

benesserebio®

Thermo-dehumidifying, heat cell-based bio-render, R and T / CSII certified. Anti-mould and anti-condensation compliant with EN ISO 13788. High energy-efficient. Made of NHL 3.5 pure natural lime, mineral geo-binder, natural amorphous pozzolan and natural active principles. Highly breathable. Natural product for bio-building. Contains raw materials of only natural origin and recycled minerals. Provides natural ventilation to improve indoor air quality, natural bacteriostatic and fungistatic effect. Recyclable as an inert material at the end of its life.



Benesserebio® bio-render protects your home and maintains its thermo-evaporating power over time, is warmer, and thermally insulates the wall to allow more efficient indoor climate control and energy savings. Benesserebio® uses natural NHL lime improved with Kerakoll's exclusive geo-binder, together with the micronized natural pozzolan protective action against salts. These natural elements give the bio-render superior mechanical performance and total protection against moisture.



GREENBUILDING RATING®

benesserebio®
 - Category: Inorganic natural minerals
 - Warm bio-render

Highly effective (5/5)	No development of bacteria or fungi	Very low VOC emissions	CO ₂ /kg emission 140 g	Recycled mineral content 45%

PRODUCT STRENGTHS

- More coverage:** the exclusive formula of besserebio® ensures a light mixture with high coverage that allows to plaster 55% to 100% more surface
- More energy saved:** the warm bio-render ensures energy savings of 30% compared to traditional masonry
- Warmer and drier:** besserebio® is able to heat the wall surface by a good 3 °C, thus ensuring the total absence of mould and condensation in indoor environments
- More thermo-evaporating power:** the thermo-evaporating power of besserebio® guarantees water disposal, in the form of vapour, from 100% to 250% higher than the common dehumidifying plasters/renders

NATURAL INGREDIENTS

	Pure NHL 3.5 certified natural lime		Natural active principles
	Certified micronized natural amorphous pozzolan		Inert minerals
	Mineral geo-binder		Recycled inert eco-pores

WHAT IS THE OPEN-PORE HEAT CELL TECHNOLOGY

More thermo-evaporating power – Thanks to the 3 °C thermal gradient between the masonry and the surface of the bio-render, and the innovative heat cells high porosity, besserebio® develops an unprecedented thermo-evaporating power to ensure the thermo-dehumidification of all types of masonry and all types of humidity.

Warmer surface – Thanks to the innovative heat cell technology, the bio-render surface heats up to 3 °C more, restoring comfort and well-being to the home and its inhabitants. More energy savings - The thermostatic and porous surface of besserebio® keeps the heat in winter and preserves summer cooling. Thanks to the innovative heat cells, the thin layer of bio-render works like a thermal micro-panelling system for the masonry and significantly improves the energy efficiency of the house.

Anti-mould and anti-condensation compliant – A 3 °C increase of the surface temperature of the bio-render permanently prevents the risk of the formation of mould and internal condensation. Benesserebio® is the certified and safe solution to restore comfort and well-being to your home.

* 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).

AREAS OF USE

Use

All-purpose hot bio-render for the breathable, protective plastering/rendering of load-bearing masonry and infill masonry, for all types of walls interior and exterior hollow clay block, brick, tufa, stone, concrete, cellular concrete, wood-cement, and mixed-material. Benesserebio® guarantees the benefits of thermo-dehumidification that specifically targets damp and moisture rising from condensation. It reduces the heat lost through masonry, stopping deterioration caused by heat dispersal or mould.

Benesserebio® is particularly well suited to create plasters/renderers in Greenbuilding, where its all-natural ingredients guarantee compliance with the required levels of hygroscopicity, porosity and breathability.

Benesserebio® is suitable in Historical Restoration projects, where the choice of traditional materials such as natural lime, natural amorphous pozzolan, stone, marble and granite, guarantees conservative interventions in full respect of the existing structures and original materials.

Do not use

On substrates which are dirty, non-cohesive, powdery or on previous paint coats and finishing coats. In underground environments subject to water infiltration.

INSTRUCTIONS FOR USE

Preparation of substrates

The support must be clean and solid, free from loose debris, dust and mould that might compromise the adhesion. Remove inconsistent rendering mortars from between the stones.

Preparation of damp substrates: on damp walls or in the presence of capillary moisture rising, completely remove the old plaster up to one metre above the highest visible signs of damp. Remove interstitial salt scaling from surfaces. Remove rendering mortars and stone blocks or bricks that are crumbling or flaky due to saline concentrations. Perform a thorough cleaning of the surfaces using hydro-sandblasting or sandblasting followed by a pressure washer, to be carried out 12 hours before applying the bio-render. The careful preparation must completely remove residues of previous operations, old plasters and finishing coats, salt formations, dirt or any element that may compromise the adhesion.

According to the mechanical strength required, use mortars from the Biocalce® or GeoCalce® ranges and the fragment-filling or break-fill techniques to rebuild missing parts of the masonry work and restore an even surface, run plumbing and electrical wires etc. and seal off the chases.

Always wet substrates before applying the product.

Preparation

Prepare benesserebio® by mixing 1 bag with the amount of water indicated on the packaging (we advise using the whole bag). 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. Mix again 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.

Application

When used as an all-purpose hot bio-render, benesserebio® can be applied up to a maximum of 4 cm per single coat. Only apply subsequent patch layers when the lower layer, left rough, has hardened.

In the presence of capillary moisture rising, the correct thermo-dehumidification of the masonry is obtained by applying a first layer of benesserebio® to cover the entire masonry. Wait for the curing of the first layer for about 1 - 2 days, depending on the temperature and humidity conditions. After the first layer has cured, apply the second coat of benesserebio® to obtain a constant minimum total thickness of 2 cm. Flatten/level and float as the product hardens.

Apply benesserebio® up to one metre above the highest visible signs of damp.

Manual application: benesserebio® can be easily applied with a trowel or spray like a normal plaster/render.

Mechanized application: benesserebio® is ideal for applications using a plaster sprayer. It is recommended to use a plastering machine and the following accessories: Mixer, Stator/Rotor D 6-3, 25x37-mm flexible hoses, 10-20 m long and spray gun.

Cleaning

Benesserebio® is a natural product and tools can be cleaned using water before the product hardens.

SPECIAL NOTES

Finish benesserebio® with the finishing mortar from the Biocalce® range.

The finished surfaces will then be ready to receive the coloured decoration to be determined within the range of coloured breathable finishes of Biocalce® or, alternatively, with the Kerakover Eco Silox range.

When plastering/rendering 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 benesserebio® bio-render to rule out any chance of cracking; particular attention must be paid to guaranteeing a continuous thickness between the meshes.

Externally, provide a shield element at the base of the plaster to separate it from floors, walkways or horizontal surfaces generally subjected to water splash and/or temporary standing water.

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.

ABSTRACT

In Greenbuilding and Historical Restoration the all-purpose plastering/rendering for water evaporation and thermal improvement of the masonry, will be carried out with a highly porous, hygroscopic, breathable plaster/render with reduced capillary water absorption for internal and external walls, especially if subject to damp, moisture rising and heat dispersal. NHL 3.5 pure hydraulic natural lime-based bio-render, mineral geo-binder, recycled inert eco-pores, extra-fine natural amorphous pozzolan and inert minerals with a 0 – 1.4 mm grading curve, GreenBuilding Rating® 5 (such as benesserebio® by Kerakoll Spa). The required characteristics, obtained exclusively through the use of raw materials of all-natural origin, make the bio-render extremely breathable (co-efficient of resistance to water vapour μ 5), the hardened mortar extremely porous ($\geq 40\%$), with natural thermal conductivity (equal to 0.14 W/mK), a high degree of occluded air during mixing ($\geq 25\%$), total resistance to salt (WTA 2-2-91/D exceeded) and less water penetration (≤ 5 mm in 24 hrs). The natural bio-render satisfies the requirements of standard EN 998/1 – R – T / CS II / W24 ≥ 0.3 kg/m², adhesion ≥ 0.15 N/mm², A1 class reaction to fire. The bio-render, including levelling layers, rustic finish coat done with flattener, squaring up of edges and corners, must be at least 20 mm thick. To be applied by hand or using a plastering machine. Coverage benesserebio® $\approx 6,5$ kg/m² per cm of thickness.

TECHNICAL DATA COMPLIANT WITH KERAKOLL QUALITY STANDARD

Type of mortar	rebuilding/restoration and heat-insulation mortar (R – T)	EN 998-1
Pure chemical nature of binder	- pure Natural Hydraulic Lime NHL 3.5 - geo-binder - extra-fine natural amorphous pozzolan	
Grading	0 – 1.4 mm	EN 1015-1
Apparent volumetric mass	≈ 0.75 kg/dm ³	UEAtc
Shelf life	≈ 12 months in the original packaging in dry environment	
Pack	bags 18 kg	
Mixing water	≈ 6 l / 1 bag 18 kg	
Apparent density of wet mortar	≈ 0.85 kg/dm ³	EN 1015-6
Apparent density of dry, hardened mortar	≥ 0.70 kg/dm ³	EN 1015-10
Water retention	$\geq 95\%$	DIN 18555-7
Occluded air / Plastering machine occluded air	$\geq 25\%$	EN 413-2
Temperature range for application	from +5 °C to +35 °C	
Minimum thickness obtainable	1 cm	
Maximum thickness obtainable by coat	≈ 4 cm	
Coverage	≈ 6.5 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 plus GEV-Emicode GEV Certified 8667/11.01.02

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

Flow	Dilution		
Toluene	319 µg m ² /h	+114%	JRC method
Pinene	327 µg m ² /h	+130%	JRC method
Formaldehyde	3458 µg m ² /h	+11%	JRC method
Carbon Dioxide (CO ₂)	350 mg m ² /h	+399%	JRC method
Humidity (Humid Air)	46 mg m ² /h	+117%	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

Coeff. for resistance to vapour circulation (µ)	5	EN 1015-19
W24 capillary water absorption	≥ 0.3 kg/m ²	EN 1015-18
Depth of water infiltration in 24 hrs	≤ 3 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)	≥ 0.1 N/mm ² - FP: B	EN 1015-12
Resistance to sulphates (table 1 ≤ 0.034%)	exceeded	ASTM C 1012-95a
Thermal conductivity (λ ₁₀ , dry)	0.14 W/(m K)	EN 1745
Durability (freeze/thaw)	evaluation based on regulations	
	applicable to mortar in the country of use	EN 998-1
Radioactivity index	I = 0.145	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**
- abide by any standards and national regulations
- protect surfaces from direct sunlight and wind
- sandblast or hydro-sandblast walls subject to rising damp
- if necessary, ask for the safety data sheet
- for any other issues, contact the Kerakoll Worldwide Global Service +39 0536 811 516 - globalservice@kerakoll.com

The Rating classifications refer to the GreenBuilding Rating® Manual 2012. This information was last updated in July 2019 (ref. GBR Data Report - 07.19); 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.



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