trowel (for large surfaces)
- Apply 2 coats of 4 to 5 mm each
- Between each application, apply slight pressure on the surface of the tadelakt and check that it leaves no marks on the finger before applying the next layer
- Prepare the substrate using a plastering trowel or a wood trowel. Remove excess with the Italian trowel and/or the plastic. Do not try to completely flatten the tadelakt, as its curves and undulations are part of its charm
- Smooth with the trowel before the setting begins to crush the grains, until the substrate is completely closed
- Optionally remove any cracks that may start to appear
- In case of a hole, fill in the gaps using a paint knife and smooth

COMPLETION OF THE FINISH

Traditional finish

For the finish, use the following tools: Italian trowel, mini-screed (except for curves), plastic (for curved surfaces), granite or marble pebble or the back of a tablespoon (for compressing the plaster and penetrating the soap). Latex gloves are used for rounded areas worked by hand, and other tools can also be made on-site as needed.

Savonite and tadelakt

Black soap is traditionally used pure for finishing tadelakts. Savonite is also an excellent protection for tadelakt, which we recommend using. It promotes the tightening with the pebble, compared to pure black soap.

Bring to a boil and add 5 grams of carnauba wax. Let cool before application.

Once assured that the surface is perfectly smooth and leaves no trace when touched, apply the savonite with a brush. Let absorb, then compress with a pebble, a tablespoon, or using a trowel.

Reapply savonite as long as the surface absorbs and smooth it out.

For a surface that will receive water, repeat the savonite operation and compression of the coating the next day.

Wait at least 1 month after the completion of work before spraying water on the tadelakt.



GLOSS- ARY





Boucharde: hand tool for hammering stone with a square head studded with steel pyramid-shaped teeth.

Boutisse: element of construction whose largest dimension is placed within the thickness of a wall and which presents one of its ends as a facing.

Calcin : hard protective layer of the facing.

Calepin(age): action of creating a working drawing of the arrangement of stones, tiles, decorative coverings, polychrome coatings, and joints of a façade for aesthetic or technical reasons.

Chamfer: bevel cut on a piece of wood or stone.

Chassis: metal structure fixed on a covering made of a frame with or without an opening part.

Sliding block: a small movable sliding piece that allows the assembly of two structural elements, thereby providing a certain flexibility of movement.

Coyau: a piece of wood added at the foot of a rafter that changes the slope at the lower part of the roof and directs rainwater away from the wall; it also gives a more graceful appearance to the roofing.

Mortar joint: a lime mortar joint that secures and seals the ridge tiles.

Notched beam (notched joist): a joist engaged in a notch at the upper part of a beam.

Engraved (engraved strip or engraving): embedding the edge of a strip or a waterproofing flap into a groove made in a vertical wall.

Struts: in a framework, a horizontal piece of a truss in which the feet of the rafters are assembled to oppose their spreading.

Joists: work located between two joists.

Scarf joint: joining of two pieces of wood.

Bevel: to chamfer the four edges of a slate.

Espagnolette: window locking system used in the 18th century.

Furring: bisection of wood, added in the angle of a valley.

Goujon: wood piece used to join two pieces of framework or construction.

Gouttereau: name given to the wall located under the eaves of the roof that receives the gutters.

Lambourdes: wood piece fixed along a wall on which the ends of the floor joists rest.

Lattis : set of small parallel wooden slats.

Loqueteau : hardware piece used to lock frames.

Lucarnes: structure built on a roof that allows light into the attic through a window placed in a vertical plane.

Moëllon: uncut or roughly cut stone of small dimensions.

Noeu: recessed line inclined at the lateral intersection of two roof slopes.

Hinge: hardware for a shutter, door, or gate, consisting of a pin anchored in the vertical frame of an opening and a metal plate fixed in place by bolting or screwing onto the movable element. Horizontal metal piece fixed on shutters and doors to ensure their support and pivoting.

Post: in carpentry, a short small post.

Eaves: intersection of a vertical slope and a sloped roof.

Sole : horizontal part of the hearth of a fireplace or oven.

Flashing: a covering element made of mortar ensuring waterproofing at the junction of a slope and a vertical wall.

Latch: small flat lock, mounted on a plate, operated by a button closing a door or a window, a frame, or a cupboard.

Mansard roof: attic whose slopes have two pitches; the lower part, which is steeper, is called brisis, and the upper part is the terrasson. This arrangement frees up space and makes the attic more livable.

Cob: a mixture of clayey soil, hay, fibrous material, or animal matter.

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