



Heat Shrink Tubing Selection Guide

HEAT SHRINK TUBING



3M™ Heat Shrink Tubing Selection Guide

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)
Single-Wall Polyolefin Tubing								
FP-301	Flexible Polyolefin General purpose flame retardant insulation for UL, CSA and MIL-DTL-23053/5 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
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
VFP-876	Very Flexible Polyolefin Terminal insulation, low shrink-temperature applications.	-55°C to +135°C	212°F 100°C	2:1	3/64" to 2"	800	10 ¹⁴	2100
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
SFTW-202 GYS	Green and Yellow Striped , 2:1 very flexible polyolefin, primarily used for ground wire identification.	-55°C to +135°C	212°F 100°C	2:1	1/8" to 3/4"	700	10 ¹⁴	2600
CP-221	Commercial Grade Polyolefin Terminal strip wire markers and general purpose insulation.	-55°C to +125°C	250°F 121°C	2:1	3/64" to 2"	550	10 ¹⁴	1800
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
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
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
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
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
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
Special Purpose Tubing								
KYNAR®	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
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
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
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
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
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
CCT	Adhesive-lined , 3:1 flexible polyolefin for sealing and insulating CATV connections.	-55°C to +110°C	250°F 121°C	3:1	.400" to 3.00"	500	10 ¹⁴	2000
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

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
400	5	1.3	Self-Extinguish meets UL 224 All-Tubing Flame Test (except clear)	Non-Corrosive	Good	3	Good	Exc.	Exc.	MIL-DTL-23053/5, Class 1, 2; AMS-3636 & 3637; UL File E-39100; CSA LR38227; ABS
400	+1, -10	1.5	Self-Extinguish meets UL 224 VW-1 Test	Non-Corrosive	Good	3	Good	Exc.	Exc.	MIL-DTL-23053/5, Class 3; UL File E-39100, VW-1; CSA LR38227, OFT
450	5	1.3	Self-Extinguish meets UL 224 All-Tubing Flame Test	Non-Corrosive	Good	2	Good	Exc.	Exc.	MIL-R-46846, Type V; UL File E-39100; CSA LR38227, MIL-DTL-23053/5
400	5	1.29	Self-Extinguish	Non-Corrosive	Good	3	Good	Good	Exc.	MIL-DTL-23053/5*, Class 1; UL File E-48398; CSA LR38227
400	5	1.29	Self-Extinguish	Non-Corrosive	Good	3	Good	Good	Exc.	MIL-DTL-23053/5, Class 1; UL File E-48398; CSA LR38227
400	5	1.1	Self-Extinguish	Non-Corrosive	Good	4	Good	Good	Exc.	
400	+1, -10	1.0	Non-Flame Retardant	Non-Corrosive	Good	7	Good	Good	Exc.	MIL-DTL-23053/4, Class 1; AMS-3634; UL File E-157227
450	+1, -5	1.3	Self-Extinguish meets UL 224 All-Tubing Flame Test (jacket)	Non-Corrosive	Good	3	Good	Good	Exc.	MIL-DTL-23053/4, Class 2; UL File E-39100
450	+1, -15	1.3	Self-Extinguish meets UL 224 All-Tubing Flame Test (jacket)	Non-Corrosive	Good	3	Good	Good	Exc.	MIL-DTL-23053/4, Class 3; UL File E-157227; ABS
400	+1, -10	1.25	Self-Extinguish	Non-Corrosive	Good	7	Good	Good	Exc.	UL File E-157227
400	+1, -10	1.0	Non-Flame Retardant	Non-Corrosive	Good	7	Good	Good	Exc.	UL File E-157227
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
350	+1, -10	1.7	Self-Extinguish meets UL 224 VW-1 Test	Non-Corrosive	Exc.	10	Exc.	Exc.	Exc.	MIL-DTL-23053/18, Class 1; MIL-DTL-23053/8; AMS-3632; UL File E-39100, VW-1, E69751; CSA LR38227 OFT
500	+1, -10	1.3	Self-Extinguish	Non-Corrosive	Exc.	1	Exc.	Good	Exc.	MIL-R-46846, Type I, Class 1; MIL-DTL-23053/1, Class 1, 2; AMS-3623, SC-X-15112
450	+1, -10	1.7	Self-Extinguish	Non-Corrosive	Exc.	4	Exc.	Exc.	Exc.	MIL-R-46846, Type III, Class 1; MIL-DTL-23053/13
350	+2, -8	1.6	Self-Extinguish	Non-Corrosive	Exc.	4	Exc.	Exc.	Exc.	SC-X15111C; meets the functional requirements of MIL-DTL-23053/16
475	+1, -10	1.28	Self-Extinguish	Non-Corrosive	Good	8	Good	Good	Exc.	MIL-DTL-23053/15, Class 2; ABS
475	+1, -10	1.28	Self-Extinguish	Non-Corrosive	Good	9	Good	Good	Exc.	MIL-DTL-23053/15, Class 1; ABS
400	+1, -10	1.30	Self-Extinguish	Non-Corrosive	Good	8	Good	Good	Exc.	
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

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Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use.

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