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DECLARATION OF PERFORMANCE No. 0434

1. Unique identification code of the product-type: **GeoSteel SRP**

(GeoSteel G600 and Geolite Gel/Epofix)

2. Intended use/es: **The SRP kit is suitable for strengthening and seismic upgrade of clay and natural stone masonry, reinforced and prestressed concrete elements and structures**

3. Manufacturer: **Kerakoll S.p.A Via dell'Artigianato, 9 - 41049 Sassuolo (MO) Italia**

4. System/s of AVCP:

System 2+

System 3 for reaction to fire

5. European Assessment Document: **EAD 340210-00-0104, November 2017**

European Technical Assessment**: ETA-18/0314 of 07/10/2024**

Technical Assessment Body: **ITC CNR**

Notified body/ies: **ITC n°0970**

6. Declared performance/s:

- Characteristic value for tensile streght and tensile strain
- Average value for modulus of elasticity

Essential characteristics	**Performance**
Reaction to fire	Class D-s2,d0
GeoSteelG600-Geolite gel/Epofix	See Annex A

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by: **Romano Sghedoni (legal representative)**

At Sassuolo, on 20/12/2024

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Annex A – GeoSteel G600-Geolite gel/Epofix

Essential characteristics		**Performance**	
Tensile strength (σu)	1 layer	≥ 3070 MPa	
	3 layers	≥ 3010 MPa	
Strain (εu)	1 layer	≥ 0,015 mm/mm	
	3 layers	≥ 0,015 mm/mm	
Modulus of elasticity (E)	1 layer	≥ 210000 MPa	
	3 layers	≥ 204000 MPa	
Interlaminar shear strength (τ)	No interl shear failure	≥ 8 MPa	
Lap tensile strength (σ_{lap})	Tested Overlap l_{lap} =200 mm	≥ 2800 MPa	
Bond strength on substrate Concrete MC (0.40) : pull-off test Failure mode C	ambient	Pull off strength f_h ≥ 2 MPa	
	water	(1000 h)	strength f_h ≥ 2,20 MPa retained $f_{h,ret}$ 121%
		(3000 h)	strength f_h ≥ 2,30 MPa retained $f_{h,ret}$ 105 %
	saltwater	(1000 h)	strength f_h ≥ 2,60 MPa retained $f_{h,ret}$ 120 %
		(3000 h)	strength f_h ≥ 2,60 MPa retained $f_{h,ret}$ 109 %
	alkali conditioning	(1000 h)	strength f_h ≥ 3,0 MPa retained $f_{h,ret}$ 119 %
		(3000 h)	strength f_h ≥ 2,40 MPa retained $f_{h,ret}$ 114%
Bond strength on substrate Concrete MC (0.40) : single-lap shear test Failure Mode FR	ambient	P_{max} ≥ 13000 N P_{deb} - (1)	
	water	(1000 h)	P_{max} ≥ 14000 N P_{deb} - (2) $P_{max,ret}$ 105% $P_{deb,ret}$ -
		(3000 h)	P_{max} ≥ 13000 N P_{deb} - (2) $P_{max,ret}$ 100% $P_{deb,ret}$ -
	saltwater	(1000 h)	P_{max} ≥ 10800 N P_{deb} - (2) $P_{max,ret}$ 93% $P_{deb,ret}$ -
		(3000 h)	P_{max} ≥ 12300 N P_{deb} - (2) $P_{max,ret}$ 98% $P_{deb,ret}$ -
	alkali conditioning	(1000 h)	P_{max} ≥ 11600 N P_{deb} - (2) $P_{max,ret}$ 95% $P_{deb,ret}$ -

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Essential characteristics		Performance	
		(3000 h)	P_{max} ≥ 12200 N P_{deb} - (2) $P_{max,ret}$ 97% $P_{deb,ret}$ -
Pull out from substrate Concrete MC (0.40) Failure Mode FR	Ambient (G600/Geolite Gel)	Pull out strength $\sigma_{pull-out}$ ≥ 2700 MPa Pull out displacement $\delta_{pull-out}$ ≥ 9 mm	
	Ambient (G600/Epofix)	Pull out strength $\sigma_{pull-out}$ ≥ 2600 MPa Pull out displacement $\delta_{pull-out}$ -nd	
	water (G600/Geolite Gel)	(1000 h)	strength $\sigma_{pull-out}$ ≥ 2400 MPa displacement $\delta_{pull-out}$ ≥ 7,4 mm retained $\delta_{pull-out, ret}$ 91%
		(3000 h)	strength $\sigma_{pull-out}$ ≥ 2200 MPa displacement $\delta_{pull-out}$ ≥ 7,3 mm retained $\delta_{pull-out, ret}$ 82%
	saltwater (G600/Geolite Gel)	(1000 h)	strength $\sigma_{pull-out}$ ≥ 2600 MPa displacement $\delta_{pull-out}$ ≥ 8,5 mm retained $\delta_{pull-out, ret}$ 97%
		(3000 h)	strength $\sigma_{pull-out}$ ≥ 2600 MPa displacement $\delta_{pull-out}$ ≥ 8,2 mm retained $\delta_{pull-out, ret}$ 96%
	alkali conditioning (G600/Geolite Gel)	(1000 h)	strength $\sigma_{pull-out}$ ≥ 2400 MPa displacement $\delta_{pull-out}$ ≥ 7,8 mm retained $\delta_{pull-out, ret}$ 91%
		(3000 h)	strength $\sigma_{pull-out}$ ≥ 2400 MPa displacement $\delta_{pull-out}$ ≥ 7,3 mm retained $\delta_{pull-out, ret}$ 89%
Freezing and Thawing	Direct tension	Tensile strength $\sigma_{u,FT}$ ≥ 3060 MPa Strain $\varepsilon_{u,FT}$ ≥ 0,018 mm/mm Modulus of elasticity E_{FT} ≥ 210 GPa Interlaminar shear strength τ_{FT} ≥ 8,5 MPa	
	Retained properties	Tensile strength $\sigma_{u,FT,ret}$ 101 % Modulus of elasticity $E_{FT,ret}$ 104 % Interlaminar shear strength τ_{FT} 87 %	
Water resistance	Direct tension (1000 h)	Tensile strength $\sigma_{u,w}$ ≥ 3150 MPa Strain $\varepsilon_{u,w}$ ≥ 0,019 mm/mm Modulus of elasticity E_w ≥ 202 GPa Interlaminar shear strength τ_w ≥ 8,7 MPa Lap Tensile $\sigma_{lap,w}$ ≥ 3020 MPa	
	Direct tension (3000 h)	Tensile strength $\sigma_{u,w}$ ≥ 3170 MPa Strain $\varepsilon_{u,w}$ ≥ 0,018 mm/mm Modulus of elasticity E_w ≥ 208 GPa Interlaminar shear strength τ_w ≥ 7,8 MPa Lap Tensile $\sigma_{lap,w}$ ≥ 3050 MPa	
	Retained properties (1000 h)	Tensile strength $\sigma_{u,w,ret}$ 102 % Modulus of elasticity $E_{w,ret}$ 99 % Interlaminar shear strength $\tau_{w,ret}$ 105 % Lap Tensile $\sigma_{lap,w,ret}$ 104 %	
	Retained properties (3000 h)	Tensile strength $\sigma_{u,w,ret}$ 102 % Modulus of elasticity $E_{w,ret}$ 102 % Interlaminar shear strength $\tau_{w,ret}$ 90 % Lap Tensile $\sigma_{lap,w,ret}$ 103 %	

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Essential characteristics		Performance
Saltwater resistance	Direct tension (1000 h)	Tensile strength $\sigma_{u,sw} \geq$ 3050 MPa Strain $\varepsilon_{u,sw} \geq$ 0,016 mm/mm Modulus of elasticity $E_{sw} \geq$ 217 GPa Interlaminar shear strength $\tau_{sw} \geq$ 6,8 MPa Lap Tensile $\sigma_{lap,sw} \geq$ 2940 MPa
	Direct tension (3000 h)	Tensile strength $\sigma_{u,sw} \geq$ 3010 MPa Strain $\varepsilon_{u,sw} \geq$ 0,015 mm/mm Modulus of elasticity $E_{sw} \geq$ 215 GPa Interlaminar shear strength $\tau_{sw} \geq$ 6,3 MPa Lap Tensile $\sigma_{lap,sw} \geq$ 2970 MPa
	Retained properties (1000 h)	Tensile strength $\sigma_{u,sw,ret}$ 99 % Modulus of elasticity $E_{sw,ret}$ 107 % Interlaminar shear strength $\tau_{sw,ret}$ 87 % Lap Tensile $\sigma_{lap,sw,ret}$ 102 %
	Retained properties (3000 h)	Tensile strength $\sigma_{u,sw,ret}$ 98 % Modulus of elasticity $E_{sw,ret}$ 106 % Interlaminar shear strength $\tau_{sw,ret}$ 78 % Lap Tensile $\sigma_{lap,sw,ret}$ 102 %
Alkali resistance	Direct tension (1000 h)	Tensile strength $\sigma_{u,alk} \geq$ 3070 MPa Strain $\varepsilon_{u,alk} \geq$ 0,017 mm/mm Modulus of elasticity $E_{alk} \geq$ 209 GPa Interlaminar shear strength $\tau_{alk} \geq$ 7,2 MPa Lap Tensile $\sigma_{lap,alk} \geq$ 3020 MPa
	Direct tension (3000 h)	Tensile strength $\sigma_{u,alk} \geq$ 3100 MPa Strain $\varepsilon_{u,alk} \geq$ 0,018 mm/mm Modulus of elasticity $E_{alk} \geq$ 214 GPa Interlaminar shear strength $\tau_{alk} \geq$ 7,9 MPa Lap Tensile $\sigma_{lap,alk} \geq$ 2890 MPa
	Retained properties (1000 h)	Tensile strength $\sigma_{u,alk,ret}$ 100 % Modulus of elasticity $E_{alk,ret}$ 103 % Interlaminar shear strength $\tau_{alk,ret}$ 95 % Lap Tensile $\sigma_{lap,alk,re}$ 103 %
	Retained properties (3000 h)	Tensile strength $\sigma_{u,alk,ret}$ 100 % Modulus of elasticity $E_{alk,ret}$ 105 % Interlaminar shear strength $\tau_{alk,ret}$ 92 % Lap Tensile $\sigma_{lap,alk,re}$ 102 %

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Essential characteristics		Performance
Alkali soil resistance	Direct tension (1000 h)	Tensile strength $\sigma_{u,soil}$ ≥ 3130 MPa Strain $\varepsilon_{u,soil}$ ≥ 0,013 mm/mm Modulus of elasticity E_{soil} ≥ 228 GPa
	Retained properties (1000 h)	Tensile strength $\sigma_{u,soil,ret}$ 101 % Modulus of elasticity $E_{soil,ret}$ 108 %
Dry heat resistance	Direct tension (1000 h)	Tensile strength $\sigma_{u,heat}$ ≥ 3100 MPa Strain $\varepsilon_{u,heat}$ ≥ 0,014 mm/mm Modulus of elasticity E_{heat} ≥ 272 GPa
	Retained properties (1000 h)	Tensile strength $\sigma_{u,heat,ret}$ 102 % Modulus of elasticity $E_{heat,ret}$ 129 %
	Direct tension (3000 h)	Tensile strength $\sigma_{u,heat}$ ≥ 2940 MPa Strain $\varepsilon_{u,heat}$ ≥ 0,013 mm/mm Modulus of elasticity E_{heat} ≥ 226 GPa
	Retained properties (3000 h)	Tensile strength $\sigma_{u,heat\ ret}$ 100 % Modulus of elasticity $E_{heat\ ret}$ 107 %
Fuel resistance	Direct tension	Tensile strength $\sigma_{u,fuel}$ ≥ 3090 MPa Strain $\varepsilon_{u,fuel}$ ≥ 0,014 mm/mm Modulus of elasticity E_{fuel} ≥ 237 GPa
	Retained properties	Tensile strength $\sigma_{u,fuel,ret}$ 100 % Modulus of elasticity $E_{fuel,ret}$ 112 %
Creep behaviour related to the adhesion on substrate Concrete MC (0.40) Failure mode FR		Displacement vs time (tabular) Maximum load $P_{max,creep}$ ≥ 13000 N Bond capacity $P_{deb,creep}$ ≥ - (2)
Tensile strength after low number of cycles (seismic behaviour)		Tensile strength $\sigma_{u,seism}$ ≥ 2680 MPa Strain $\varepsilon_{u,seism}$ ≥ 0,0144 mm/mm Modulus of elasticity $E_{1,seism}$ ≥ 209 GPa
Tensile strength after high number of cycles (fatigue actions)		NPA
Tensile strength on bent fabric	Straight fabric	$\sigma_{u,f,straight}$ ≥ 2950 MPa $\sigma_{u,f,straight,sw1000}$ ≥ 2790 MPa $\sigma_{u,f,straight,sw3000}$ ≥ 2410 MPa
	Bent fabric	$\sigma_{u,f,bent}$ ≥ 2410 MPa $\sigma_{u,f,bent,sw1000}$ ≥ 2190 MPa $\sigma_{u,f,bent,sw3000}$ ≥ 2000 MPa
Creep rupture (creep deformation)		$t_{u\ 10}$ $\varepsilon_{u,creep}$ ≤ 0,009 mm/mm $t_{u\ 100}$ $\varepsilon_{u,creep}$ ≤ 0,014 mm/mm $t_{u\ 1000}$ $\varepsilon_{u,creep}$ ≤ 0,021 mm/mm $t_{u\ 2000}$ $\varepsilon_{u,creep}$ ≤ 0,024 mm/mm $t_{u\ 3000}$ $\varepsilon_{u,creep}$ ≤ 0,026 mm/mm
Void content (V)	1 layer	0.7 %
	3 layers	0.2 %
Glass Transition Temperature of resin		Tg ≥ 60°C

(1) Rupture of fibres was observed outside the bonded length, therefore no value for the bond capacity is indicated
(2) For specimens reinforced, rupture of fibres was observed outside the bonded length, therefore no value for the bond capacity P_{deb} is indicated

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