Cold Temperature Results

Twin-Path® Extra Slings with K-Spec® Core Yarn actually become stronger at -50 degrees F. Twin-Path Extra Slings w/ K-Spec have been used successfully in cold temperatures in Northern Canada for many years with no failures of any kind. The Twin-Path® Extra Slings are used in the North Atlantic to tow ice bergs. Pictures of the applications have appeared in our February 2004 newsletter and one in 2003 showing the ice berg being towed. We are confident that the Twin-Path Extra® Sling with K-Spec® Core Yarn is the best choice for cold weather applications. The K-Spec® does not become brittle like carbon or steel at cold temperatures but remains flexible.

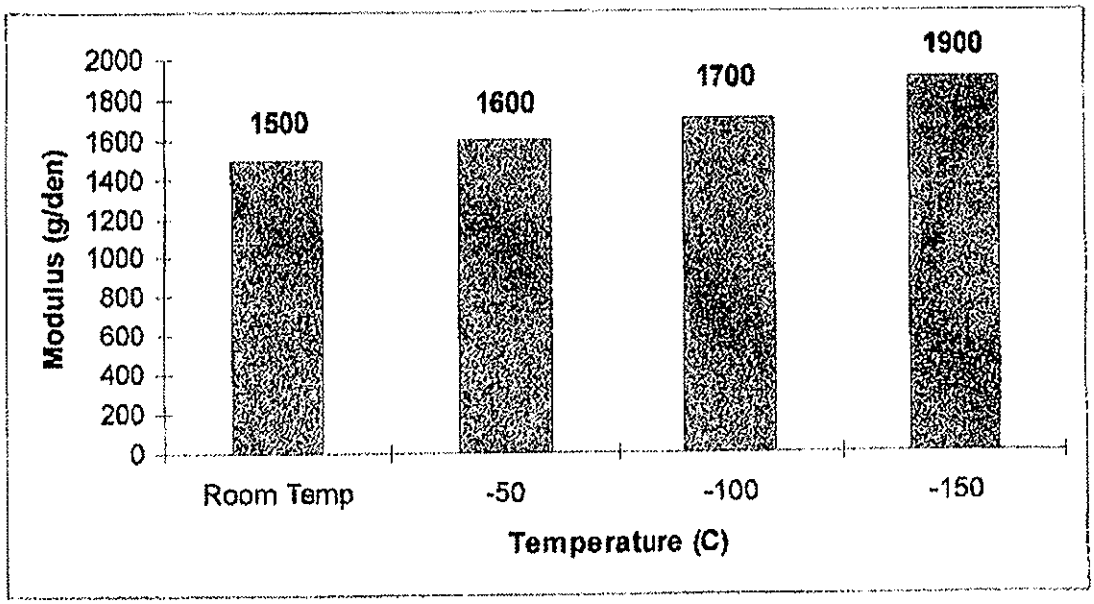
The chart below shows actual break testing of K-Spec® Core Yarn Fibers in cold temperature environments.

TABLE I

EFFECT OF COLD TEMPERATURE ON K-SPEC CORE YARN

TEMPERATURE	BREAKING STRENGTH (lb)	ULTIMATE ELONGATION (%)	TENSILE MODULUS (g/den)	TENACITY (g/den)	% STRENGTH INCREASE
Fiber Test: Denier 1221	76.4	3.21	1350	28.4	-
21°C -Control	73.0	4.40	917	27.1	-
0°C	84.0	4.20	1186	31.6	15.1%
-20°C	83.3	3.78	1206	31.4	14.1%
-40°C	91.4	3.66	1252	34.4	25.2%
-60°C	92.9	3.22	1331	35.0	27.3%
-80°C	97.4	2.96	1662	36.6	33.4%
-100°C	97.2	3.04	1473	36.6	33.2%

Physical Properties of K-Spec® at Low Temperature



- Folded 100 denier product tested as a 400 denier specimen.
- Elongation at Break 2.6-2.8%

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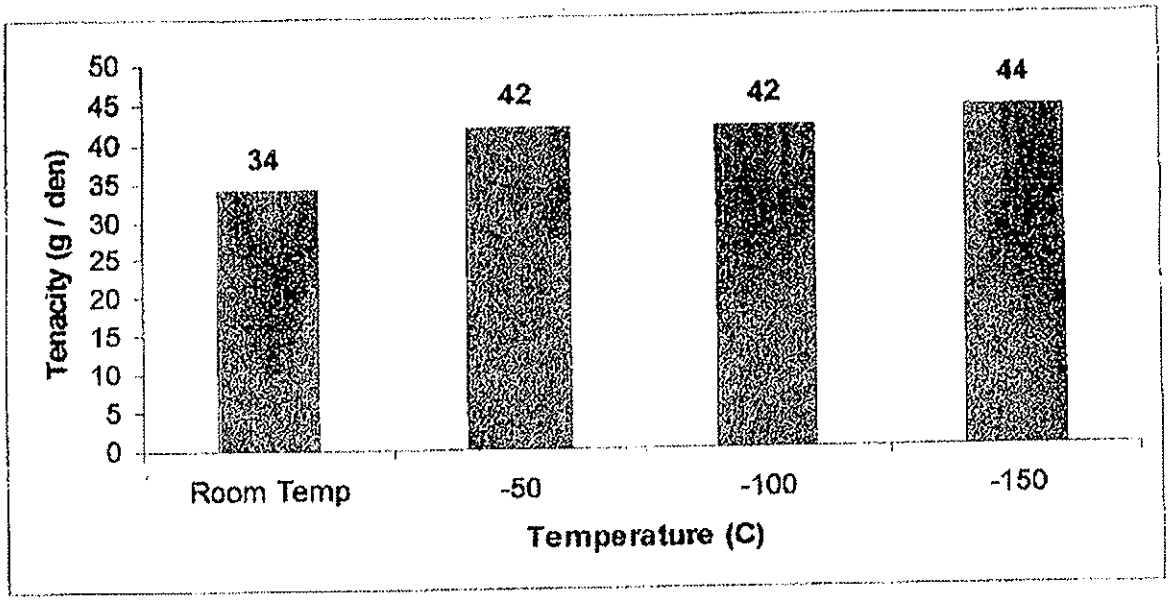

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