



Sumiden Wire

EPOXY COATED STRAND

Size	Standard Outer Diameter	Coating Thickness ¹	Unit Weight	Yield Point at 1% Extension	Min. Ultimate Breaking Strength	Min. Elongation at Ultimate Breaking Strength	1,000 Hours Relaxation @ 70% GUTS	Standard Area of Steel Strand ²
0.6" ECS	0.648 inch	15~45 mils 0.38~1.14 mm	0.820 lb/ft	52,740 lbf	58,600 lbf	≥3.5%	≤6.5%	0.217 in ²
	16.46 mm		1.220 kg/m	234.6 kN	260.7 kN			140.00 mm ²
1/2" ECS	0.540 inch		0.550 lb/ft	37,170 lbf	41,300 lbf	≥3.5%	≤6.5%	0.153 in ²
	13.72 mm		0.819 kg/m	165.3 kN	183.7 kN			98.71 mm ²
3/8" ECS	0.415 inch		0.310 lb/ft	20,700 lbf	23,000 lbf	≥3.5%	≤6.5%	0.085 in ²
	10.54 mm		0.461 kg/m	92.1 kN	102.3 kN			54.84 mm ²

1 At crowns.

2 Does not include area contribution of epoxy coating.

Salt Corrosion Resistance Test	Test Method	Result
Salt Spray Test	ASTM B 117	No corrosion, holidays nor other coating damage present after 3,000 hours exposure to Salt Spray (fog) @ 70% GUTS
Chloride Permeability	FHWA-RD-74-18	No chloride penetration detected.
Chemical Resistance	Test Method	Result
Distilled Water	ASTM G 20-77	2 types of samples tested: Normal epoxy coated strand and sample with 1/4" hole intentionally drilled into coating. No coating damage after 45 days immersion. Steel corrosion at drilled hole did not cause adjacent epoxy coating to soften, blister, nor lose bond with adjacent steel.
3M CaCl ₂		
3M NaOH		
Ca(OH) ₂		
Handling Durability	Test Method	Result
Impact Test	ASTM G 14	No cracking, shattering or bond loss.
Sand Abrasion Test	ASTM D 968	< 10 mils (0.25 mm) loss of coating
Bending Test	ASTM A 370	No cracking or disbonding when bending strand around mandrel 32 times nominal strand Ø
Ultra-Violet Light Resistance	Test Method	Result
Ultra-Violet Light Resistance	<ul style="list-style-type: none"> Use sunshine arc furnace ultraviolet light machine Strength of ultraviolet-80W/m² Test term-300Hr 	<ul style="list-style-type: none"> No loss of the coating thickness after 300Hr Maintained equivalent bending characteristics
Concrete Pull-Out Tests (Flo-Bond)	Test Method	Result
0.6" (15.25 mm)	ASTM A 882	> 2,590 lbf (11.52 kN)
1/2" (12.70 mm)		> 2,350 lbf (10.45 kN)
3/8" (9.53 mm)		> 2,210 lbf (9.83 kN)
Elevated Temperature Test	ASTM A 882	Strand tensioned @ 70% GUTS and cast in a prestressed concrete member started to lose bond with the concrete at 170°F (77°C) when tested with both dry heat and steam heat. [Minimum requirement is 150°F (66°C)]
Fatigue Properties	Test Method	Result
Mono-Strand Fatigue Test	2001 PTI Recommendations for Stay Cable Design, Testing and Installation Mono-strand test method	Fatigue limit exceeds PTI specification by achieving 2 x 10 ⁶ cycles @ 36.3 ksi (250 MPa) stress range with a maximum load of 45% GUTS.
Fatigue and Durability During Bending Load Test	Test Method	Result
Full scale fatigue test at deviation point	<ul style="list-style-type: none"> 19-strand 0.6" 270K (15.2mm) tendon using epoxy coated strand. Initial load @ 60% GUTS [665 kips (2957 kN)] Stress range = 29.0 kips (129.2 kN) Radius of deviation = 9.8 feet (3 m) Deviation angle = 14° Frequency = 0.7 Hz # Cycles = 3 x 10⁶ cycles No grout 	<ul style="list-style-type: none"> No wire breaks after 3 x 10⁶ cycles. Epoxy coating had slight damage, but did not expose steel.