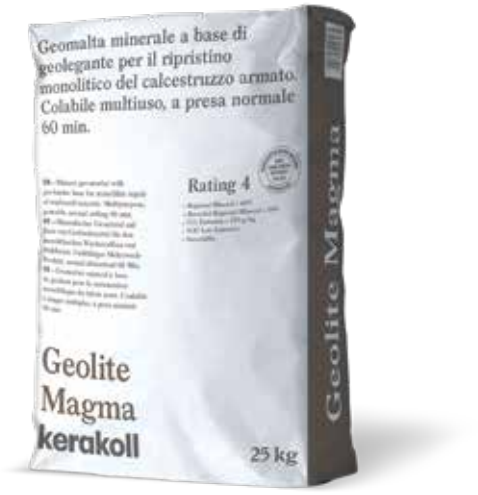
Geolite Magma

Mineral geo-mortar with geo-binder base for monolithic repair of reinforced concrete.

Geolite Magma is a pourable, multipurpose geo-mortar for passivating, repairing and consolidating structures in reinforced concrete with a swelling effect, for anchoring and fixing metal elements.



GREENBUILDING RATING
REF. GBR DATA REPORT 05.22
APPROVED

Rating 4

- ✓ Regional Mineral ≥ 60%
- × Recycled Mineral ≥ 30%
- ✓ CO_2 ≤ 250 g/kg
- ✓ VOC Very Low Emission
- ✓ Recyclable

1. Pourable, multipurpose, class R4
2. Normal setting: 60 min.
3. Thicknesses from 10 to 100 mm
4. Based on geo-binder
5. For naturally stable, monolithic repairs
6. Modular setting times

kerakoll

Areas of application

→ Use
Passivation, restoration and monolithic consolidation of reinforced concrete structures and infrastructures:
- by the formwork casting of concrete for vertical structures and at the soffit of horizontal elements;
- by pouring onto the top surface of horizontal elements or by bonded section underpinning in general.

Precision fastening and structural anchoring of sub-plates, tie-rods, bars, plates, machinery on reinforced concrete.

Instructions for use

→ Preparation of substrates
Before applying Geolite Magma it is necessary to:
- thoroughly remove all weakened concrete until a solid, resistant substrate is obtained; roughen it by mechanical scarification or hydro-demolition to a depth of ≥ 5 mm, equivalent to level 9 of the Test kit for preparation of reinforced concrete and masonry substrates;
- remove the rust from the reinforcing bars, which must be cleaned by brushing (manual or mechanical) or sandblasting;
- clean the treated substrate using compressed air or a high pressure washer;
- saturate with water until the substrate is saturated yet with no excess water on the surface. Alternatively on horizontal concrete surfaces, apply Geolite Base on a dry substrate in order to ensure regular absorption and promote the natural crystallisation of the geo-mortar.

Check that the resistance class of the supporting concrete is suitable.
In case of thick patched layers and on large surface areas, provide a reinforcing welded mesh anchored to the substrate.

→ Preparation
Prepare Geolite Magma by mixing 25 kg of powder with the amount of water indicated on the packaging (we advise using the whole bag).
The mixture can be
prepared in:
- a mixer, mixing until a smooth, lump-free mortar is obtained;
- a suitable mixing pump;
- a mortar mixer or drill-type mixing device with a low-rev agitator.

→ Application
- For repair and/or reinforcement involving the use of Geolite Magma, apply the mortar by pouring or pumping it on the extrados of horizontal surfaces or in sealed and formworks treated with parting compound that assists air escape, using the correct application techniques.
  Geolite Magma must never be applied in a thickness of less than 10 mm. For applications involving a thickness of 60-100 mm (according to the type of work to be carried out and the size of the operation), to contain hydration heat, mix up a fine grain concrete, adding Ghiaia 3.6 in a ratio of 25-30% by weight of the Geolite Magma (25-30 kg of Ghiaia 3.6 for every 100 kg of Geolite Magma), so that the grain size curve is optimised according to the application thickness.
- For grouting of bars, fill the hole previously made with Geolite Magma and insert the bar with a rotating movement.
- Mechanized application: it is recommended to use an endless screw plastering machine (such as Turbosol or Putzmeister) or a three-phase continuous pump mixer (such as PFT G4) and the following accessories: mixer, stator/rotor D 6-3 (flow rate 22 l/min), Ø 25 mm flexible hose, 10-15 m long.

Geolite Magma must be integrated with the structure to be restored by incorporating the existing reinforcing rods, after freeing them from the concrete, or by inserting additional reinforcement in the form of rods or electro-welded mesh.
Allow the surfaces to cure for at least 24 hrs.

→ Cleaning
Residual traces of Geolite Magma can be removed from tools and machines using water before the product hardens.

Special notes

→ Repair of industrial flooring and/or flat concrete surfaces

1. Detailed analysis of damage, deterioration and cracks.
2. Removal of the weakened concrete by scarification down to the sound part. The surface must be prepared to a ≥ 5 mm roughness, equivalent to level 9 of the Test kit for preparation of reinforced concrete and masonry substrates.
3. Sealing of any cracks by injection with Kerabuild Epofill.
4. Removal of the dust and concrete residue using compressed air or washing with pressurised water.
5. Spray application of Geolite Base surface preparation coat onto the clean, dry surface.
6. Reconstruction of the section based on the following guidelines:
   a. for thin patched layers between 10 and 35 mm thick, add suitable short fibres;
   b. for medium thickness patched layers between 35 and 60 mm, insertion of galvanised, electro-welded mesh Ø 5 mm, mesh size approx. 10x10 mm, positioned in the upper third of the layer thickness and anchored with steel rods bent into an "L" shape and grouted to the substrate using Kerabuild Epofill for a minimum depth of 60 mm;
   c. for high thickness patched layers from 60 to 100 mm in addition to b) above, add 25-30% by weight to the Ghiaia 3.6 mortar. It is advisable to use a combination of electro-welded mesh with suitable short fibres.
7. Always allow the surfaces to cure for at least 24 hrs.
8. Creation of expansion joints using a diamond coated circular saw, preferably in square areas that are not larger than 16-20 m². Always respect the existing joints in the floor.
9. For surface finishes with an even appearance that are also slip-resistant and non-slip, the surface must be shot peened at least 7 days after casting.
10. This type of floor is suitable for surface treatment with specific resins from the Kerakoll Factory range, to give higher levels of chemical and mechanical resistance.

The indications provided are based on a knowledge of the problems relating to floors and on the experience gained in this sector both regarding products and applications.
The Designer and Constructor will be responsible for selecting the best solution, which may involve indications other than those provided in the technical description, based also on the state of preservation of the surfaces and the subsequent conditions of use.

N.B.

1. On large surface areas, use special mixing machines, so that the product can be applied continuously without waiting times or pauses.
2. It is always recommended that the amounts of suitable short fibres suggested in the respective technical data sheets be added to mortars that are used to repair or create flooring in order to improve ductility.
3. Comply with the times indicated in the product technical data sheet before returning the floors to use.
4. Carry out test samples to assess site organisation as regards laying, and the effectiveness of the option selected.
5. Perform contraction joints after at least 12 hours and no later than 24 hours.

Certificates and marks

CE EN 1504-3 · CE EN 1504-6 · CE EN 1504-7 · R4 CC WET WAY TESTED EN 1504-3 · R4 PCC DRY WAY TESTED EN 1504-3 · CR METHOD 3.1 - 3.3 EN 1504-3 · SS METHOD 4.2 - 4.4 EN 1504-3/6 · RP METHOD 7.1 - 7.2 EN 1504-3 · CA METHOD 11.2 EN 1504-7 · PASSES CARBONATION RESISTANCE EN 1504-3

EPD-IES-0006151 environdec.com · GEV-EMICODE EC 1 PLUS very low emission · eco 1 · ÉMISSIONS DANS L'AIR INTÉRIEUR A+ A+ A B C

* 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

Localised or generalised centimetre-thick monolithic repair and strengthening of reinforced concrete in damaged or deteriorated sections and simultaneous treatment of reinforcing bars, reconstruction of concrete floors, fastening and anchoring of metal elements by applying by hand or machine casting into formworks or on horizontal surfaces, after adequate preparation and wetting of the substrates until fully saturated, of certified, mineral, pourable, normal-setting geo-mortar with a geo-binder base, extremely low petrochemical polymer content, free from organic fibres, specific for the passivation, repair and guaranteed, long-lasting, monolithic strengthening of concrete structures and anchoring of metal elements, such as Geolite Magma by Kerakoll Spa, GreenBuilding Rating 4, CE-marked and compliant with the performance requirements of Standards EN 1504-7 for the passivation of reinforcing bars, EN 1504-3, Class R4 for volumetric reconstruction and consolidation and EN 1504-6 for the anchoring with swelling effect; according to Principles 3, 4, 7 and 11 as defined by Standard EN 1504-9.

Technical Data compliant with Kerakoll Quality Standard		
Appearance	powder	
Apparent volumetric mass	≈ 1280 kg/m³	UEAtc
Aggregate mineral content	silicate - carbonate	
Grading	0 – 2.5 mm	EN 12192-1
Shelf life	≈ 12 months from production in the original sealed packaging, protect from humidity	
Pack	25 kg bags	
Mixing water	≈ 3.8 l / 1 x 25 kg bag	
Flow of the mixture	270 – 290 mm with no shaker table vibration	EN 13395-1
Density of the mixture	≈ 2200 kg/m³	
pH of the mixture	≥ 12.5	
Pot life	≥ 45 min. (at +21 °C)	
Start/end of setting	> 60 – 70 min.	
Temperature range for application	from +5 °C to +40 °C	
Embedded bar adhesive tension	> 25 MPa	RILEM-CEB-FIP-RC6-78
Minimum thickness	10 mm	
Maximum thickness	60 – 100 mm (according to the type of work and the size of the operation)	
	for thicker layers, mix Geolite Magma with Ghiaia 3.6	
Coverage	≈ 19 kg/m² per cm of thickness	

Values taken at +21 °C, 60% 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 3542/11.01.02
HIGH-TECH			
Performance characteristic	**Test Method**	**Requirements of EN 1504-7**	**Geolite Magma Performance**
Corrosion protection	EN 15183	no corrosion	value exceeded
Shear adhesion	EN 15184	≥ 80% of the value of the uncovered bar	value exceeded
	Test Method	**Requirements of EN 1504-3 class R4**	**Geolite Magma Performance in CC and PCC conditions**
Compressive strength	EN 12190	≥ 45 MPa (28 days)	> 22 MPa (24 hrs)
			> 70 MPa (7 days)
			> 75 MPa (28 days)
Flexural tensile strength	EN 196-1	None	> 4 MPa (24 hrs)
			> 7 MPa (7 days)
			> 9 MPa (28 days)
Adhesive bond	EN 1542	≥ 2 MPa (28 days)	> 2 MPa (28 days)
Resistance to carbonation	EN 13295	d_k ≤ reference concrete [MC (0.45)]	value exceeded
Modulus of elasticity under compression	EN 13412	≥ 20 GPa (28 days)	28 GPa in CC 26 GPa in PCC
Thermal compatibility with freeze/thaw cycles with de-icing salts	EN 13687-1	bond strength after 50 cycles ≥ 2 MPa	> 2 MPa
Capillary absorption	EN 13057	≤ 0.5 kg·m^{-2}·h$^{-0,5}$	< 0.5 kg·m^{-2}·h$^{-0,5}$
Chloride ion content (determined on the product in powder form)	EN 1015-17	≤ 0.05%	< 0.05%
Reaction to fire	EN 13501-1	Euroclass	A1
Resistance to severe chemical attacks (group 3: unused heating oil, diesel oil and oils for engine and gear)	EN 13529	analysis of damage and bond strength ≥ 2 MPa	no deterioration and bond strengths > 2 Mpa
	Test Method	**Requirements of EN 1504-6**	**Geolite Magma Performance**
Pull-out strength of steel rebars (movement in mm in relation to a 75 kN load)	EN 1881	≤ 0.6 mm	< 0.6 mm
Chloride ion content (determined on the product in powder form)	EN 1015-17	≤ 0.05%	< 0.05%
Hazardous substances		compliant with point 5.4	
Aggregate performance characteristic	**Test Method**	**Requirements of UNI 8520-22**	**Geolite Magma aggregate performance**
Alkali-aggregates reaction	UNI 11504	reactivity class	NR (non-reactive)

Warning

→ Product for professional use
→ abide by any standards and national regulations
→ store the product away from any sources of humidity and out of direct sunlight
→ use at temperatures between +5 °C and +40 °C
→ do not add binders or additives to the mixture
→ do not apply to dirty, loose and flaking surfaces
→ do not apply on gypsum, metal or wood
→ following application, protect from direct sunlight and wind
→ allow the product to cure during the first 24 hours
→ if necessary, ask for the safety data sheet
→ for any other issues, contact Kerakoll Customer Care +91-22-2839 5593 / 1800 102 4957 - info@kerakollindia.com

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