

USE MANUAL OF NATURAL CEMENT MARFIL



CEMENTOS COLLET

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QUICK SETTING NATURAL MINE CEMENT "MARFIL"

DESCRIPTION

Is a hydraulic binder obtained by firing clay and limestone grinding of constant chemical composition and underground origin.

This natural cement is composed mainly of calcium silicate, calcium aluminate and together with other minority elements, calcium, magnesium, potassium sulphate and sodium sulphate..

Due to the high resistance to the attack by sulfates, it has special conditions of durability and is not expansive.

PHYSICAL CHARACTERISTICS

Natural Mine cement "marfil" meets with the European standard not harmonized UNE 80309-2006. Document under Ref. Collet13incontrol FC0201 January 2013. Available on quality section of www.cementoscollet.com.

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| <p>START OF HARDENING : Between 1 and 4 min (Depending on the application temperature and without adding hardening retardant)</p> |
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| <p>CONTROLLED HARDENING WITH MARFIL-CONTROL (Citric Acid E-330) Possibility of delay of start of cement hardening to 15 min..</p> |
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Compressive strength to pure pastry.

| TIME | MINIUM VALUE ACCORDING TO STANDARD UNE 80309/2006 | OBTAINED VALUES IN LABORATORY TEST Tests performed without the addition of sand and with a ratio of water / cement of 0,40 |
|---------|---|---|
| 1 Hour | 1,0 N/mm ² | 6,8 N/mm ² |
| 7 Days | 5,2 N/mm ² | 19,3 N/mm ² |
| 28 Days | 8,0 N/mm ² | 22,5 N/mm ² |

COMPRESSIVE STRENGHT WITH THE ADITION OF SAND.

| TIME | MORTER 1:1 Ratio water/cement0,40 |
|---------|--------------------------------------|
| 1 Hour | 6,0 N/mm ² |
| 7 Days | 18,2 N/mm ² |
| 28 Days | 21,0 N/mm ² |

HIGH GRIP to all types of supports and VERY LOW permeability coefficient.

The crystallization process of cement under high humidity conditions gives it special waterproofing characteristics.

NATURAL BINDER COMPATIBLE WITH LIMESTONE, when mixed improves their properties, accelerates the hardening and respects the characteristics of water vapor permeability and DURABILITY.

APPLICATIONS

ON QUICK MASONRY

- Construction of partitions and walls.
- Anchor of bolts, frames, doors, gates.
- Repair and immediate tuning of circulation roads.
- Placement of poles and signs in public road.
- Restoration of decorative elements.
- Construction of vaulted ceilings.

IN PRESENCE OF WATER

- Sealing and grouting pipes, tanks or wells.
- Logs of sewers and aggressive water or sewage pipes.
- In all kinds of immersion work.

IN RESTORATION

- Grouting of stone walls.
- Plastering of walls, mixed with lime mortar.

IN ECO CONSTRUCTIONS

- For a mortar made with natural cement and organic fibers with or without lime mixture to lighten or insulate walls, ceilings and floors.

HOW TO USE THIS NATURAL CEMENT

If the support that that will be in contact with the cement is porous, it's IMPORTANT that it is wet enough.

MIX cement with water in the ratio of maximum 400 cc of water per kg of cement.

STIR the cement paste for maximum - 45 sec - until you get a smooth, consistent paste NOT WATERY.

If it is necessary to control the hardening of the cement with the retarder MARFIL-CONTROL, ALWAYS add it to water, never directly to cement.

VERY IMPORTANT.

AN EXCESS OF WATER OR STIRRING THE PASTA MORE THAN NECESSARY CAN REDUCE THE FINAL RESISTANCE OF CEMENT AND AFTER A WHILE CAN CAUSE CRACKS.

HOW TO MEASURE THE HARDENING RETARDANT.

RATIO OF "MARFIL CONTROL" PER LITER OF WATER.

| START OF HARDENING | TEMPERATURE IN | | DOSING OF MARFIL-CONTROL | |
|--------------------|----------------|-----------|--------------------------|--------------------------|
| | WATER | AMBIENT | BOTTLE OF 250 or 1 kg. | JUG OF 5 kg. |
| 8' to 12' | 10 °C | 6 a 12°C | 1 stopper x lt./Water | 1 stopper x 5 lt./ Water |
| 10' to 12' min. | 20 °C | 24 a 25°C | 2 stopper x lt./Water | 2 stopper x 5 lt./Water |
| 12' to 15' min. | 20 °C | 24 a 25°C | 3 stopper x lt./Water | 3 stopper x 5 lt./Water |

IMPORTANT: The hardening of this cement is very sensitive to fluctuations of temperature application, therefore it must meet exactly the amount of retardant according to the desired start of tightening on site.

You can find additional information on the dosing of "MARFIL CONTROL" in the section of this technical document of quality cement, available in www.cementoscollet.com

OBSERVATIONS

- This cement contains SUFFICIENT GRANULOMETRY to be used in most masonry works without having to mix with sand, in a pure paste.
- If making a mortar with this cement is desired, it must be respected the MAXIMUM DOSAGE OF CEMENT / SAND 1:1 BY VOLUME, to avoid a significant reduction of the final resistances.
- When working with this cement without retardant, the application must be QUICK AND ALWAYS BEFORE you beginning of cement hardening because it CAN'T BE REMIXED.
- When placing tiles with this cement you MUST BE VERY CAREFUL because the pieces should have ENOUGH MOISTURE.



The tiles can be placed once the water has evaporated from the surface, after two minutes.

An EXCESS OF bricks PREVENTS CEMENT ADHERENCE and the LACK OF MOISTURE can cause a CRACK BETWEEN CEMENT AND TILES.

- To achieve the MAXIMUM GRIP and RESISTANCE OF CEMENT, it should be left to cure. this can be achieved by maintaining humidity the maximum time possible as this facilitates the crystallisation of the cement and allows for maximum grip and resistance.
- It is NOT recommended to work with cement with NEGATIVE TEMPERATURES, but if necessary HEAT SLIGHTLY THE WATER to assist with the cement hardening.
- When working with HIGH TEMPERATURES AND FULL SUNLIGHT it 's necessary to protect the work area during same days with soaked textiles to allow a GOOD CEMENT CURING.

PRECAUTIONS

- Avoid hand contact with cement. Always use gloves and suitable tools.
- The cement can be kneaded by mechanical mixer or manually with palette and drawer but always RESPECTING THE BEGINNING OF THE HARDENING.
- An UNOPENED BAG CAN BECOME COMPACTED over time and can cause a SMALL DELAY in the start of hardening - 1' to 3'- but IT WON'T LOSE IT'S CONDITIONS OF RESISTANCE.
- Store cement in the closed bag to avoid moisture. A bag already opened has to be WELL SEALED AND AVOID CONTACT WITH THE AIR.

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| NATURAL CEMENT | HAZARD IDENTIFICATION R/36/37/38 Irritating to eyes and respiratory tract. |
|  Attention | PRECAUTIONS S2 Keep out of the reach of children. S24/25 Avoid contact with skin and eyes. S26 In case of contact with the eyes wash off immediately thoroughly with water and get immediate medical attention. |
|  Danger | S37/39 Use protective gloves, goggles and face protective. S46 In case of ingestion, get immediate medical attention and show the label |
| CONTAINER MANAGEMENT The final holder of the package is the responsible for proper environmental management. | |



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