

# Biocalce® Intonaco

**Certified, eco-friendly natural plaster/render made with pure natural lime NHL 3.5 according to EN 459-1, for highly breathable WTA-approved plasterwork, ideal for use in GreenBuilding and Historical Restoration. Contains raw materials of only natural origin and recycled minerals. Low CO<sub>2</sub> emissions and very low volatile organic compound emissions. Provides natural ventilation to improve indoor air quality, natural bacteriostatic and fungistatic effect. Recyclable as an inert material at the end of its life.**












Biocalce® Intonaco is suitable for the breathable, protective rendering of internal and external brick, tuff, stone and mixed-material load-bearing masonry structures and infill masonry.



## GREENBUILDING RATING®

### Biocalce® Intonaco

- Category: Inorganic Natural Minerals
- Class: Natural, breathable mortars for plaster/render coats and restoration
- Rating: Bio 5

	 Pollution Reduced Indoor Air Quality	 Bacteriostatic Indoor Air Quality	 Low Emission Indoor Air Quality	 CO <sub>2</sub> ≤ 250 g/kg	 Recycled Regional Mineral ≥ 50%
	 Highly effective (5/5)	 No development of bacteria or fungi	 Very low VOC emissions	 CO <sub>2</sub> /kg emission 85 g	 Recycled mineral content 45%

## NATURAL INGREDIENTS

	Pure NHL 3.5 certified natural lime		Siliceous Washed Natural River Sand (0,1-1 mm)
	Certified extra-fine natural pozzolan		Medium grain Dolomitic limestone (0-2,5 mm)
	Siliceous washed natural river sand (0,1-0,5 mm)		

## PRODUCT STRENGTHS

- Natural, porous and highly breathable, allows walls to breath
- Natural bacteriostatic and fungistatic classified B+ e F+ (CSTB method)
- Protects and maintains masonry over time
- WTA-approved, ideal for newly built facades and historic restoration and renovation



## AREAS OF USE

### Use

Breathable, protective plaster/render for interior and exterior hollow clay block, brick, tufa, stone, and mixed-material load-bearing masonry structures and infill masonry. Biocalce® Intonaco is particularly well suited to plaster in Edilizia del Benessere® in which the all-natural ingredients guarantee compliance with the required levels of porosity, hygroscopicity and breathability.

Biocalce® Intonaco is suitable for plasterwork in Historical Restoration projects: the choice of traditional materials such as natural lime, natural pozzolan, stone, marble and granite, mixed in carefully studied proportions, guarantees conservative interventions in full respect of the existing structures and original materials.

Biocalce® Intonaco has been tested and certified as a WTA-approved undercoat plaster in layers thicker than 4 cm to restore damp and salt-damp, above-ground walls before the application of Biocalce® Zoccolatura restoration plaster.

### Do not use

On substrates which are dirty, non-cohesive, powdery or on previous paint coats and finishing coats. Remove interstitial salt scaling from surfaces.

## INSTRUCTIONS FOR USE

### Preparation of substrates

The substrate must be clean and solid, free from loose debris, dust and mould. Clean the surfaces using hydro-sandblasting or sandblasting followed by a pressure washer to remove all remaining traces of previous processes (lime putty coverings, old finishing coats, saline formations, etc.) that may impair adhesion. Remove inconsistent rendering mortars from between the stones. Use Biocalce® Muratura and the fragment-filling and/or break-fill techniques to rebuild missing sections of the wall and restore an even surface. Always wet substrates before applying the plaster.

## INSTRUCTIONS FOR USE

### Preparation

Manual application: To prepare Biocalce® Intonaco, mix one 25 kg bag with about 5.1 l of clean water in a standard concrete mixer. Mix by pouring water into the clean cement mixer and then add the powder in one operation. Wait until the right consistency forms while mixing. In the first 1-2 minutes the product will seem dry; do not add water at this stage. Keep mixing for 4-5 minutes until a smooth, spongy and lump-free mortar forms. Use all of prepared mixture; do not reuse it in subsequent mixings. Store the product in places protected against the heat in summer months and against the cold during the winter. Use running water not subject to the influence of outside temperatures.

Adding cement in any quantity would impair the quality of the mortar which is guaranteed by its all-natural origins.

### Application

Mechanized application: Biocalce® Intonaco has the same fine grain and plasticity of the best natural hydraulic limes, making it ideal for applications using a plaster sprayer. The excellent consistency of the wet product gained WTA certification, also extended to mechanized application. Tests to prove the compliance of Biocalce® Intonaco with WTA specifications were carried out using a plaster sprayer and the following accessories: Mixer, Stator 30, Rotor 30+, Turbo-stator, Turbo-rotor, 25x37 mm flexible hoses, length 10/20 m and spray gun.

Biocalce® Intonaco can be easily applied with a trowel or spray like a normal plaster/render. Prepare the substrate, filling in any fragments if necessary to create a flat, smooth surface. Apply the rough coat, create the levelling layers, plaster, strike off then float as the product hardens.

Biocalce® Intonaco should be applied with precision, each coat being no more than 2 cm thick even though the product lends itself easily to form thicker coats. This traditional system of application prevents the formation of micro-cracks. Only apply patch layers on rough or previous coats when the lower has hardened. The finishing will depend on the technique selected. Allow the hardened product to cure and keep it moistened during the first 24 hours.

### Cleaning

Biocalce® Intonaco is a natural product and tools can be cleaned with water before the product hardens.

## SPECIAL NOTES

When plastering walls of different ages, or walls with sections that have been clad in different materials, we recommend inserting a galvanized or synthetic anti-alkali plaster-reinforcing mesh into the Biocalce® Intonaco to rule out any chance of cracking.

When applying Biocalce® Intonaco to compact or non-absorbent substrates, always apply a layer of Biocalce® Rinzafo first then check adhesion.

Walls made of cellular concrete blocks should be prepared as indicated by the manufacturer: do not dampen or rough cast these surfaces. Prepare them before plastering by applying Biocalce® Fondo consolidant-absorption unifier with a brush or roller.

Furthermore, when working on cellular concrete walls, always insert Rinforzo V 50 reinforcing mesh between the two coats of finishing product, made with either Biocalce® Intonachino Fino or Granello.

## ABSTRACT

*In Edilizia del Benessere® (Building for Wellness), a highly porous, breathable, hygroscopic plaster is created for interior and exterior walls using pure NHL 3.5 natural hydraulic lime, extra-fine natural pozzolan, inert siliceous sand and Dolomitic limestone materials with a granulometric curve of 0-2.5 mm, and GreenBuilding Rating Bio 5 (such as Biocalce® Intonaco).*

*The required characteristics, obtained exclusively through the use of raw materials of all-natural origin, make the plaster extremely breathable (co-efficient of resistance to water vapour  $\leq 6$ ), the hardened mortar extremely porous ( $\geq 40\%$ ), with natural thermal conductivity (equal to 0.54 W/mK) and a high degree of occluded air during mixing ( $\geq 20\%$ ).*

*In Historical Restoration, the required breathable plaster must be certified WTA-Merkblatt 2-2-91 Sanierputzsysteme, having satisfied the requirements through the sole use of all-natural materials. The natural plaster must also meet the requirements of standard EN 998/1 - GP / CS II / W1, adhesion 0.2 N/mm<sup>2</sup>, A1 class reaction to fire.*

*The plaster covering must not exceed 20 mm, consisting of two layers of an average thickness of 10 mm, levelling layers, rustic finish coat done with flattener, squaring up of edges and corners, and excluding the cost of scaffolding hire. To be applied by hand or using a plastering machine.*

*Coverage Biocalce® Intonaco:  $\approx 13 \text{ kg/m}^2$  per cm of thickness.*

## TECHNICAL DATA COMPLIANT WITH KERAKOLL QUALITY STANDARD

Type of mortar	general purpose rendering/plastering mortar (GP)	EN 998-1
Chemical nature of binder	pure Natural Hydraulic Lime NHL 3.5	EN 459-1
Grading	0 – 2.5 mm	EN 1015-1
Apparent density of powder	$\approx 1,28 \text{ kg/dm}^3$	UEAtc
Shelf life	$\approx 12$ months in the original packaging	
Pack	Bags 25 kg	
Mixing water	$\approx 5.1 \text{ l} / 1 \times 25 \text{ kg bag}$	
Consistency of wet mortar 0'	$\approx 174 \text{ mm}$	EN 1015-3
Apparent density of wet mortar	$\approx 1,61 \text{ kg/dm}^3$	EN 1015-6
Apparent density of dry, hardened mortar	$\approx 1,4 \text{ kg/dm}^3$	EN 1015-10
pH of the mixture	$\geq 12$	
Occluded air / Plastering machine occluded air	$\geq 20\%$	EN 413-2
Temperature range for application	from +5 °C to +35 °C	
Maximum thickness obtainable by coat	$\approx 2 \text{ cm}$	
Coverage	$\approx 13 \text{ kg/m}^2$ per cm of thickness	

Values taken at +20  $\pm$  2 °C, 65  $\pm$  5% R.H. and no ventilation. Data may vary depending on specific conditions at the building site.

## PERFORMANCE

### VOC INDOOR AIR QUALITY (IAQ) - VOLATILE ORGANIC COMPOUND EMISSIONS

Conformity EC 1 GEV-Emicode GEV certified 2752/11.01.02

### ACTIVE INDOOR AIR QUALITY (IAQ) - DILUTION OF INDOOR POLLUTANTS \*

	Flow	Dilution	
toluene	253 µg m <sup>2</sup> /h	+69%	JRC method
Pinene	347 µg m <sup>2</sup> /h	+144%	JRC method
Formaldehyde	6437 µg m <sup>2</sup> /hr	+106%	JRC method
Carbon dioxide (CO <sub>2</sub> )	398 mg m <sup>2</sup> /h	+467%	JRC method
Humidity (Humid Air)	43 mg m <sup>2</sup> /h	+100%	JRC method

### BIOACTIVE INDOOR AIR QUALITY (IAQ) - BACTERIOSTATIC ACTION \*\*

Enterococcus faecalis Class B+ no proliferation CSTB method

### BIOACTIVE INDOOR AIR QUALITY (IAQ) - FUNGISTATIC ACTION \*\*

Penicillium brevicompactum Class F+ no proliferation CSTB method

Cladosporium sphaerospermum Class F+ no proliferation CSTB method

Aspergillus niger Class F+ no proliferation CSTB method

### HIGH-TECH

Co-efficient of resistance to the diffusion of water vapour (µ)	≤ 6	EN 1015-19
Water absorption through capillary action W1 category		EN 998-1
W24 capillary water absorption	≥ 1 kg/m <sup>2</sup>	EN 1015-18
Depth of water infiltration in 24 hrs	≥ 5 mm	EN 1015-18
Porosity	≥ 40%	WTA 2-2-91/D
Reaction to fire	class A1	EN 13501-1
Compressive strength after 28 days	CS II category	EN 998-1
Adhesion to support (hollow clay block)	≥ 0,2 N/mm <sup>2</sup> - FP: B	EN 1015-12
Thermal conductivity (λ <sub>10°</sub> dry)	0,54 W/mK (table value)	EN 1745
Thermal conductivity (λ <sub>10°</sub> dry)	0,33 W/mK (calculated in a Klimaroom thermal chamber)	EN 1934
Specific heat capacity (Cp)	1,45 (10° J/m <sup>3</sup> K) measured with heat exchange analyser	
Durability (freeze/thaw)	evaluation based on regulations applicable to mortar in the country of use	EN 998-1
Radioactivity index	I = 0,26	UNI 10797/1999

Values taken at +20 ± 2 °C, 65 ± 5% R.H. and no ventilation. Data may vary depending on specific conditions at the building site.

\* Tests carried out according to JRC method - Joint Research Centre - European Commission, Ispra (Varese, Italy) - to measure the reduction of polluting substances in indoor environments (Indoortron Project). Flow and speed in proportion to a standard cement-based plaster/render (1,5 cm).

\*\* Tests carried out according to CSTB method, bacterial and fungal contamination

## WARNING

- **Product for professional use**
- protect surfaces from direct sunlight and wind
- allow the hardened product to cure and keep it moistened during the first 24 hours
- if necessary, ask for the safety data sheet
- for any other issues, contact the Kerakoll Worldwide Global Service - [globalservice@kerakoll.com](mailto:globalservice@kerakoll.com)

The Eco and Bio classifications refer to the GreenBuilding Rating Manual 2011. This information was last updated in August 2011 (ref. GBR Data Report - 02.11); please note that additions and/or amendments may be made over time by KERAKOLL SpA; for the latest version, see [www.kerakoll.com](http://www.kerakoll.com). KERAKOLL SpA shall therefore be liable for the validity, accuracy and updating of information provided only when taken directly from its institutional website. The technical data sheet given here is based on our technical and practical knowledge. As it is not possible for us to directly check the conditions in your building yards and the execution of the work, this information represents general indications that do not bind Kerakoll in any way. Therefore, it is advisable to perform a preliminary test to verify the suitability of the product for your purposes.

Kerakoll  
Quality  
System

ISO 9001  
CERTIFIED

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