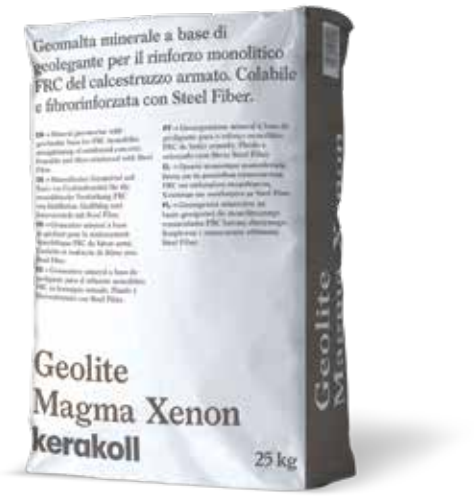
Geolite Magma Xenon

Mineral geo-mortar with geo-binder base for FRC monolithic strengthening of reinforced concrete. Pourable and fibre-reinforced with Steel Fiber.

When combined with Steel Fiber, Geolite Magma Xenon forms a high ductility, certified, fibre-reinforced, pourable geo-mortar for passivating, repairing and consolidating reinforced concrete structures.



1. **C.V.T. certified, pourable FRC system**
2. **It does not need additional rebars**
3. **Thicknesses from minimum 15 mm**
4. **Based on geo-binder**
5. **For high ductility monolithic strengthening**

kerakoll

Areas of application

→ Use
Inorganic mineral matrix to be used with Steel Fiber for the preparation of the high ductility, ultra-high performance, pourable, fibre-reinforced, C.V.T.-certified Geolite FRC mortar, for the repair and strengthening of structural elements, by means of low thickness interventions without the use of additional rebars.

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 the Geolite FRC system – Geolite Magma Xenon & Steel Fiber 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 Primer Uni on a dry substrate in order to ensure regular absorption and promote the natural crystallisation of the geo-mortar.
- apply Epobinder on a dry substrate to obtain a chemical-type anchoring; alternatively, use shear connectors for mechanical anchoring.

Check that the resistance class of the supporting concrete is suitable.

→ Preparation
The Geolite FRC - Geolite Magma Xenon & Steel Fiber system can be prepared in:
- a mixer, mixing Geolite Magma Xenon with the quantity of water shown on the package for about 6 minutes, until a smooth and lump-free mortar is obtained; then slowly add Steel Fiber in the amount of 6.5 % of the weight of the powder (1.66% by volume = 1 packaging of Steel Fiber every 4 bags of Geolite Magma Xenon) and further mix for approximately 2 minutes in order to ensure perfect distribution of Steel Fiber inside the binder matrix;
- a suitable indirect mixing pump equipped with a stator suitable for the maximum grain size of the product (1.5 mm) and the size of the steel fibre (13 mm);
- a mortar mixer or drill-type mixing device with a low-rev agitator, while keeping the percentage of steel fibres unchanged.

→ Application
Apply the Geolite FRC – Geolite Magma Xenon & Steel Fiber system by pouring or pumping it on the extrados of horizontal surfaces or in sealed formworks treated with a parting compound that assists air escape, using the correct application techniques.
Application thicknesses of shall not be less than 15 mm; for thicknesses greater than 40 mm, provide a reinforcing welded mesh anchored to the substrate.
In case of mechanical applications, it is recommended to use a suitably equipped endless screw plastering machine (such as Turbosol or Putzmeister).
Allow the surfaces to cure for at least 48 hrs. Cover with a waterproof sheet for the next 5 days.

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

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 · CVT

Certified in combination with Steel Fiber

EPD-IES-0001665 environdec.com

GEV-EMICODE EC1 VERY LOW EMISSION

RICICLABILE CON LA CARTA Aticelca® 501

Aticelca® 11137-0013

When properly emptied, the packaging is recyclable as paper (up to 80 per cent) according to the ATICELCA® 501 method.

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

Geolite FRC – Geolite Magma Xenon & Steel Fiber system: supply and laying of repair and structural strengthening of reinforced concrete using a high ductility, ultra-high performance, pourable, fibre-reinforced mortar, FRC (Fibre Reinforced Concrete), created with steel fibres obtained by cold drawing of high-performance and high carbon content wire, such as Steel Fiber, by Kerakoll Spa, CE-marked and compliant with the performance requirements of Standard EN 14889-1, immersed in a certified, pourable, normal-setting, mineral geo-mortar with a geo-binder base, with very low petrochemical polymer content and free of organic fibres, specific for the passivation, repair and guaranteed, long-lasting monolithic strengthening of concrete structures and the anchoring of metal elements, such as Geolite Magma Xenon by Kerakoll Spa, CE-marked and compliant with the performance requirements of Standards EN 1504-7 for the passivation of reinforcing bars, EN 1504-3, R4 Class, CC and PCC type, for volumetric reconstruction and strengthening and EN 1504-6 for anchoring, according to Principles 3, 4, 7 and 11 defined by EN 1504-9. C.V.T. certified mechanical characteristics: compressive strength C80/95 (EN 12390-3); modulus of elasticity under compression 43.41 GPa (NTC 2018); tensile strength 7.40 MPa (average value, CNR DT 204); tenacity class 8b $f_{R,1k}$ = 9.54 MPa, $f_{R,2k}$ = 8.83 MPa, $f_{R,3k}$ = 7.33 MPa and $f_{R,4k}$ = 6.10 MPa (typical values, EN 14651).

Technical Data compliant with Kerakoll Quality Standard		
Appearance	powder	
Apparent volumetric mass	≈ 1250 kg/m³	UEAtc
Aggregate mineral content	silicate - carbonate	
Grading	0 – 1.5 mm	EN 12192-1
Shelf life	≈ 12 months from production in the original sealed packaging, protect from humidity	
Pack	25 kg bags	
Mixing water:		
- into the cement mixer	≈ 3.3 l / 1 bag 25 kg	
- manual and mechanical mixing	≈ 3.1 l / 1 bag 25 kg	
Mixture spread	215 mm with no shaker table vibration	EN 13395-1
Density of the mixture	≈ 2270 kg/m³	
pH of the mixture	≥ 12.5	
Pot life	≥ 60 min. (at + 21 °C)	
Start/End of setting	> 360 min.	
Temperature range for application	from +5 °C to +40 °C	
Minimum thickness	15 mm	
Maximum thickness	40 mm	
Coverage	≈ 20 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 10894/11.01.02

HIGH-TECH

Performance characteristic	Test Method	Requirements of EN 1504-7	Performance
Corrosion protection	EN 15183	no corrosion	value exceeded
Shear adhesion	EN 15184	≥ 80% of the value of the uncovered bar	value exceeded

Performance			
	Test Method	**Requirements of EN 1504-3 class R4**	**Performance in CC and PCC conditions**
Compressive strength (N/mm²):	EN 12190		
- 24 hrs			> 70
- 7 days			> 85
- 28 days		≥ 45	> 110
Flexural tensile strength (N/mm²):	EN 196-1	none	
- 24 hrs			> 8
- 7 days			> 10
- 28 days			> 14
Adhesive bond	EN 1542	≥ 2 N/mm² (28 days)	> 2 N/mm² (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)	
- in CC			34 GPa
- in PCC			33 GPa
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
	Test Method	**Requirements of EN 1504-6**	**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	
	Test Method	**Requirements of standard**	**Performance**
Embedded bar adhesive tension	RILEM-CEB-FIPRC6-78	None	> 25 N/mm²
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 N/mm²	no deterioration and bond strengths > 2 N/mm²
Water-resistance	EN 12390-8	None	0 mm
Aggregate performance characteristic	**Test Method**	**Requirements of UNI 8520-22**	**Aggregate performance**
Alkali-aggregates reaction	UNI 11504	reactivity class	NR (non-reactive)

Performance		
Geolite FRC System – Geolite Magma Xenon & Steel Fiber (in accordance with CVT: Certificato di Valutazione Tecnica/Technical Assessment Certificate, no. 434/2020)		
Performance characteristic	**Test Method**	**Performance**
Density (product when hard)	EN 12390-7	2250 kg/m³
Compressive strength (characteristic value)	EN 12390-3	R_{ck} = 106,50 N/mm² C80/95
Modulus of elasticity under compression	NTC 2018	43,41 GPa
Poisson coefficient	NTC 2018	0 – 0.2
Coefficient of linear thermal expansion	NTC 2018	$10 \cdot 10^{-6}$ °C^{-1}
Residual flexural strength (characteristic value)	EN 14651	$f_{R,1k}$ = 9.54 N/mm²
		$f_{R,2k}$ = 8.83 N/mm²
		$f_{R,3k}$ = 7.33 N/mm²
		$f_{R,4k}$ = 6.10 N/mm²
		$f_{R,3k}$/ $f_{R,1k}$ = 0,768
Resistance to proportionality limit (average and characteristic value)	EN 14651	$f_{fct,L}$ = 6.95 N/mm²
		$f_{fct,Lk}$ = 5.91 N/mm²
Tenacity class	EN 14651	8b
Tensile strength (average value)	CNR DT 204	f_{Fts} = 7.40 N/mm²
Exposure classes	EN 206	X0
		XC1, XC2, XC3, XC4
		XD1, XD2, XD3
		XS1, XS2, XS3
		XF1, XF2, XF3, XF4
		XA1
Freeze/thaw resistance (after 20 cycles)	EN 12390-9	98% ($f_{R,1}$)
		101% ($f_{R,3}$)
Resistance to high temperatures (+100 °C)		99% ($f_{R,1}$)
		101% ($f_{R,3}$)
Reaction to fire	EN 13501-1	class A1
Installation conditions		
Temperature range (air and surface)		from +5 °C to +40 °C
Relative humidity (air and substrate)		irrelevant
Service conditions		
Temperature range (air and surface)		from -20 °C to +100 °C
Relative humidity (air and substrate)		irrelevant

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
→ following application, protect from direct sunlight and wind
→ allow the product to cure during the first 48 hours
→ if necessary, ask for the safety data sheet
→ when laying on gypsum, metal or timber, contact Kerakoll Worldwide Global Service
→ for any other issues, contact the Kerakoll Worldwide Global Service +39 0536 811 516 - globalservice@kerakoll.com

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