

Geocalce F Antisismico

Fine-grain, breathable structural geo-mortar made from pure natural NHL range and geo-binder – Class M15. Specific for use as a mineral matrix to be used with GeoSteel galvanized steel sheets, GeoSteel Grid basalt and stainless steel fibre mesh and Steel Dryfix stainless steel helical bars in certified structural reinforcement, improvement and seismic adaptation systems.

Certified to improve the safety of buildings.

Geocalce F Antisismico (anti-seismic) is a geo-mortar with M15 resistance class according to EN 998-2 and R1 according to EN 1504-3, for operations on highly breathable walls and concrete structures.

1. Health and safety

The first breathable lime-based structural mortars that ensure high permeability to vapour. Used in combination with Kerakoll strengthening systems, they increase the mechanical resistance of the existing walls in order to improve the structural safety of the building.

2. Low elastic modulus

Thanks to the use of NHL lime and the geo-binder, the Geocalce range features a low elastic modulus that creates a perfect balance with characteristic strengths typical of masonry structures of all types.

3. Culture and tradition

The Geocalce range respects and satisfies the needs of applications on buildings subjected to Historical Restoration of Environmental and Architectural Heritage buildings and on traditional buildings.

4. Bacteriostatic and fungistatic product (CSTB method)**



Rating 5

- ✓ Pollution Reduced
- ✓ Bacteriostatic
- ✓ VOC Low Emission
- ✓ CO₂ Emission ≤ 250 g/kg
- ✓ Recycled Regional Mineral ≥ 30%

kerakoll

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

Natural Ingredients



Pure NHL 3.5 certified natural lime



Mineral geo-binder



Siliceous washed natural river sand
(0.1 – 0.5 mm)



Siliceous Washed Natural River Sand
(0.1 – 1 mm)



Selected Dolomitic Limestone
(0 – 1.4 mm)



Pure Fine White Carrara Marble
(0 – 0.2 mm)

Areas of application

→ Intended use:

Geocalce F Antisismico is ideal for the breathable structural strengthening of masonry elements and the protection of non-structural elements. To be used in combination with Geosteel G galvanized steel sheets, Geosteel Grid basalt and stainless steel fibre mesh, Geo Grid 120 basalt fibre mesh, Rinforzo ARV 100 AR fibreglass and aramid fibre mesh and Steel Dryfix and Steel Helibar 6 stainless steel helical bars.

Geocalce F Antisismico can be used to build new walls and to repair damaged masonry facings, respecting the mechanical performance levels of

the existing wall.

Geocalce F Antisismico is particularly well suited to provide reinforcement of masonry structures in which the all-natural origin of its components guarantees compliance with the required levels of porosity, hygroscopicity and breathability. Where capillary moisture rising is present, complete the cycle with Benesserebio.

Do not use on existing plasters/renders or finishing coats, on substrates which are dirty, non-cohesive, powdery or on previous paint coats and salt scaling.

Instructions for use

→ Preparation of substrates

The substrate must be clean and solid, free from loose debris, dust and mould. Clean the surfaces by sand-blasting or sanding until achieving a surface roughness equal to level 8 of the test kit for preparation of reinforced concrete and masonry substrates. Subsequent power washing to remove all residue from previous operations which could impair adhesion. Remove inconsistent rendering mortars from between the stones. Use Geocalce F Antisismico 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 product.

→ Preparation and application

To prepare Geocalce F Antisismico, mix one 25-kg bag using clean water, in the amount shown on the package, 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 consistency is achieved. Use all of prepared mixture; do not reuse it in subsequent mixings. Use running water not subject to the influence of outside temperatures. Adding cement in any quantity would impair the quality of the geo-mortar which is guaranteed by its all-natural origins.

Geocalce F Antisismico has the same plasticity of the best natural limes, making it ideal for applications using a plaster sprayer. Tests to prove the compliance of Geocalce F Antisismico were carried out using a plaster sprayer and the following accessories: Mixer, Stator/Rotor D6-3, 25x37-mm flexible hoses, 10-20 m long and spray gun. Geocalce F Antisismico 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. Then wet the substrate until it is fully saturated yet dry, leaving no excess water on the surface.

Do not add other components (binders or generic inert materials) to the mix.

→ Strengthening of masonry elements by widespread retrofitting and protection of non-structural elements

Low thickness spot reinforcement systems are created in the following phases:

a) apply a first layer of Geocalce F Antisismico, thickness approximately 3-5 mm; b) with

the mortar still fresh, lay the GeoSteel Grid 200/400, basalt and stainless steel fibre mesh, or the GeoSteel Grid 120 basalt fibre mesh, or the Rinforzo ARV 100 AR fibreglass and aramid mesh, taking care to ensure the mesh is completely impregnated and avoiding the formation of any voids or air bubbles that might compromise adhesion of the mesh to the matrix or to the substrate; c) insert any GeoSteel thread connector systems, created using GeoSteel G600/G1200 sheets and with injection of Geocalce FL Antisismico, or dry connections, created using Steel Dryfix bars. Select the most suitable connection system according to the wall; d) apply the second layer of Geocalce F Antisismico, thickness approximately 2-5 mm, in order to fully incorporate the reinforcement mesh and fill any underlying voids; e) repeat phases (a) and (b) if necessary for all the subsequent reinforcement layers required by the project.

→ Reinforcement of masonry elements with band fixing

Low thickness band reinforcement systems are created in the following phases:

a) apply a first layer of Geocalce F Antisismico, thickness approximately 3-5 mm; b) with the mortar still fresh, lay the GeoSteel G600 or GeoSteel G1200 galvanized steel fibre sheet, taking care to ensure the sheet is completely impregnated and avoiding the formation of any voids or air bubbles that might compromise adhesion of the sheet to the matrix or to the substrate; c) insert any GeoSteel thread connector systems, created using GeoSteel G600/G1200 sheets and with injection of Geocalce FL Antisismico, or dry connections, created using Steel Dryfix bars. Select the most suitable connection system according to the wall; d) apply the second layer of Geocalce F Antisismico, thickness approximately 2-5 mm, in order to fully incorporate the reinforcement mesh and fill any underlying voids; e) repeat phases (a) and (b) if necessary for all the subsequent reinforcement layers required by the project.

→ Cleaning

Geocalce F Antisismico is a natural product and tools can be cleaned using water before the product hardens.

Special notes

- Outdoors, provide for a separation from floors, walkways or horizontal surfaces in general, to avoid possible capillary draw phenomena;
- similarly, protect the Kerakoll strengthening system against the elements by applying Kerakover Silox Pittura.

Certificates and marks

CE mark in combination with GeoSteel G600 and G1200 for masonry structures

CE-marked in combination with Geosteel Grid 200 and 400 and Rinforzo ARV 100 for masonry structures

* 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).

Abstract

Reinforcement of masonry elements using spot or band fixing, arrangement, pointing, or creating structural fine-grain concretes are done with a geo-mortar with very high hygroscopicity and breathability for internal and external walls with a base of pure natural NHL 3.5 and geo-binder, inert siliceous sand, and Dolomitic limestone on granulometric curve 0 – 1.4 mm, GreenBuilding Rating 5 (such as Geocalce G Antisismico by Kerakoll Spa). The natural geo-mortar must also meet the requirements of standard EN 998-2 – G/ M15, and EN 1504-3 – R1 PCC, A1 class reaction to fire. The geo-mortar covering must not exceed 15 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 Geocalce F Antisismico: $\approx 14 \text{ kg/m}^2$ per cm of thickness.

Technical Data compliant with Kerakoll Quality Standard		
Appearance	Powder	
Aggregate mineral content	silicate - carbonate	
Grading	0 – 1.4 mm	
Shelf life	≈ 12 months from production in the original sealed packaging, protect from humidity	
Pack	25 kg bags	
Mixing water	≈ 4.5 l / 1 x 25 kg bag	
Apparent density of wet mortar	≈ 1.73 kg/dm ³	EN 1015-6
Apparent density of dry, hardened mortar	≈ 1.58 kg/dm ³	EN 1015-10
Temperature range for application	from +5 °C to +35 °C	
Maximum thickness obtainable by coat	≈ 1.5 cm	
Coverage	≈ 14 kg/m ² per cm of thickness	

Values taken at +20 ± 2 °C, 65 ± 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 4093/11.01.02
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Active INDOOR AIR QUALITY (IAQ) - Dilution of indoor pollutants *

	Flow	Dilution	
Toluene	299 µg m ² /h	+100%	JRC method
Pinene	162 µg m ² /h	+14%	JRC method
Formaldehyde	2330 µg m ² /h	test failed	JRC method
Carbon dioxide (CO ₂)	388 mg m ² /h	+453%	JRC method
Humidity (Humid Air)	26 mg m ² /h	+21%	JRC method

Bioactive INDOOR AIR QUALITY (IAQ) - Bacteriostatic action **

<i>Enterococcus faecalis</i>	Class B+ no proliferation	CSTB method
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Bioactive INDOOR AIR QUALITY (IAQ) - Fungistatic action **

<i>Penicillium brevicompactum</i>	Class F+ no proliferation	CSTB method
<i>Cladosporium sphaerospermum</i>	Class F+ no proliferation	CSTB method
<i>Aspergillus niger</i>	Class F+ no proliferation	CSTB method

Performance		
HIGH-TECH EN 998-2		
Compressive strength after 28 days	M15 category	EN 998-2
Permeability to water vapour (μ)	from 15 to 35 (table value)	EN 1745
Water capillary absorption	≈ 0.3 kg/(m² · min ^{0.5})	EN 1015-18
Shear strength	> 1 N/mm²	EN 1052-3
Adhesion to the substrate after 28 days	> 1 N/mm² - FP: B	EN 1015-12
Thermal conductivity (λ10, dry)	0.82 W/(m K) (table value)	EN 1745
Static modulus of elasticity	9 GPa	EN 998-2
Conformity	M15 resistance class	EN 998-2
HIGH-TECH EN 1504-3		
Compressive strength	> 15 MPa (28 days)	EN 12190
Flexural tensile strength	> 5 MPa (28 days)	EN 196/1
Adhesive bond	> 0.8 MPa (28 days)	EN 1542
Adhesion on clay brick	> 1 MPa (28 days)	EN 1015-12
Modulus of elasticity under compression	9 Gpa (28 days)	EN 13412
Thermal compatibility with freeze/thaw cycles with de-icing salts	visual inspection passed	EN 13687-1
Chloride ion content (determined on the product in powder form)	< 0.05%	EN 1015-17
Reaction to fire	Euroclass A1	EN 13501-1
<small>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</small>		

Possible applications of the Geocalce F Antisismico matrix with Kerakoll sheets and meshes						
	Geosteel G600	Geosteel G1200	Geosteel Grid 200	Geosteel Grid 400	Geo Grid 120	Rinforzo ARV 100
Geocalce F Antisismico	yes	yes	yes	yes	yes	yes

Warning

- Product for professional use
- abide by any standards and national regulations
- store the product in places protected against the heat in summer months and against the cold during the winter
- protect the surfaces from air currents
- 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

Kerakoll Quality System

ISO 9001 CERTIFIED 1710/0327

Kerakoll Quality System

ISO 40001 CERTIFIED 18586-1

The Rating classifications refer to the GreenBuilding Rating Manual 2012. This information was last updated in July 2023 (ref. GBR Data Report – 0723); 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 site 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.