

Biocalce® Pietra

Certified, eco-friendly, natural mortar containing pure NHL 3.5, EN 459-1 compliant lime for extremely breathable rough rendering and pointing of masonry, ideal for use in GreenBuilding and Historical Restoration. Contains raw materials of only natural origin. Low CO₂ emissions and very low volatile organic compound emissions. Provides natural ventilation to improve indoor air quality, naturally bacteriostatic and fungistatic effect. Recyclable as an inert material at the end of its life.

Biocalce® Pietra is an M5 class mortar, suitable for the construction of exposed vertical walls and for pointing brick or natural stone coverings. Internal, external.



GREENBUILDING RATING®

Biocalce® Pietra

- Category: Inorganic Natural Minerals
- Class: Natural, breathable mortars for construction and consolidation
- Rating: Bio 4

	 Pollution Reduced Indoor Air Quality	 Bacteriostatic Indoor Air Quality	 Low Emission Indoor Air Quality	 CO ₂ /kg ≤ 250 g/kg	 Recycled Regional Mineral ≥ 20%
	 High efficiency (4/5)	 No development of bacteria or fungi	 Very low VOC emissions	 CO ₂ /kg emission 108 g	

PRODUCT STRENGTHS

- Natural, porous and highly breathable, allows walls to breath
- Ideal for pointing old brick and stone walls
- Soft, plastic mixture for fast, easy spreading
- Can be mixed with inert native materials from 1 to 4 mm in grain size to reproduce the characteristics of the original mortar

NATURAL INGREDIENTS

	Pure NHL 3.5 certified natural lime		Fine grain Dolomitic limestone (0,4-1,4 mm)
	Certified extra-fine natural pozzolan		Pure fine white Carrara marble (0-0,2/0-0,5 mm)
	Siliceous washed natural river sand (0,1-0,5 mm)		

AREAS OF USE

Use
Pointing or breathable rough rendering for interior and exterior hollow clay block, brick, tufa, stone, and mixed-material load-bearing masonry structures and infill masonry.
Biocalce® Pietra is particularly well suited for the construction of exposed vertical walls and to point brick or natural stone coverings in Edilizia del Benessere® (Building for Wellness) in which the all-natural ingredients guarantee compliance with the required levels of porosity, hygroscopicity and breathability. Biocalce® Pietra is suitable for grouting and exposed reconstruction 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.

Do not use
On substrates which are dirty, non-cohesive, powdery. On substrates with a lot of interstitial salt deposits.

INSTRUCTIONS FOR USE

Preparation of substrates
The substrate must be clean and solid, free from loose debris, dust and mould. Old walls must be carefully cleaned and remaining traces of previous processes removed (lime putty coverings, old finishing coats, etc.) as well as any surface interstitial salt deposits which could impair adhesion. Remove inconsistent rendering mortars from between the stones. Before grouting, always wet substrates.

* ÉMISSION DANS L'AIR INTÉRIEUR Information sur le niveau d'émission de substances volatiles dans l'air intérieur, présentant un risque de toxicité par inhalation, sur une échelle de classe allant de A+ (très faibles émissions) à C (fortes émissions).

INSTRUCTIONS FOR USE

Preparation

To prepare Biocalce® Pietra, mix one 25 kg bag with about 4.5 l of clean water in a standard concrete mixer or in the bucket. The mixture is obtained by pouring water into the container and then gradually adding the powder. The mixing process can be performed in a cement mixer, in a bucket (working manually or with a low-rev, mechanical stirring device) or using a continuous mixer until a smooth and lump-free mortar is obtained. 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

Pointing of exposed vertical walls: when pointing exposed vertical walls, prepare and dampen the joints then apply a first coat of Biocalce® Pietra using a trowel, spreader or machine. Press down hard to ensure adhesion. Excess mortar must be removed immediately, and the brickwork must also be cleaned straight away. Wall-level grouting may be sponged.

Construction of exposed vertical walls: when constructing exposed vertical walls, apply the mortar using a trowel to create the mortar bed then place the building block into it, pressing lightly with circular movements until it is correctly aligned and at the right depth; remove any excess mortar on the front of the masonry by cutting and smoothing with the trowel.

Cleaning

Biocalce Pietra is a natural product and tools can be cleaned using water before the product hardens.

SPECIAL NOTES

To obtain a mortar that mirrors specific local features, without changing its technical characteristics, add a maximum of 20% by weight of a local inert material with a grain size of 1 to 4 mm to the Biocalce® Pietra mix.

Biocalce® Pietra is a non-pigmented natural hydraulic lime product, hence the colour may vary from production batch to batch.

Furthermore, being a mineral product, the colour of the hardened, dried mortar will vary depending on substrate absorption and weather conditions during application.

ABSTRACT

In Edilizia del Benessere® (Building for Wellness) and Historical Restoration, pointing and rough rendering interventions on internal and external masonry structures, made of hollow clay block, brick, tufa, and natural stone, are done using a compact, highly breathable and hygroscopic mortar made of pure NHL 3.5 natural hydraulic lime, extra-fine natural pozzolan, inert siliceous sand and Dolomitic limestone materials with a granulometric curve of 0-1.4 mm, and GreenBuilding Rating Bio 4 (such as Biocalce® Pietra).

The required characteristics, obtained exclusively through the use of raw materials of all-natural origin, guarantee a reduced chloride content ($\leq 0.002\% Cl$).

The natural mortar must also meet the requirements of standard EN 998/2 - G / M 5, initial shear strength $\geq 0.2 N/mm^2$, adhesion to support $\geq 0.5 N/mm^2$, capillary water absorption $\approx 0.4 kg/(m^2 \cdot min^{0.5})$, A1 class reaction to fire.

Including the superior workmanship required to assure the structural integrity of walls, corners and indented panels, the flattening of the mortar bed, cutting required to create openings in door/window posts and any other recesses and embedding needed to place windows and doors of any size in position, including the cost of general scaffolding (mobile platforms and trestle) for work at heights of up to 3.5 m, and anything else needed to complete the project to the highest standard. Application can be done by hand or by machine. Coverage Biocalce® Pietra: $\approx 1.7 kg/dm^3$.

TECHNICAL DATA COMPLIANT WITH KERAKOLL QUALITY STANDARD

Type of mortar	performance-guaranteed masonry mortar for general purpose use (G) in external applications subject to structural requirements	EN 998-2
Chemical nature of binder	pure Natural Hydraulic Lime NHL 3.5	EN 459-1
Grading	0 – 1.4 mm	EN 1015-1
Apparent density of powder	$\approx 1,57 kg/dm^3$	UEAtc
Shelf life	≈ 12 months in the original packaging in dry environment	
Pack	Bags 25 kg	
Mixing water	$\approx 4.5 l / 1 x 25 kg$ bag	
Consistency of wet mortar	≈ 165 mm	EN 1015-3
Apparent density of wet mortar	$\approx 1,97 kg/dm^3$	EN 1015-6
Apparent density of dry, hardened mortar	$\approx 1,8 kg/dm^3$	EN 1015-10
pH of the mixture	≥ 12	
Temperature range for application	from $+5$ °C to $+35$ °C	
Coverage	$\approx 1,7 kg/dm^3$	

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-R plus GEV-Emicode GEV certified 2748/11.01.02

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

Flow	Dilution		
toluene	152 µg m ² /h	+59%	JRC method
Pinene	213 µg m ² /h	+31%	JRC method
Formaldehyde	5012 µg m ² /h	test failed	JRC method
Carbon dioxide (CO ₂)	30 mg m ² /h	+38%	JRC method
Humidity (Humid Air)	16 mg m ² /h	+14%	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

Compressive strength	M 5 category	EN 998-2
Coeff. for resistance to vapour circulation (µ)	≥ 15 ≤ 35 (table value)	EN 1015-19
Water capillary absorption	≈ 0,4 kg/(m ² · min ^{0,5})	EN 1015-18
Reaction to fire	class A1	EN 13501-1
Initial shear strength	≥ 0,2 N/mm ²	EN 1052-3
Adhesion to support (hollow clay block)	≥ 0,55 N/mm ² - FP: B	EN 1015-12
Chloride content	≤ 0,002% Cl	EN 1015-17
Thermal conductivity (λ _{10, dry})	0.75 W/mK (table value)	EN 1745
Thermal conductivity (λ _{10, dry})	0.62 W/mK (determined in Klimaroom)	EN 1934
Specific heat capacity (Cp)	1,7 (10 ⁶ J/m ³ K)	
Durability (freeze/thaw)	measured with heat exchange analyser 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 construction mortar (1,5 cm).

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

WARNING

- Product for professional use
- abide by any standards and national regulations
- 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

The Eco and Bio classifications refer to the GreenBuilding Rating Manual 2012. This information was last updated in October 2012 (ref. GBR Data Report - 11.12); please note that additions and/or amendments may be made over time by KERAKOLL SpA; for the latest version, see 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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