

FTEP Cable Liner

# FITCO® Liner FP150

## Description

This liner combines the corrugated design with the modified polymer formulation of the FP100 resulting in a high performance product for the most challenging applications in both manual and automatic transmissions.

FP150 has lateral ribs or castellations on the internal surface reducing the contact area of the inner wire that retains the lubricant in the pockets or reservoirs between corrugations increasing the efficiency and longevity with reduced wear of the Liner. This innovation is revolutionary in the control cable design and is protected by a patent.

FITCO® Liner FP150 offers low friction performance resulting in good service efficiency. Another important feature of this liner is dimensional accuracy achieved by specially designed extrusion lines combined with inline laser measuring equipment. This will guarantee dimensional accuracy and will maintain a +/- 0.05mm tolerance on ID and OD, which compares to industry standards generally at +/- 0.08mm or +/- 0.10mm. Laboratory tests confirm that FITCO® Liner FP150 cable liners offer many advantages compared to alternative polymers (e.g. HD, PBT, POM, Etc.). Furthermore FP150 features better durability and cost-effectiveness compared to PTFE.

## Application

Manual & automatic transmission for demanding applications, luxury vehicles, 4x4, busses, trucks, agricultural machinery and army vehicles.

<b>Shrinkage (Parallel):</b>	1.4%	<b>FTEP Liner - Performance</b>	
		Cycles	1,500,000
<b>Shrinkage (Parallel, annealed):</b>	0.2%	Initial Efficiency	95%
		Final Efficiency	92%

Properties	Test Method	Typical Value
<b>Mechanical</b>		
Specific density	ISO 1183	1,31 g/cc
Efficiency (Molykote Lub. grease used)	Liner FP150: ID 2.5, OD 4.5	95%
Strain at break	ISO 527-2/1A, 50mm/min	70 MPa
Yield stress	ISO 527-2/1A, 50mm/min	60 MPa
Tensile modulus	ISO 527-2/1A, 50mm/min	2800 MPa

## Thermal

Melt temperature	ISO 11357-1,2,3	235°C
Coefficient of Linear thermal expansion (CLTE Parallel -40-23°C)	ISO 11359-1/-2	0.75
Coefficient of Linear thermal expansion (CLTE Parallel 23-55°C)	ISO 11359-1/-2	1.09
Coefficient of Linear thermal expansion (CLTE Parallel 55-160°C)	ISO 11359-1/-2	1.45
Vicat Softening Temperature – 50N	ISO 306	175°C
Continuous operating temperature*	-	-40°C to 140°C
Short term peak temperature*	-	160°C
Flammability (1.0mm thickness)	DIN 75 200, ISO 379; FMVSS 302	< 100 mm/min

\* Preliminary values, to be confirmed after longterm testing