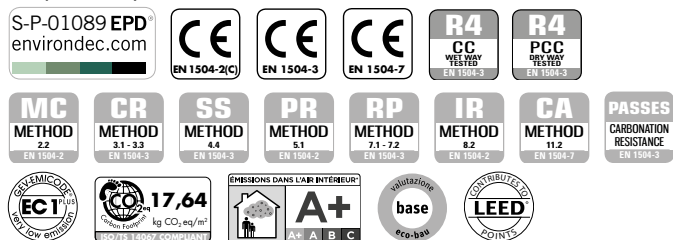


# GeoLite®

**Certified, eco-friendly mineral geo-mortar with a crystalline reaction geo-binder base, for passivation, restoration, finishing and monolithic protection of deteriorated concrete structures, ideal for use in GreenBuilding. Very low petrochemical polymer content, free from organic fibres. Thixotropic, normal setting.**

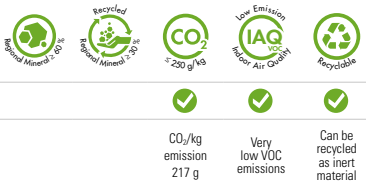
GeoLite® is a thixotropic geo-mortar used to passivate, restore, finish and protect reinforced concrete structures such as beams, pillars, slabs, front sections, ramps, facades, decorative elements, cornices and civil engineering structures such as bridges, viaducts, tunnels and water channels. Suitable for use as an inorganic mineral matrix to be used with GeoSteel galvanized steel sheets in certified structural reinforcement, improvement and seismic adaptation systems.



## GREENBUILDING RATING®

### GeoLite®

- Category: Inorganic mineral products
- Repair and reinforcement of reinforced concrete and masonry



RATING SYSTEM ACCREDITED BY CERTIFICATION BODY SGS

## ECO NOTES

- Based on geo-binder
- Eco-friendly concrete restoration
- Very low petrochemical polymer content
- Free from organic fibres
- With low CO<sub>2</sub> emissions
- With very low volatile organic compound emissions
- Can be recycled as mineral inert material, avoiding waste disposal costs and environmental impact

## PRODUCT STRENGTHS

- **GEO-BINDER.** Exclusive use of the innovative Kerakoll geo-binder revolutionises mortars used to repair concrete, guaranteeing levels of safety never before achieved and unique eco-friendly performance.
- **MONOLITHIC.** The first geo-mortar that forms a monolithic conglomerate that will surround, protect and strengthen reinforced concrete works without the need to apply several layers. The only mortar that is certified to passivate, restore, finish, correct and protect in a single layer.
- **CRYSTALLISING.** The naturally stable, monolithic repairs carried out with GeoLite® crystallise with the concrete to guarantee the durability of a mineral rock.
- **QUICK.** The first geo-mortar that requires just one day's work to achieve complete restoration, as compared with the six days required by traditional restoration mortar cycles involving several layers.
- **TAILORED.** The first range of geo-mortars with different setting times (> 80 – 40 – 10 min.) that can be mixed together to customise setting times according to conditions on the building site.



## AREAS OF USE

### Use

Passivation, localised and generalised restoration; finishing and monolithic protection of reinforced concrete structures, such as beams, pillars, slabs, front sections, ramps, exposed walls, decorative elements, cornices and civil engineering structures such as bridges, viaducts, tunnels, water channels.

Specific for medium or large size operations, machine application, finishing of large surface areas.

Suitable as an inorganic mineral matrix in certified composite reinforcement systems from the GeoSteel range, for the static and seismic adaptation or improvement of reinforced concrete or masonry structural elements.

Ideal for GreenBuilding and Restoration of Modern Architecture.

## INSTRUCTIONS FOR USE

### Preparation of substrates

Before applying GeoLite® restore the concrete surface and roughen it to a depth of at least 5 mm, equal to level 8 of the Test Kit for preparation of reinforced concrete and masonry substrates, by mechanical scarification or hydro-demolition, thoroughly removing all

\* 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

weakened concrete; after this all rust must be removed from the reinforcing bars, which must be cleaned by polishing (manual or mechanical) or sandblasting. Then proceed with cleaning of the treated surface using compressed air or high-pressure washer, and soak thoroughly to saturate the substrate, but with no liquid water on the surface. As an alternative to wetting with water, on horizontal concrete surfaces, application of GeoLite® Base guarantees proper absorption on dry substrates and encourages natural crystallisation of the geo-mortar. Before applying GeoLite®, check that the resistance class of the supporting concrete is suitable.

**High-thickness patching on large surface areas:** a suitable contrasting metallic reinforcement needs to be anchored to the substrate using anchoring pins.

### Preparation

Prepare GeoLite® by mixing 25 kg of powder with the amount of water indicated on the packaging (we advise using the whole bag). A cement mixer can be used – mix until the mortar is smooth with no lumps; a suitable mortar machine can also be used to mix and then spray the product. When mixing small quantities, use a bucket and drill-type mixing device with a low-rev agitator. Store the product away from any sources of humidity and out of direct sunlight.

### Application

In localised/generalised restoration work in which GeoLite® is applied in thicknesses from 2 mm to 40 mm (maximum per layer), apply the mortar by hand using a trowel or mortar spray machine.

**Mechanized application:** it is recommended to use an endless screw plastering machine (such as Turbosol or Putzmeister) or a three-phase continuous pump mixers (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 and spray gun.

**Application of GeoSteel SRG systems:** to create structural reinforcements, systems in which GeoLite® acts as an inorganic mineral matrix, apply an initial layer of geo-mortar, to guarantee a sufficient amount of material on the suitably prepared support (minimum thickness 5 - 8 mm) to regulate it and allow laying and incorporation of the strengthening textile. After applying the steel textile, apply a second layer so as to incorporate the reinforcement completely and close up any underlying gaps.

To make a protective finishing, GeoLite® can be applied manually (with a steel spreader) or by machine in a minimum thickness of 2 mm after the surface has been roughened to a depth of 1 – 2 mm.

Always allow the surfaces to cure for at least 24 hrs.

### Cleaning

Residual traces of GeoLite® 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 end surface must be roughened to a depth of +/- 5 mm, equal to level 8 of the Test Kit for preparation of reinforced concrete and masonry substrates.
- 3- Sealing of any cracks by injection with epoxy systems.
- 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 5 and 35 mm thick, add suitable short fibres
  - b) for medium thickness patched layers between 30 and 80 mm, insertion of galvanised, electro-welded mesh Ø 5 mm, mesh size approx. 100x100 mm positioned in the upper third of the layer thickness and anchored with "L" shaped steel bars embedded in the lower surface using Kerabuild Epofill epoxy resin to a minimum depth of 60 mm. It is advisable to use a combination of electro-welded mesh with suitable short fibres.
- 7- Allow damp curing of the conglomerate for at least 24 hours.
- 8- Contraction joints using a diamond coated circular saw, preferably in square areas that are not larger than 16-20 m<sup>2</sup>. Always follow the existing expansion 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 particular 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- When carrying out work on extensive surfaces, 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 recommended in the respective technical data sheets be added to mortars that are used to repair or create flooring, to improve ductility.
- 3- Comply with the times indicated in the product technical data sheet before returning the floors to use. Returning the floors to use too early with unsustainable loads might irreparably damage the internal cohesion of the mortar and its future strength.
- 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.

## ABSTRACT

Passivation, localised and generalised centimetre-thick monolithic restoration of deteriorated concrete structural elements and civil engineering structures, millimetre-thick monolithic protective finishing with manual or machine application of certified, thixotropic, eco-friendly, normal setting geo-mortar with a crystalline reaction zirconia and geo-binder base, extremely low petrochemical polymer content and free from organic fibres, specific for the passivation, restoration, finishing and guaranteed, long-lasting, monolithic protection of concrete structures, such as GeoLite® by Kerakoll® Spa, GreenBuilding Rating® 3, that is CE-marked and compliant with the performance requirements of Standard EN 1504-7 (passivation of reinforcing bars), EN 1504-3, Class R4 (volumetric reconstruction and finishing) and EN 1504-2 (protection of surfaces), according to Principles 2, 3, 4, 5, 7, 8 and 11 as defined by EN 1504-9.

## TECHNICAL DATA COMPLIANT WITH KERAKOLL QUALITY STANDARD

Appearance	powder	
Apparent volumetric mass	≈ 1260 kg/m <sup>3</sup>	UEAtc
Aggregate mineral content	silicate - carbonate	
Grading	0 – 0,5 mm	EN 12192-1
Shelf life	≈ 12 months in the original packaging in dry environment	
Pack	25 kg bags	
Mixing water	≈ 5 ℓ / 1 x 25 kg bag	
Flow of the mixture	160 – 180 mm	EN 13395-1
Density of the mixture	≈ 2050 kg/m <sup>3</sup>	
pH of the mixture	≥ 12.5	
Start/End of setting	> 70 – 80 min. (> 200 – 220 min. at +5 °C) – (> 50 – 60 min. at +30 °C)	
Temperature range for application	from +5 °C to +40 °C	
Minimum thickness	2 mm	
Maximum thickness per layer	40 mm	
Coverage	≈ 17 kg/m <sup>2</sup> 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

HIGH-TECH			
Performance characteristic	Test Method	Requirements of standard EN 1504-7	GeoLite® Performance
Corrosion protection	EN 15183	no corrosion	value exceeded
Shear adhesion	EN 15184	≥ 80% of the value of the uncovered bar	value exceeded
Performance characteristic	Test Method	Requirements of standard EN 1504-3, class R4	GeoLite® Performance in CC and PCC conditions
Compressive strength	EN 12190	≥ 45 MPa (28 days)	> 20 MPa (24 hrs)
			> 35 MPa (7 days)
			> 50 MPa (28 days)
Flexural tensile strength	EN 196/1	None	> 5 MPa (24 hrs)
			> 7 MPa (7 days)
			> 8 MPa (28 days)
Adhesive bond	EN 1542	≥ 2 MPa (28 days)	> 2 MPa (28 days)
Resistance to carbonation	EN 13295	depth of carbonation ≤ reference concrete [MC (0.45)]	value exceeded
Modulus of elasticity under compression	EN 13412	≥ 20 GPa (28 days)	22 GPa in CC - 20 GPa in PCC (28 days)
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 <sup>-2</sup> ·h <sup>-0.5</sup>	< 0.5 kg·m <sup>-2</sup> ·h <sup>-0.5</sup>
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

## PERFORMANCE

Performance characteristic	Test Method	Requirements of standard EN 1504-2 (C)	GeoLite® Performance
Permeability to water vapour	EN ISO 7783-2	reference class	class I: $S_D < 5 \text{ m}$
Capillary absorption and water permeability	EN 1062-3	$w < 0.1 \text{ kg}\cdot\text{m}^{-2}\cdot\text{hrs}^{-0.5}$	$w < 0.1 \text{ kg}\cdot\text{m}^{-2}\cdot\text{hrs}^{-0.5}$
Bond strength by pull off	EN 1542	$\geq 2 \text{ MPa}$	$> 2 \text{ MPa}$
Linear shrinkage	EN 12617-1	$\leq 0.3\%$	$< 0.3\%$
Thermal expansion coefficient	EN 1770	$\alpha_T \leq 30\cdot 10^{-6}\cdot\text{k}^{-1}$	$\alpha_T < 30\cdot 10^{-6}\cdot\text{k}^{-1}$
Resistance to abrasion	EN ISO 5470-1	loss of weight $< 3000 \text{ mg}$	value exceeded
Adhesion following thermal shock	EN 13687-2	$\geq 2 \text{ N/mm}^2$	$> 2 \text{ N/mm}^2$
Resistance to impact	EN ISO 6272-1	reference class	Class III : $\geq 20 \text{ Nm}$
Hazardous substances		compliant with point 5.4	
Aggregate performance characteristic	Test Method	Requirements of standard UNI 8520-22	GeoLite® aggregate performance
Alkali-aggregates reaction	UNI 11504	reactivity class	NR (non-reactive)
<b>VOC INDOOR AIR QUALITY (IAQ) - VOLATILE ORGANIC COMPOUND EMISSIONS</b>			
Conformity		EC 1 plus GEV-Emicode	GEV certified 3539/11.01.02

## WARNING

- **Product for professional use**
- abide by any standards and national regulations
- use at temperatures between  $+5 \text{ }^\circ\text{C}$  and  $+40 \text{ }^\circ\text{C}$
- 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 the Kerakoll Worldwide Global Service +39 0536 811 516 - [globalservice@kerakoll.com](mailto: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](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**  
The GreenBuilding Company

KERAKOLL S.p.a.  
Via dell'Artigianato, 9 - 41049 Sassuolo (MO) Italy  
Tel +39 0536 816 511 - Fax +39 0536 816 581  
[info@kerakoll.com](mailto:info@kerakoll.com) - [www.kerakoll.com](http://www.kerakoll.com)