

Technical Bulletin 34: Cold Temperature Performance of Twin-Path® Roundslings

K-Spec® High Performance Core yarn gets stronger at low temperatures, even at temperatures far below freezing. Twin-Path slings made with K-Spec have successfully been used for many years in cold climates such as Northern Canada. K-Spec fiber was tested at a series of low temperatures down to -100° C, and even at the lowest temperatures the breaking strength was actually higher than the control sample. The full set of results are shown in Table 1 below. In addition to maintaining strength, the fiber does not become brittle or lose its flexibility. Unlike steel wire rope, a Twin-Path sling does not rely on applied lubricants. Many lubricants used on wire rope will freeze and flake off at low temperatures, leaving the sling unprotected.

Twin-Path high performance roundslings with K-Spec core yarn are the best choice for low-temperature applications.

Table 1 - Effect of Cold Temperature on K-Spec Core Yarn

Temperature (°C)	Breaking Strength (lbf)	Ultimate Elongation (%)	Tensile Modulus (g/den)	Tenacity (g/den)	% Strength Increase
21	73	4.4	917	27.1	-
0	84	4.2	1186	31.6	15.10%
-20	83.3	3.78	1206	31.4	14.10%
-40	91.4	3.66	1252	34.4	25.20%
-60	92.9	3.22	1331	35.0	27.30%
-80	97.4	2.96	1662	36.6	33.40%
-100	97.2	3.04	1473	36.6	33.20%