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Reliable protection and sealing. Convenient insulation.

3M™ Heat Shrink Tubing
Product Selection Guide

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Product	Material/Typical Applications	Operating Temperature Range	Shrink Temp. (Min.)	Shrink Ratio	Standard Sizes Expanded Diameter	Dielectric Strength (V/mil)	Volume Resistivity (ohm-cm)	Tensile Strength (PSI)	Ultimate Elongation (%)	Longitudinal Change (± %)	Specific Gravity	Flammability	Corrosive Effect	Abrasion Resistance	Flexibility (see note below)	Fuel & Oil Resistance	Solvent Resistance	Resistance To Acids and Alkalis	Applicable Specifications
Single-Wall Polyolefin Tubing																			
FP-301	**Flexible Polyolefin** General purpose flame retardant insulation for UL, CSA and SAE AS23053/5 applications; cable and component covering. Class 1 = opaque colors; Class 2 = clear.	–55°C to +135°C	212°F 100°C	2:1	3/64" to 4"	900	10^{15}	2400	400	5	1.3	Self-Extinguish meets UL 224 All-Tubing Flame Test (except clear)	Non-Corrosive	Good	3	Good	Exc.	Exc.	SAE AS23053/5**, Class 1, 2; UL File E-39100; CSA LR38227
FP-301VW	**Highly Flame-Retardant, Flexible Polyolefin** Insulation applications, flame-retardant applications requiring UL VW-1 and CSA OFT, fire-resistant wiring.	–55°C to +135°C	212°F 100°C	2:1	3/64" to 4"	900	10^{15}	2400	400	+1, –10	1.5	Self-Extinguish meets UL 224 VW-1 Test	Non-Corrosive	Good	3	Good	Exc.	Exc.	SAE AS23053/5**, Class 3; UL File E-39100, VW-1; CSA LR38227, OFT
SFTW-203	**Very Flexible Polyolefin** Shrink-fit jacketing and insulation of flexible wire bundles and temperature-sensitive components.	–55°C to +135°C	212°F 100°C	3:1	1/16" to 1 1/2"	700	10^{15}	2600	400	5	1.29	Self-Extinguish	Non-Corrosive	Good	3	Good	Good	Exc.	UL File E-48398; CSA LR38227
Adhesive-Lined, Polyolefin Tubing																			
MW	**Multiple Wall Polyolefin** Insulation, strain relief and sealing of electrical connections, wire splices and components.	–55°C to +110°C	275°F 135°C	2.5:1	1/8" to 1"	900	10^{15}	2200	400	+1, –10	1.0	Non-Flame Retardant	Non-Corrosive	Good	7	Good	Good	Exc.	SAE AS23053/4**, Class 1; UL File E-157227
EPS-200	**Environmental Protection Sleeve** Insulation, strain relief and environmental protection of electrical wire bundles and components.	–55°C to +110°C	250°F 121°C	2:1	1/8" to 2"	800	10^{14}	2100	450	+1, –5	1.3	Self-Extinguish meets UL 224 All-Tubing Flame Test (jacket)	Non-Corrosive	Good	3	Good	Good	Exc.	SAE AS23053/4**, Class 2; UL File E-39100; CSA LR38227
EPS-300	**Environmental Protection Sleeve** Insulation, strain relief and environmental protection for automotive and marine wire bundles and splices.	–55°C to +110°C	250°F 121°C	3:1	1/8" to 1-1/2"	700	10^{14}	2100	450	+1, –15	1.3	Self-Extinguish meets UL 224 All-Tubing Flame Test (jacket)	Non-Corrosive	Good	3	Good	Good	Exc.	UL File E-157227; CSA LR38227
EPS-400	**Environmental Protection Sleeve** Insulation, strain relief and environmental protection for sealing voids in multiple wire bundles for automotive and marine applications.	–55°C to +110°C	250°F 121°C	4:1	.300" to .700"	700	10^{14}	1900	400	+1, –10	1.25	Self-Extinguish	Non-Corrosive	Good	7	Good	Good	Exc.	UL File E-157227; CSA LR38227
TMW	**Semi-Rigid Multiple Wall Terminal Protection Sleeve** Insulation, strain relief and environmental protection. Uses include the manufacture of heat shrink butt connectors, ring terminals and fork terminals.	–55°C to +110°C	275°F 135°C		.183" to .330"	900	10^{14}	2500	400	+1, –10	1.0	Non-Flame Retardant	Non-Corrosive	Good	7	Good	Good	Exc.	UL File E-157227
TES SMS	All-Weather, Heat-Shrinkable, Dual Wall, Polyolefin Tubing for Automotive Wire Harnesses.	–55°C to +110°C	250°F 121°C	4:1 4:1	.220" to .700"	500	10^{14}	2450 1900	450 350	+0, -10 +0, -10	0.97 1.25	TES Non-Flame Retardant SMS Self-Extinguish	Non-Corrosive Non-Corrosive	Good Good	TES 5 SMS 3	Good Good	Good Good	Exc. Exc.	ESB-M99D56-Ford MS-DB56-Chrysler
Special Purpose Tubing																			
MFP	**Polyvinylidene Fluoride** Heat-resistant transparent insulation and marking for electronic and appliance applications.	–55°C to 175°C	347°F 175°C	2:1	3/64" to 2"	900	10^{14}	5500	350	+1, –10	1.7	Self-Extinguish meets UL 224 VW-1 Test	Non-Corrosive	Exc.	10	Exc.	Exc.	Exc.	SAE AS23053/8+*; UL File E-39100, CSA LR38227 OFT
NST	**Modified Neoprene** Insulation and abrasion resistant covering of wiring and cable harnesses. Oil resistant coverings.	–70°C to +121°C	275°F 135°C	2:1	1/8" to 3"	800	10^{12}	2100	500	+1, –10	1.3	Self-Extinguish	Non-Corrosive	Exc.	1	Exc.	Good	Exc.	SAE AS23053/1+*, Class 1, 2; UL File E-39100; SC-X-15112
VTN-200	**Fluoroelastomer** Synthetic fuel and hydraulic oil resistant applications, high-temperature coverings.	–55°C to +200°C	347°F 175°C	2:1	1/8" to 2"	500	10^{12}	2400	450	+1, –10	1.7	Self-Extinguish	Non-Corrosive	Exc.	4	Exc.	Exc.	Exc.	SAE AS23053/13+*
PSTH	**Flexible Elastomeric Polyester** Designed for harsh operating conditions.	–55°C to +150°C	338°F 170°C	2:1	3/16" to 2 1/2"	500	10^{14}	2200	350	+2, –8	1.6	Self-Extinguish	Non-Corrosive	Exc.	4	Exc.	Exc.	Exc.	SAE AS23053/16+*; SC-X-15111
Heavy-Duty Tubing																			
MDT	**Medium-Duty** Excellent abrasion, corrosion and environmental protection. Flame retardant.	–55°C to +110°C	250°F 121°C	3:1	.400" to 4.30"	500	10^{14}	2400	475	+1, –10	1.28	Self-Extinguish	Non-Corrosive	Good	8	Good	Good	Exc.	SAE AS23053/15+*, Class 2
HDT	**Heavy-Duty** Fabricated from specially formulated cross-linked polyolefin, assuring long-term environmental protection. Highly chemical, abrasion and split resistant.	–55°C to +110°C	250°F 121°C	3:1	.300" to 7.00"	500	10^{14}	2400	475	+1, –10	1.28	Self-Extinguish	Non-Corrosive	Good	9	Good	Good	Exc.	SAE AS23053/15+*, Class 1
BBI	**Bus Bar Tubing,** Designed for insulating rectangular, square, or round bus bar rated 5 kV through 35 kV.	–55°C to +110°C	250°F 121°C		2.38" to 10.28"	550	10^{13}	2200	575	+0, –10	1.20	Self-Extinguish	Non-Corrosive	Good	8	Good	Good	Exc.	ASTM-D-257, 149, 150, 2303; IEC 216; ANSI/IEEE Std C37.20

Note: The materials are rated on a scale of 1–10 for flexibility:
1 = most flexible and 10 = most rigid.
*Material characteristics only.

* Formerly MIL-I-23053, MIL-DTL-23053 and formerly SAE-AMS-DTL-23053 for selected number noted before slash mark.

+ QPL Listed

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80-6109-4340-1H (10182.0) L/GP-1