



DECLARATION OF PERFORMANCE No. 0434

1. Unique identification code of the product-type: **GeoSteel SRP (GeoSteel G600 and Geolite Gel)**
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 10/06/2020**
Technical Assessment Body: **ITC CNR**
Notified body/ies: **ITC n°0970**
6. Declared performance/s:
 - Characteristic value for tensile strength and tensile strain
 - Average value for modulus of elasticity

Essential characteristics	Performance
Reaction to fire	Class D-s2,d0
GeoSteelG600-Geolite gel	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 12/06/2020



Annex A – GeoSteel G600-Geolite gel

Essential characteristics		Performance		
Tensile strength (σ_u)	1 layer	≥ 3070 MPa		
	3 layers	≥ 3010 MPa		
Strain (ϵ_u)	1 layer	$\geq 0,015$ mm/mm		
	3 layers	$\geq 0,015$ 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 $f_h \geq 2$ MPa		
	water	(1000 h)	strength $f_h \geq 2,20$ MPa retained $f_{h,ret} 121\%$	
		(3000 h)	strength $f_h \geq 2,30$ MPa retained $f_{h,ret} 105\%$	
	saltwater	(1000 h)	strength $f_h \geq 2,60$ MPa retained $f_{h,ret} 120\%$	
		(3000 h)	strength $f_h \geq 2,60$ MPa retained $f_{h,ret} 109\%$	
	alkali conditioning	(1000 h)	strength $f_h \geq 3,0$ MPa retained $f_{h,ret} 119\%$	
		(3000 h)	strength $f_h \geq 2,40$ MPa retained $f_{h,ret} 114\%$	
	Bond strength on substrate Concrete MC (0.40) : single-lap shear test Failure Mode FR	ambient	$P_{max} \geq 13000$ N $P_{deb} -^{(1)}$	
		water	(1000 h)	$P_{max} \geq 14000$ N $P_{deb} -^{(2)}$ $P_{max,ret} 105\%$ $P_{deb,ret} -$
			(3000 h)	$P_{max} \geq 13000$ N $P_{deb} -^{(2)}$ $P_{max,ret} 100\%$ $P_{deb,ret} -$
saltwater		(1000 h)	$P_{max} \geq 10800$ N $P_{deb} -^{(2)}$ $P_{max,ret} 93\%$ $P_{deb,ret} -$	
		(3000 h)	$P_{max} \geq 12300$ N $P_{deb} -^{(2)}$ $P_{max,ret} 98\%$ $P_{deb,ret} -$	
alkali conditioning		(1000 h)	$P_{max} \geq 11600$ N $P_{deb} -^{(2)}$ $P_{max,ret} 95\%$ $P_{deb,ret} -$	



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



Essential characteristics		Performance
Saltwater resistance	Direct tension (1000 h)	Tensile strength $\sigma_{u,sw} \geq 3050$ MPa Strain $\epsilon_{u,sw} \geq 0,016$ 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 $\epsilon_{u,sw} \geq 0,015$ 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 $\epsilon_{u,alk} \geq 0,017$ 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 $\epsilon_{u,alk} \geq 0,018$ 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 $\sigma_{lap,alk,ret} 103$ %
	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 $\sigma_{lap,alk,ret} 102$ %



Essential characteristics		Performance
Alkali soil resistance	Direct tension (1000 h)	Tensile strength $\sigma_{u,soil} \geq 3130$ MPa Strain $\epsilon_{u,soil} \geq 0,013$ mm/mm Modulus of elasticity $E_{soil} \geq 228$ 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 $\sigma_{u,heat} \geq 3100$ MPa Strain $\epsilon_{u,heat} \geq 0,014$ mm/mm Modulus of elasticity $E_{heat} \geq 272$ 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 $\sigma_{u,heat} \geq 2940$ MPa Strain $\epsilon_{u,heat} \geq 0,013$ mm/mm Modulus of elasticity $E_{heat} \geq 226$ 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 $\sigma_{u,fuel} \geq 3090$ MPa Strain $\epsilon_{u,fuel} \geq 0,014$ mm/mm Modulus of elasticity $E_{fuel} \geq 237$ 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 $P_{max,creep} \geq 13000$ N Bond capacity $P_{deb,creep} \geq \dots$ (2)
Tensile strength after low number of cycles (seismic behaviour)		Tensile strength $\sigma_{u,seism} \geq 2680$ MPa Strain $\epsilon_{u,seism} \geq 0,0144$ mm/mm Modulus of elasticity $E_{1,seism} \geq 209$ GPa
Tensile strength after high number of cycles (fatigue actions)		NPA
Tensile strength on bent fabric	Straight fabric	$\sigma_{u,f,straight} \geq 2950$ MPa $\sigma_{u,f,straight+sw1000} \geq 2790$ MPa $\sigma_{u,f,straight+sw3000} \geq 2410$ MPa
	Bent fabric	$\sigma_{u,f,bent} \geq 2410$ MPa $\sigma_{u,f,bent+sw1000} \geq 2190$ MPa $\sigma_{u,f,bent+sw3000} \geq 2000$ MPa
Creep rupture (creep deformation)		$t_u 10 \quad \epsilon_{u,creep} \leq 0,009$ mm/mm
		$t_u 100 \quad \epsilon_{u,creep} \leq 0,014$ mm/mm
		$t_u 1000 \quad \epsilon_{u,creep} \leq 0,021$ mm/mm
		$t_u 2000 \quad \epsilon_{u,creep} \leq 0,024$ mm/mm
		$t_u 3000 \quad \epsilon_{u,creep} \leq 0,026$ mm/mm
Void content (V)	1 layer	0.7 %
	3 layers	0.2 %
Glass Transition Temperature of resin		$T_g \geq 60^\circ\text{C}$

(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