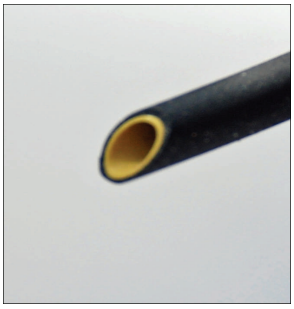
QUIET LINER™ NOISE REDUCTION, ABRASION RESISTANT, ANTI-FRICTION CONTROL CABLE LINER



Markel QUIET LINER™ Control Cable Liner has an AR-650™ Liner base with the addition of a sound dampening jacket of TPE (thermoplastic elastomer). AR-650™ Liner is the industry premier liner in terms of efficiency, load bearing capability and life cycle expectation. AR-650™ Liner replaced the original industry standard AR-500™ Liner. It can be used with or without a silicone lubricant.

CHARACTERISTICS

Markel QUIET LINER™ Jacketed Control Cable Liner provides the same anti-slip-stick performance of the basic AR-650™ Liner with the additional benefit of greatly reduced sound transmission through the cable assembly. The jacket has a continuous operating temperature of 135 °C. Sound dampening is dependant upon the wall thickness of the jacket. Consult Markel for recommendations.

KEY BENEFITS

- Reduced Sound Transmission via Structure-born Noise Transfer Path
- 90% Average Efficiency
- Ultimate Life >1,000,000 cycles
- Service Temperature 135 °C
- Flame Rating UL 94 HB

TYPICAL PERFORMANCE

The performance characteristics of TPE are compared to conventional jacket materials, nylon 6/6 and polypropylene. See pg. 2 for additional jacket test values. See data sheet for AR-650™ Liner for performance values.

CHARACTERISTIC	NYLON 6/6	POLYPROPYLENE	TPE
Specific Gravity	1.14	0.90	0.97
Melt Point, °C	260	160	155
Tensile Strength @ Yield, psi	12,000	5,400	1,640
% Elongation @ Break	90	9	520
Flex Modulus, psi	440,000	216,000	N/A (Elastomer)
Durometer	120 R	106 R	80 A
Cold Brittleness Temp., °C	-40	-10	-60

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TEST METHODS AND RESULTS ON TPE JACKET MATERIAL

PROPERTY	TEST METHOD	VALUE
Hardness, Durometer A Scale, 5 sec, 3mm	ASTM D2240	80
Density, Specific Gravity	ASTM D792	0.97 at °23 C
Tensile Strength @ Break Elas (Across Flow)	ASTM D412	1640 psi
Tensile, Change After Heat Age at 150 °C for 168 hours		+3%
Elongation @ Break (Across Flow)	ASTM D412	520%
Elongation, Change After Heat Age at 150 °C for 168 hrs.		-23%
Tensile Stress @ 100% Across Flow	ASTM D412	670 psi
Compression Set (23 °C, 170 hr.) (100 °C, 170 hr.	ASTM D395	 29% 41%
Tensile Set	ASTM D412	20%
Tear Strength, 23 °C 100 °C	ASTM D624	190 lbf/in 75 lbf/in
Brittle Temperature	ASTM D746	-60 °C
Dielectric Constant		2.3
Dielectric Strength at 3.17 mm		19.6 kv/mm
Continuous Operating Temperature, 1000 hrs.		135 °C
Flame Rating	UL	UL 94 HB
Ozone Resistance		Excellent

Note: Values are from molded plaques, side gated, 82.6 x 117.5 x 3 mm

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