



# INTOCALCE ST 10



**HIGH RESISTANCE ECO-FRIENDLY BIO-MORTAR BASED ON NATURAL HYDRAULIC LIME NHL 3.5 FOR STRUCTURAL RESTORATIONS AND TYPE "FR" FIBER REINFORCED – "I" WATER REPELLENT- CLASS R1-CC**  
**Compliant with UNI EN 998-1 - UNI EN 998-2 UNI EN 1504-3**

## DESCRIPTION

It is an eco-friendly bio-mortar with an high resistance, with compressive strength CSIV compliant with EN 998-1, M10 compliant with EN 998-2 and R1 compliant with EN 1504-3, based on natural hydraulic lime NHL 3,5 compliant with EN 459-1 and metakaolins with an high breathability, specific for the reinforcement of masonry structures, for the realization of reinforced repair mortars with the structural reinforcement system MALVIN NET, which uses networks, connectors and preformed accessories in GFRP (Glass Fiber Reinforced Polymer) ) (\* FIBRE NET), or F.R.P networks (Fiber Reinforced Polymer) made of glass fibers AR GLASS (alkali resistant) and connectors in stainless steel AISI 304 cold drawn or with network welded both on the walls and on the vaults for the restoration and reinforcement of masonries, makeover of bedding mortar on the joints or for entrapment of bearing walls, with an high and constant quality level, produced with an automated system, to apply by hand or with a plaster sprayer. The characteristics of the natural hydraulic lime NHL ensure an hydraulic hardening very slow and constant that allow to obtain mortars with an high durability and breathability, metakaolins with an appropriate grading curve, improve and extol the structural performances. Form no vapor barriers and contains no solvents. Recyclable as inert at the end of the life. Specific for the historical conservative restoration, thanks to the natural origins of its components that respect the nature of the original materials of the structures of historical interest. Available fiber reinforced with a special composition of polypropylene fibers type "FR" and water repellent type "I".



## COMPOSITION

Natural hydraulic lime NHL 3,5 compliant with EN 459-1 obtained by burning marbly limestones at 950°C, natural lime, metakaolins, selected carbonated and siliceous sands with grading from 0 to 1,3 mm, natural additives tested for the specific use which give to the product a very high adhesion and workability. For "FR" polypropylene fibers. For "I" water repellent agent.

## AVIABILITY

**INTOCALCE ST 10:** Structural bio-mortar  
**INTOCALCE ST 10 FR:** Structural bio-mortar Fiber reinforced;  
**INTOCALCE ST 10 I:** Structural bio-mortar Water repellent;  
**INTOCALCE ST 10 I FR:** Structural bio-mortar Water repellent Fiber reinforced;

## USE

INTOCALCE ST 10 is an eco-friendly bio-mortar with an high resistance specific for the structural reinforcement to apply on every kind of interior and exterior of historical interest and new buildings as old masonries, concrete, reinforced concrete, slabs in reinforced bricks, etc., to apply by hand or mechanically.

## APPLICATION

- Preparation of the surface by removing all crumbling and inconsistent parts; removing foreign matter such as dust, mud, tar, oil stains, etc.
- The walls on which must be applied INTOCALCE ST 10 must be previously washed with a water jet at strong pressure, to remove all the deteriorated parts and the impurities.
- Take care to seal and fill before the laying any crack or cavity of the substrate.
- To wet, in advance, particularly absorbent or dried or exposed to hot climates walls.
- To mix by hand, in a cement mixer or with a mixer at low speed, until when the mixture isn't homogeneous; with a plaster sprayer regulating the flow-meter until when the density isn't perfect.
- INTOCALCE ST 10 must be applied by hand or mechanically; can be applied at different thicknesses, is recommended for just one application don't apply thicknesses lower to cm 1 and never higher to cm 3. In case of more applications let the product rest for 2/3 hours at least before applying the following layer, taking care to don't smooth the first coat.
- The minimum thickness of the finished product doesn't have to be lower than cm 1.
- If used as plaster the min. thickness of the finished product doesn't have to be lower to cm 1.



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- In case of application as structural reinforced mortar with MALVIN NET, which uses networks, connectors and preformed accessories in GFRP (Glass Fiber Reinforced Polymer) (\* FIBRE NET), or F.R.P networks (Fiber Reinforced Polymer) made of glass fibers AR GLASS (alkali resistant) and stainless steel connectors AISI 304 cold drawn, taking care to apply the network at the half of the layer of plaster, so the total min. thickness applied must not be lower to 3 cm. In case of application of thicknesses higher than 3 cm value the use of anti-shrinkage networks.
- In case of application as structural reinforced mortar with network welded, take care to apply the network to a distance of at least 1cm from the wall and covered by at least 2cm mortar, so the minimum thickness of the total applied must not be less than 4cm.
- After the application is necessary to sponge the surface to make it uniform with the specific sponge float and wet it in advance with water or "grate it" to make it suitable to receive the following finish.
- If used as bedding mortar the min. thickness must never be lower to cm 0,5.
- With high temperatures, wind and low humidity, is recommended to protect from the quick dry moistening the substrates and eventually spraying water on the surface of the plaster within 48 hours from the application.
- Apply on very smooth or not adherent reinforced concrete substrates, treated in advance with a coat of INTOCALCE ST 10 mixed with water and INTOELASTIC in 1:1. Cover with the "fresh on fresh" technique with INTOCALCE ST 10.
- Additivate with INTOELASTIC in 1:5 with water to improve the adhesion to the substrates and the mortar elasticity.
- Don't apply on frozen substrates, with frost or possible frost in 24 hours.
- Don't apply on gypsum substrates, synthetic coatings, paints. 7,50 ql. (70 sacchi).
- Don't apply with strong wind or in very sunny days.
- Don't apply until when the substrate isn't completely dried.
- Don't apply on inconsistent and friable substrates.
- Don't apply with driving rain.
- Don't add any other material to the product.
- To apply on reinforced concrete substrates carefully washed to remove every residue of form release agents.
- Apply on very smooth reinforced concrete substrates previously treated with the primer "ANCOMUR".
- We suggest to apply INTOCALCE ST 10 with a temperature between + 5 ° C and + 30 ° C.

## YIELD

As plaster 14 kg/mq for each cm of thickness.

As mortar 15/16 kg/mq of masonry with cm 8 bricks.

## PACKAGING

Loose in silo (gravity feed).

Multi-ply paper sacks with protection of Kg. 25 on wood pallets of 17,50 ql. (70 sacks).

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## TECHNICAL SPECIFICATIONS COMPLIANT WITH

**Water content of the mix**  
**Grading EN 1015-1**  
**Specific Weight EN 1015-10**  
**Chloride content EN 1015-17**  
**Workability time EN 1015-19**  
**Plastic shrinkage in cond. Termoigr. Standard**  
**Compressive strength after 28 days EN 1015-11**  
**Flexural strength after 28 days EN 1015-11**  
**Adhesion on brick EN 1015-12**  
**Initial adhesion (tabulated value) EN 998-2**  
**Water vapor diffusion resistance factor EN 1015-19**  
**EN 1015-19**  
**Water abs. coeff. due to capillary action EN 1015-18**  
**TYPE "I"**  
**Reaction to fire EN 998-1/2**  
**Thermal conductivity coeff. EN 1745 p.A.12**  
**Durability**  
**Toxicity - Regulation CE 1272/08**  
**Classification UNI EN 998-1/998-2:2010**  
**Classification UNI EN 998-1/998-2:2010 TYPE "I"**

\* at guaranteed performance (2+)

## TECHNICAL SPECIFICATIONS COMPLIANT WITH

**Compressive strength after 28 days EN 12190**  
**Content of chloride ions "Cl"**  
**Bonding adhesion EN 1542**  
**Carbonation resistance EN 13925**  
**Modulus of elasticity EN 13412**  
**Compatibilità termica EN 13687**  
**Absorption due to capillary action EN 13057**  
**Classification UNI EN 1504-3**

\* at guaranteed performance (2+)

## UNI EN 998-1

~21-25%  
 $\leq 1,3 \text{ mm}$   
 $1.400 \text{ kg/m}^3$   
 -  
 2 hours  
 Absent  
 $11,5 \text{ N/mm}^2 \text{ (CSIV)}$   
 $4,8 \text{ N/mm}^2$   
 $0,5 \text{ N/mm}^2$   
 -  
 -  
 $20 < \mu$   
 WO  
 W1  
 Class "A1"  
 $\lambda_{10, \text{dry, mat}} = 0,47 \text{ W/mK}$   
 NPd  
 Denger  
 GP-CSIV-WO/DOP nr. 93  
 GP-CSIV-W1/DOP nr. 94

## UNI EN 998-2

~18-19%  
 $\leq 1,3 \text{ mm}$   
 $1.400 \text{ kg/m}^3$   
 $< 0,1 \% \text{ p/p}$   
 1 hour  
 Absent  
 $M10(11,5 \text{ N/mm}^2)$   
 $4,8 \text{ N/mm}^2$   
 -  
 $0,15 \text{ N/mm}^2$   
 $5 < \mu < 20$   
 -  
 $> 0,55 \text{ Kg}/(\text{m}^2 \cdot \text{min}^{0,5})$   
 $\leq 0,40 \text{ Kg}/(\text{m}^2 \cdot \text{min}^{0,5})$   
 Class "A1"  
 $\lambda_{10, \text{dry, mat}} = 0,47 \text{ W/mK}$   
 NPd  
 Denger  
 G-M10/DOP nr. 91 \*  
 G-M10/DOP nr. 92 \*

## UNI EN 1504-3

10 MPa (Class R1)  
 $\leq 0,05 \%$   
 $\geq 0,8 \text{ N/mm}^2$   
 NPd  
 NPd  
 NPd  
 NPd  
 NPd  
 CC-R1/DOP nr. 261\*

## SUMMARY

Internal and external reinforced plasters, the structural reinforcement of old masonries and of deteriorated vaults or a sack, in brick, stone and rock, matchable to the structural reinforcement system MALVIN NET in GFRP or F.R.P. AR GLASS, the elevations of masonries and/or localized reparations, will be realized with an eco-friendly bio-mortar with an high resistance, for structural uses, with compressive strength CSIV compliant with EN 998-1, M10 with EN 998-2 and R1 compliant with EN 1504-3, a based on natural hydraulic lime NHL 3,5 compliant with EN 459-1 obtained by burning marbly limestones at 950°C, metakaolins, selected siliceous and carbonated sands and with grading from 0 to 1,3 mm, natural additives tested for the specific use, type "INTOCALCE ST 10" or fiber reinforced with a special composition of polypropylene fibers tested for the specific use type "FR" or water repellent type "I", by MALVIN S.r.l., applied by hand or mechanically and to mix just adding water, with a consumption as plaster of 14 kg/mq for each cm of thickness, as mortar 15/16 kg/mq of masonry with cm 8 bricks, with compressive strength after 28 days of 11,5 N/mm<sup>2</sup>.

*The performance characteristics refer to laboratory tests, values depend on the weather conditions and on the methods of implementations. The operator must verify the suitability of the product depending on the use planned.*



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