



PROMPT VICAT 
NATURAL CEMENT

HERITAGE RESTORATION

A LITTLE HISTORY

THE ORIGINS OF NATURAL CEMENT

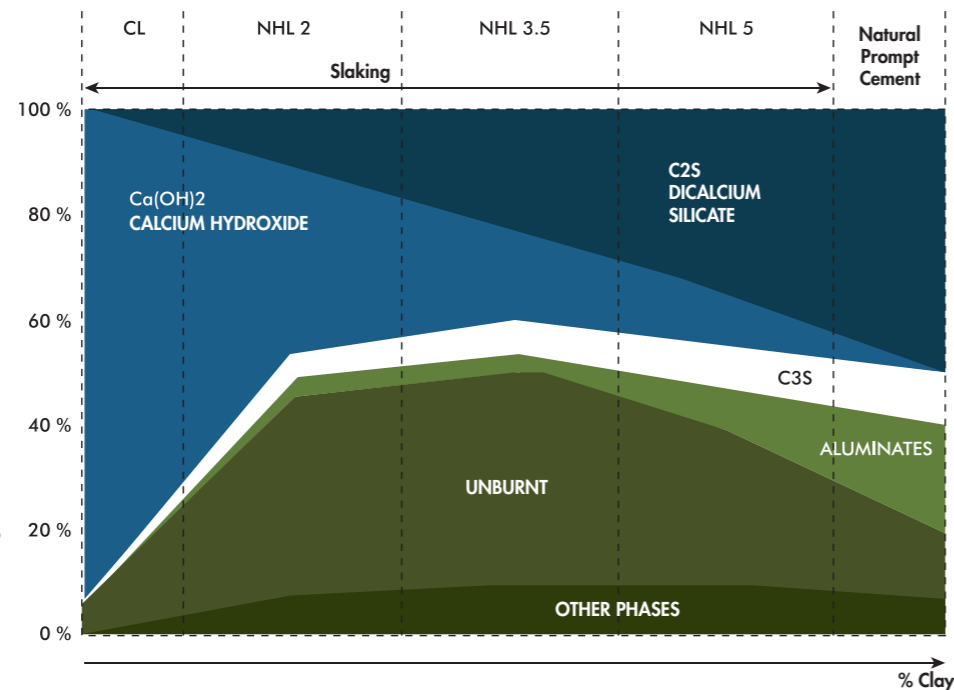
Lime and cement; more than two centuries of development and production.

A far-reaching technological breakthrough in the field of construction and used in particular for decorative finishes on facades, natural cements - also called "Roman cements" - were invented in the early 19th century.

These quick setting hydraulic binders were made using an argillaceous limestone with a higher clay content than that used for lime products.

It was in England that the first empirical advances were made. In 1796, lime manufacturer James Parker patented the firing of nodules of marl (septaria) found on the Isle of Sheppey. He called this very quick setting hydraulic lime product "Roman cement". A scientific investigation into this discoveries eventually began in 1817.

Louis Vicat developed the theory of hydraulicity and introduced the concept of the "hydraulic index" specifying the ratio of clay to lime, and enabling him to classify lime products and natural cements. Easily manufactured using the traditional process of burning in lime kilns, natural cements were widely produced throughout Europe up until the early 20th century.



Natural cement production sites in the 19th century

Technical and aesthetic use

Highly valued in architecture but also for ornamental use; natural cements combined both technical and aesthetic qualities. Rapid hardening and compatibility made these natural cements excellent additions to lime mortars, not to mention another major asset: an improved durability.

They are most often used as:

- An economic and durable solution for decorative finishes on facades and in particular for creating mouldings in the "stucco" style.
- Decorative artificial stone for perfectly imitating the colours and texture of dressed natural stone.

Facade – Grenoble, France
Mouldings and faux stones



A LITTLE TECHNIQUE

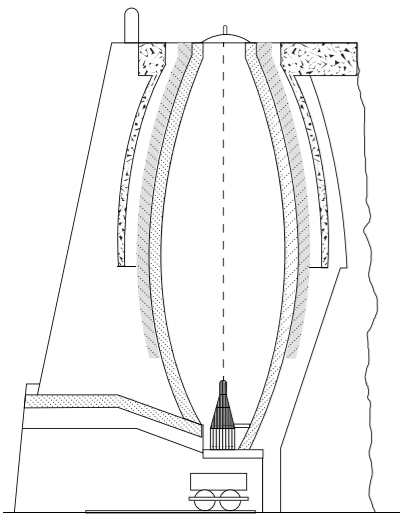
PROMPT NATURAL CEMENT, ONE OF A KIND

Exclusive production
from a remarkable quarry.

Prompt Natural Cement is produced and marketed exclusively by the Vicat Group. It is the only remaining natural cement manufactured on an industrial scale today. For over 170 years, Vicat has exploited a remarkable deposit. The Prompt Natural Cement quarry is situated in the Chartreuse Mountains.

The source is a single geological layer of argillaceous limestone with regular and specific chemical and mineral composition suitable for producing natural cement. The burning process has remained unchanged since the 19th century. The stones are burnt in vertical kilns traditionally used for lime. Burning is at low temperature and across a wide thermal range (between 500°C and 1200°C).

After removal from the kiln the pieces of stone are called "grumes" (lumps). Depending on the level of burning, they can be classified into three categories, unburnt, well burnt and over-burnt. A good natural cement is primarily characterized by a mix of these different "grumes" in the appropriate proportions. Unlike hydraulic lime, the stone contains very little free lime and is not slaked after burning. This special characteristic is why it is termed natural cement as opposed to natural hydraulic lime. Once burnt, the lumps are then finely ground in a rotary ball mill until reaching a level of fineness similar to that of hydraulic lime. Nothing is added to Prompt Natural Cement during the production process.



Vertical kiln
for burning Prompt stone



Prompt stone
before burning



Prompt stone
after burning

La Pérelle cement plant –
Chartreuse Mountains, France
Created in 1875 by Joseph Vicat



UNIQUE CHARACTER

EXCEPTIONAL PROPERTIES

Prompt Natural Cement; a durable and aesthetic material.

Aesthetic

Its ochre colour and fine texture make natural cement the ideal binder for facade decoration and restoration. Its light colour enables a wide palette of shades depending on the choice of sand.

Natural

The absence of additives and low firing temperature make it possible to obtain a pure hydraulic binder ideally suited to heritage projects and restoration of old buildings.

Compatibility with lime products and old substrates

Adding Prompt Natural Cement, usually in a smaller amount than the lime content, gives lime mortars excellent short term mechanical strength. Its low shrinkage, permeability and low modulus of elasticity make Prompt Natural Cement suitable for restoration projects and for mixing with lime.

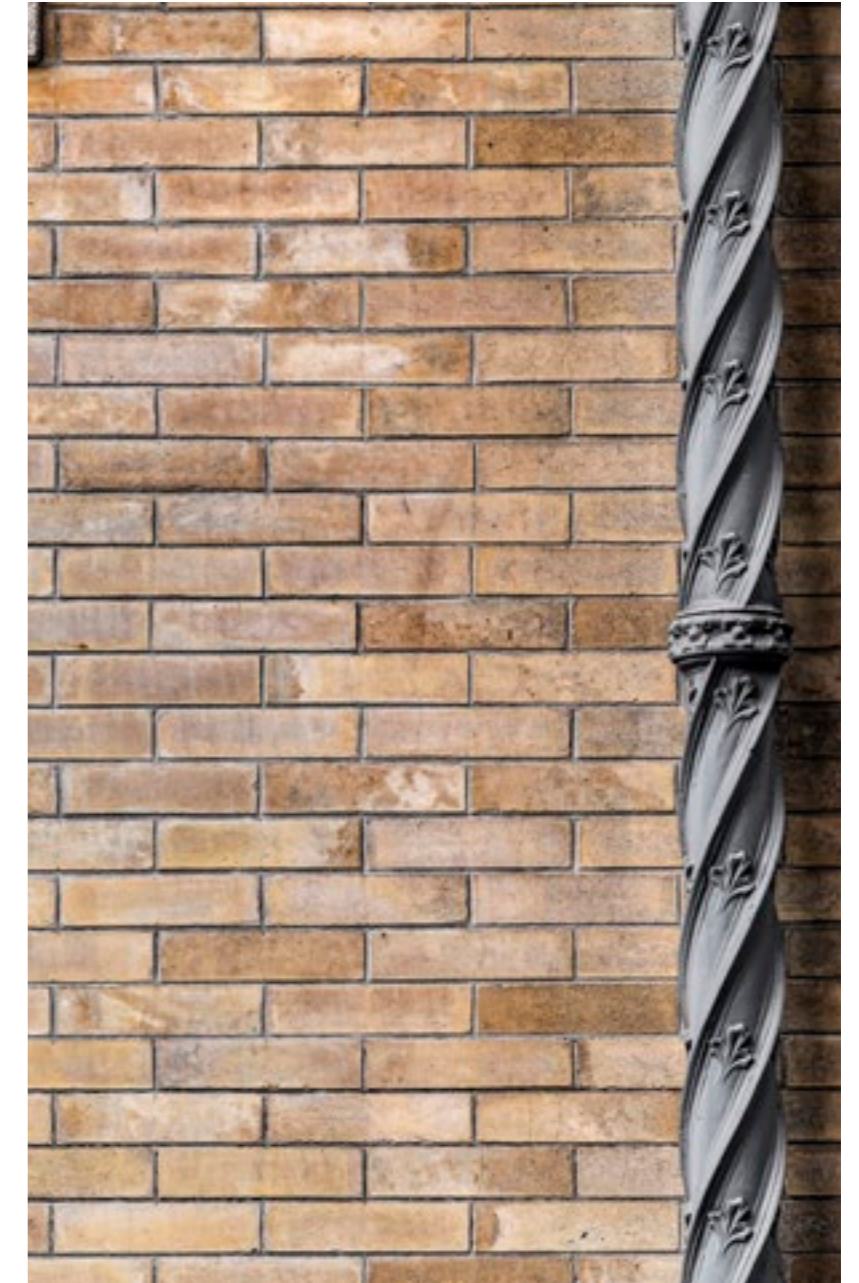
Durability

The strength of Prompt Natural Cement lies in its original mineralogical source which gives it durability properties such as increased strength over time, resistance to corrosive water and seawater, and waterproofing.

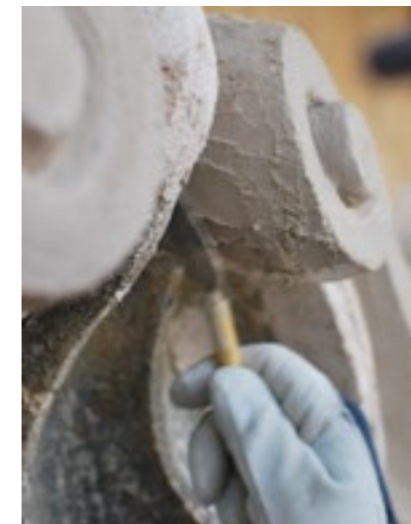
	Dosage of sand in kg/m ³			Permeability at 3 months (g/m ² .h.mmHg)	
	Total binder	PNC	NHL 3.5	PNC-NHL mortar 3.5	NHL control sample 3.5 Total binder dosage
Lean mortar	280	70	210	0.92	0.76
Standard mortar	340	100	240	0.78	0.73
Rich mortar	360	200	160	0.60	0.57

**The higher the permeability value, the better the water vapour transfer.*

↓
Facade –
Grenoble, France
Facade finished with
bricks imitation



↗
Invalidovna –
Prague, Czech Republic
Sculptural embellishment applied
wet-on-wet



PRESERVING OUR HERITAGE

NATURAL CEMENT IN THE SPOTLIGHT

Sculpted or moulded, natural cement remains the preferred material of architects.

From its emergence in the 19th century, architects were quick to adopt natural or Roman cements for decorative finishes on facades.

Although already in use with gypsum plaster, prefabricated mouldings, or creating mouldings using in-situ developed further with natural cement, the perfect

↘
Facade –
Grenoble, France
*Natural cement
mouldings*

material thanks to its durability and suitability for mass production.

Many ornamental mouldings made of natural cement can still be seen today on European facades (France, United Kingdom, Italy, Germany, Austria, Czech Republic, Poland, etc.).

Natural cement also regularly features in landscaped gardens, used in the creation of decorative items such as pottery, decorative borders, balustrades, chapiters, etc.

In the early 20th century, use of artificial stones became popular in cities including Grenoble, Lyon, Saint-Etienne, Marseille, Nice, etc. Admired for the aesthetic qualities of its beautiful ochre colour, this less costly solution was an alternative to natural stone.

Repair of decorative elements, replacement of mouldings... Prompt Natural Cement is ideal for restoring these architectural elements while retaining the same characteristics as the original material.

And still today this unique material is invaluable for preserving our built heritage.



↘
Hadlow Tower,
United Kingdom
*Identical
restoration*



↘
La Casamaures –
Saint-Martin-le-Vinoux, France
Identical restoration

RENOVATION OF HISTORIC BUILDINGS

A VERSATILE MATERIAL

The material's technical properties and compatibility with old structures make it an invaluable product for use in renovation work.

With its unique mineralogy and compatibility with the specific requirements of old buildings; natural cement is comparable to a quick setting hydraulic lime.

From the 19th century, natural cements were mixed with aerial lime or hydraulic lime to improve durability of mortars for decorative or repair use.

↑
Lambertini Palace –
Bologna, Italy
Repair of moulding details
Company: *Léonardo*

Natural cements meet weather constraints and are therefore also used to speed up setting of lime mortars in cold weather.

Prompt Natural Cement, used in the same dosage as lime products, has properties close to those of lime in terms of porosity, water absorption, modulus of elasticity and water vapour permeability, but also minimal shrinkage compared with lime mortars.

Repair and sealing mortars, decorative mortars, jointing of stone and brick, intermediate coats and coatings... Prompt Natural Cement is highly versatile and perfectly suited for use in renovation and preservation of historic buildings.

↓
Lambertini Palace –
Bologna, Italy
Repair of moulding details
Company: *Léonardo*





Angers Cathedral, France
Repair of sculptures
Company: Les Ateliers
du Paysage



Saint Michael's Mount –
Cornwall, United Kingdom
Identical restoration

HISTORIC BUILDINGS ON COASTLINES

A DURABLE MATERIAL FOR SEASIDE LOCATIONS

Prompt Natural Cement has high seawater resistance and boasts exceptional durability in marine environments.

It meets the requirements of standard NF P15-314 “sea-water resisting cements”.

Its original physical and mineralogical properties ensure that mortars and concretes containing Prompt Natural Cement have excellent durability in marine environments.

Proven seawater resistance in addition to waterproofing properties and quick setting and hardening make this material the ideal binder for tidal locations.

Its quick setting properties speed up works and contribute to worker safety in tidal and underwater zones.

Mortars with a high proportion of natural cement have been, and still are, used for waterproofing of basins and fountains.

These technical qualities are complemented by an aesthetic appearance which, when combined with water, creates unique natural effects.

Concreting and injecting lime slurry for reinforcement, repair mortars, decorative and waterproofing mortars and coatings are just a few examples of the diverse applications of Prompt Natural Cement in heritage projects in marine environments today.

Château d'If –
Marseille, France
Stone paving
Chief Architect for Historic
Monuments: François Botton
Company: Vivian & Cie



PROPERTY DEVELOPMENT

APPLICATION VERSATILITY

From waterproofing of basins through to pebble-dashing and paving, Prompt Natural Cement, alone or combined with lime, is for use in a wide range of applications.

Depending on whether used in mortar or in concrete, used alone or mixed with other binders, and on its dosage, Prompt Natural Cement offers sought after properties for development works.

Combined with lime, its water vapour permeability and mechanical strength enable construction of high quality permeable paving and abrasion-resistant.

Prompt Natural Cement can be used to make coatings intended for waterproofing of basins, fountains and other water bodies and even for use on submerged structures.

With its aesthetically pleasing ochre colour, Prompt Natural Cement is used as part of a mixture to create bedding layers and for jointing of natural stone paving in locations requiring quick access.

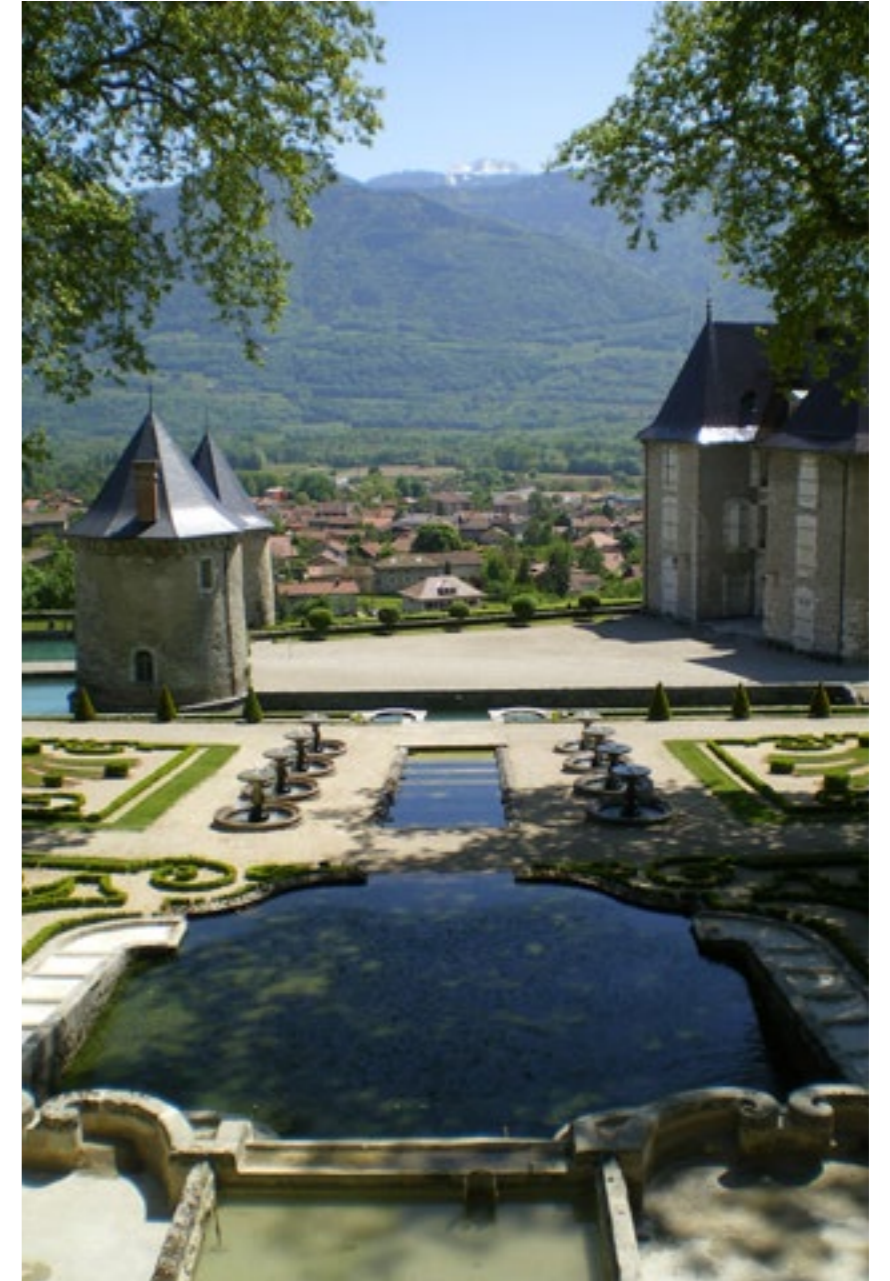
Lastly, mixed with bio-aggregates, it also offers bio-sourced thermal insulation solutions, which give excellent hygrometric performance.

These solutions are ideal for energy saving related renovation work on old substrates.



↓
Château d'If –
Marseille, France
Stone paving
Chief Architect for Historic
Monuments: François Botton
Company: Vivian & Cie

↓
Château de Saint-Hilaire
du Touvet, France
Restoration of cascade features



↓
Saint Cirq Lapopie, France
Jointing of paving stones
Project manager: Juliette Favaron
Company: Occitanie Pierres



VICAT & HERITAGE

PRESERVING AND TRANSMITTING KNOW-HOW

A committed heritage partner, the Vicat Group, undertakes to preserve and transmit its expertise across generations.

In 1817, Louis Vicat, a structural and civil engineering graduate, revolutionized the world of construction with his law of lime and cement hydraulicity.

In so doing he heralded the manufacture of artificial cement and decided not to take out a patent so that this invention could be transmitted to as many people as possible.

On 16 February 1818, the French Royal Academy of Science officially validated his discoveries relating to artificial lime and cements.

The Vicat Group has since continued to evolve, preserving and transmitting its know-how and expertise from generation to generation, always adopting this guiding principle: making high quality products and innovative services available to the construction industry.

It stands to reason that the Vicat Group is very much involved in preserving our heritage, whether of natural or artificial cement.

Since 2003, the Group has been a member of the French Heritage Partners Circle created by the Ministry of Culture.

Through this partnership, Vicat wishes to improve knowledge about our natural cement heritage.

Three research programs, in collaboration with the Historic Monuments Research Laboratory, have been conducted in the Rhône-Alpes region and in Marseille.

The Louis Vicat Foundation was created in 2017 on the occasion of the bicentenary of the invention of artificial cement.

Committed to the duty of remembrance, it acts to promote scientific and technical culture in line with the work of Louis Vicat but also to preserve and showcase our concrete heritage.

In 2019 the Vicat Group joined the French Historic Monuments Consortium as an associate member to strengthen its proximity to member companies.



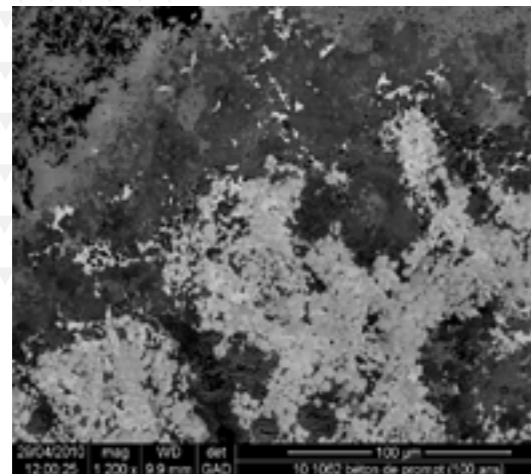


CONSULTANCY & SERVICES

SYNERGY BETWEEN EXPERTISE AND SERVICES

As a materials expert the Vicat Group makes the competencies and resources of its research and control laboratory available to project owners and enterprises.

Recognition of old materials, characterization of physico-chemical and mechanical properties, formulation of repair mortars and concretes... All for providing support with the most complex projects.



In consultation with heritage professionals, the Vicat Group advises on developing solutions appropriate to site constraints while also respecting the structure and substrates.

The Vicat Group advises on implementation techniques and offers on-site assistance. It is a day to day presence for all parties involved in heritage preservation and restoration, so that it can share its expertise.



A scanning electron microscope (SEM) micrograph of a residual grain of Prompt Natural Cement - LMM VICAT





www.cimentetarchitecture.com
www.ciment-vicat.fr

Vicat – Cement Sales Department
4, quai Papacino
F - 06300 Nice
Tel. : +33(4) 92 00 18 80 – cimentnaturel@vicat.fr