

AR-500™ Abrasion Resistant, Anti-friction Control Cable Liner

DESCRIPTION

Markel AR-500™ Abrasion Resistant Anti-friction Control Cable Liner is PTFE with polyphenylene sulfide inert inorganic filler material designed to enhance cycle life under moderate loads while maintaining the basic anti-slip stick characteristic of PTFE. AR 500™ Liner has been designed for use with or without a silicone lubricant to yield efficiency and cycle life not normally attainable with generic liners. Performance characteristics include 85% average efficiency through 1,000,000 cycles.

APPLICATIONS

Markel AR-500™ liner is ideally suited for moderate duty cables used in accelerator, clutch and automatic transmission actuator assemblies. AR-500™ is the liner of choice when loads up to 25lbs., difficult routings or very long life cycles are required. The ever increasing operating temperatures in engine compartments require the use of high performance cable liners. Non-automotive applications include aircraft, heavy duty off-road equipment and industrial controls.

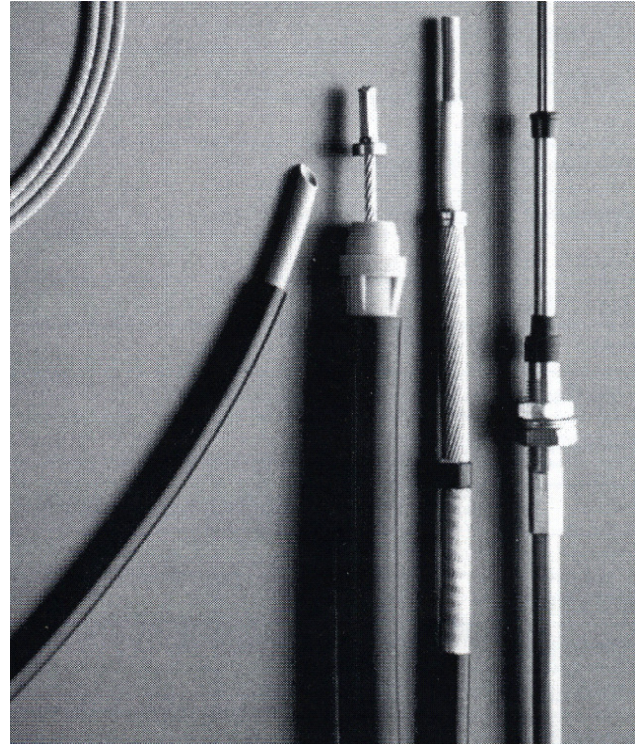
JACKETING

Markel offers the additional step of jacketing PTFE-based liners with thermoplastic resin. Polypropylene, polyethylene, PBT, TPE and nylon are used. Nylon resins offer a wide range of mechanical and thermal properties including melt temperatures as high as 135°C.

SPECIFICATIONS

Markel AR 500™ meets the performance requirements of the following industry specifications:

- Ford ESA-M4D465-A2
- General Motors TF 004.AA
- Chrysler PF-8244, 8695, 8762, 8992, 9168 and 9530



KEY FEATURES

- Markel AR-500™ Anti-Friction liner eliminates “stick-slip”
- 85% average efficiency through 1,000,000 cycles with 25 lb. load
- Plastic jacketed liner offers significant weight reduction compared to steel
- Sound transmission via structure-borne noise path reduced with Markel QUIET LINER® Liner with TPE jacket.
- Jacket can be stabilized to liner with Markel TEFLOCK™ Splined Liner.
- Specified by major manufacturers of automotive control cables in North America and Europe.

All materials of construction are warranted to meet specification and certified to be made from top quality resins without PFOA surfactant.

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CHARACTERISTICS

PROPERTY	TEST METHOD	TYPICAL PERFORMANCE
Operating Temperature (°C)		200
Tensile Strength . MPa (psi)	ASTM D 638	5000
Elongation (%)	ASTM D 638	200
Specific Gravity, Method A-1	ASTM D 792	2.06
Durometer “D”, 15 seconds	ASTM D 676	55
Color		Brown
Base Material		PTFE
Filler		Polyphenylene Sulfide
Melt Point (°C)		PTFE @ 327 , Filler @ 277
Chemical Resistance		Excellent

LIFE CYCLE TEST DATA

TEST	LUBRICATED*
Test Cycles	1,000,000
Load, Lbs.	6-25
Average Efficiency	85%
Change in Linear Weight	+2 mg
Ultimate Cycle Life	>1,000,000

*with E-155 Silicone Lubricant (Wacker Silicone, Adrian, MI)

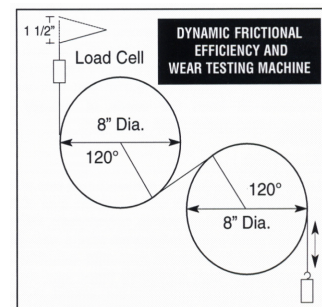
The above values are typical performance data for AR-500™ Liner and are not intended to be used as design data.

	Average Efficiency (%)*	Wear Cycles	Continuous Service Temperature (°C) **	Heat Deflection Temperature Under Load (°C) **
AR-750™	91%	1MM	250	65
AR-650™	86%	1MM	250	65
AR-500™	85%	800K	250	65
AR-280™	83%	500K	250	65
PTFE(Natural)	84%	250K	250	55
PBT ***	75%	150K	118	54

* Measured at 20°C under 25 lb. (11 kg) load lubricated with E155 Silicone Fluid, Wacker Chemical Corp.

** Continuous Service Temperature measured without load. Heat Deflection Temperature via ASTM.

***PBT Coming soon from Markel



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