



Heat Shrinkable Products

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3M™ Heat Shrink products provide a uniquely effective means of applying skintight insulating and protective coverings for a wide variety of electrical, electronic and mechanical applications.

All of our heat shrink products are made by 3M in the U.S. and available ‘off-the-shelf’ from a nationwide network of sales representatives and stocking distributors. Because every item is stocked, there’s never a problem with long lead times or back-orders. Plus, our people are professionally trained in the use of 3M’s heat shrink products, so they can assist you with information and guide you to the right product for your specific needs.

Worldwide Service

3M products, from tape to test equipment, are respected worldwide for their innovative features and reliable properties. 3M’s service includes a superior product at a fair price, application information, employee and field service training including instruction sheets and technical papers, easy access to 3M personnel through a toll-free number, and laboratory and technical service support from 3M operations worldwide. When you choose 3M, you choose more than a vendor, you choose a partner. You’ll receive a quality product that will perform reliably and a company that is dedicated to responding to your needs — now and in the future.

Meeting Performance Requirements

3M heat shrink products offer the important advantages of simple installation, improved performance and long-term reliability. They are abrasion resistant, withstand heat, corrosion, moisture and other hostile environments and offer superior dielectric properties. Benefits include cost, size and labor savings as well as enhanced product appearance.

Materials are specifically developed to meet demanding performance requirements and are manufactured under stringent quality-assurance standards. 3M heat shrink products meet or exceed the requirements of military, commercial, aerospace and industrial OEM specifications. They have proven their effectiveness in the most demanding environments including outer-space, undersea and underground.

In addition to the standard product line, 3M offers the capability to meet special requirements for custom-designed and manufactured heat shrink products. Research, development and testing laboratories exist in combination with complete facilities for production-scale compounding, processing and cross-linking of polymeric materials. 3M also offers technical service and engineering support to assist you in evaluating your specific application needs.



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Cross-linking

Products such as FP-301 tubing are fabricated from specially modified polyolefin. Cross-linking converts the polyolefin, a meltable or thermoplastic material, into a non-melting, thermoset material and imparts a permanent “memory” to the polyolefin. This permits the material to be supplied in the expanded state and, with the application of heat, shrink to its original size.

In the process, the polyolefin is transformed into an entirely new class of high temperature material with significantly improved properties including increased temperature resistance, improved mechanical properties, solvent and chemical resistance, and thermal stability.

Cross-linking is used to enhance or alter one or more of the physical, chemical or electrical properties of a wide variety of polymers, such as polychloroprene, polyvinylidene fluoride, and other fluoropolymers. The combined application of cross-linking and polymer chemistry leads to the creation of specialized, high-performance heat shrink products offering characteristics that are superior to the already outstanding properties of the polymeric base material.

Broad Product Range

3M offers a range of products based on heat shrink technology, including tubing, solder splice connectors and molded parts.

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
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
TP	Terminal Polyolefin Insulation and strain relief of terminals. Used extensively with automatic assembly equipment.	-55°C to +135°C	275°F 135°C	2.5:1	.240" to .485"	800	10 ¹⁵	1900
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
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
Medium- and 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

Technical information provided consists of typical product data and should not be used for specification purposes. Unless otherwise noted, all tests are performed at room temperature.

Kynar® Elf Atochem North America, Inc.
Neoprene® E. I. du Pont de Nemours & Co. Inc.

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	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
350	+0, -10	1.25	Self-Extinguish	Non-Corrosive	Good	7	Good	Exc.	Exc.	UL File E-157227; CSA LR38227
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
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
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 E-102356

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

Single-Wall Polyolefin Tubing

3M™ FP-301 Thin-Wall Tubing

Shrink Ratio 2:1



3M FP-301 is a heat shrinkable, flexible polyolefin tubing that offers an outstanding balance of electrical, physical and chemical properties for a wide variety of industrial and military applications. Rated for

275°F (135°C) continuous operation. FP-301 tubing is typically used as a shrink-fit electrical insulation over cable splices and terminations. It is also used for lightweight wire harness covering, wire marking, wire bundling, component packaging and fire-resistant covering.

FP-301 clear tubing provides excellent visibility for component packing. All FP-301 tubing is split resistant, mechanically tough, easily marked and cold flow resistant.

FP-301 is available in black, white, red, blue, yellow and clear in the standard lengths of 6-inch (15,2 cm) cut pieces, 48-inch (1,21 m) and small (8,5-inch core diameter) spools of 50 (15,24 m) and 100 (30,48 m) feet. Four-foot lengths of green tubing are available in sizes 1/16 inch to 1/2 inch. Additional sizes, colors and put-ups are available — please contact your 3M Electrical Products Sales Representative.

Application Specifications: UL Recognized and CSA Certified at 600 volts at 257°F (125°C); UL File Nos. E-39100 and CSA No. LR 38227. MIL-I-23053/5, Class 1,2. AMS 3636 (Type I) and AMS 3637 (Type II).

Ordering Information: Reference specific product size, color and description on the following pages. *Example:* FP-301-1/4, white 6" (15,2 cm) pieces.

*Technical information can be found on page 102

Specification and Ordering Information for 3M FP-301 Assortment Kits

Description	UPC (051135-)	Case Quantity
Assorted Colors Kit	37677	5 kits
Kit Contents:	Kit Quantity:	
3/32 (2,35 mm)	35	-
1/8 (3,18 mm)	28	-
3/16 (4,75 mm)	21	-
1/4 (6,35 mm)	21	-
3/8 (9,53 mm)	14	-
1/2 (12,70 mm)	14	-
Assorted Black Kit	38139	5 kits
Kit Contents:	Kit Quantity:	
3/16 (4,8 mm)	30	-
1/4 (6,5 mm)	28	-
3/8 (9,6 mm)	20	-
1/2 (12,7 mm)	14	-
3/4 (19,1 mm)	6	-
1 (25,4 mm)	4	-

Specification and Ordering Information for 3M FP-301 Six-Inch Pieces—Tamper Evident Bags (Refills for Kits)

Product No.	Size	Color	UPC (051135-)	Description	Expanded/ Recvd. I.D.	Case Qty
FP-301	3/64" (1,19 mm)	Black Clear	36484 36485	40 pcs/bag	0.046/0.023" (1,17/0,58 mm)	10
FP-301	1/16" (1,59 mm)	Black Clear	36486 36487	38 pcs/bag	0.063/0.031" (1,6/0,79 mm)	10
FP-301	3/32" (2,4 mm)	Black Clear	36488 36489	36 pcs/bag	0.093/0.046" (2,36/1,17 mm)	10
FP-301	1/8" (3,18 mm)	Black Clear	36490 36491	34 pcs/bag	0.125/0.062" (3,18/1,57 mm)	10
FP-301	3/16" (4,77 mm)	Black Clear	36492 36493	30 pcs/bag	0.187/0.093" (4,75/2,36 mm)	10
FP-301	1/4" (6,4 mm)	Black Clear	36494 36495	26 pcs/bag	0.250/0.125" (6,35/3,18 mm)	10
FP-301	3/8" (9,55 mm)	Black Clear	36496 36497	24 pcs/bag	0.375/0.187" (9,53/4,75 mm)	10
FP-301	1/2" (12,7 mm)	Black Clear	36498 36499	20 pcs/bag	0.500/0.250" (12,7/6,35 mm)	10
FP-301	3/4" (19,0 mm)	Black Clear	36500 36501	14 pcs/bag	0.750/0.375" (19,05/9,52 mm)	10
FP-301	1" (25,4 mm)	Black Clear	36502 36503	10 pcs/bag	1.000/0.500" (25,4/12,7 mm)	10
FP-301	1-1/2" (38,1 mm)	Black Clear	36504 36505	6 pcs/bag	1.500/0.750" (38,1/19,05 mm)	10
FP-301	2" (50,8 mm)	Black Clear	36506 36507	4 pcs/bag	2.000/1.000" (50,8/25,4 mm)	10
FP-301	3" (76,0 mm)	Black Clear	36508 36509	3 pcs/bag	3.000/1.500" (76,2/38,1 mm)	10
FP-301	4" (102,0 mm)	Black Clear	36510 36511	2 pcs/bag	4.000/2.000" (101,6/50,8 mm)	10

Specification and Ordering Information for 3M FP-301 Assortment Packs of Six-Inch Lengths—Tamper Evident Bags (Refills for Kits)

Product	Size	Color	UPC (051135-)	Description	Case Qty.
FP-301	3/64–3/16" (1,19–4,77 mm)	Black	36612	6 each of 5 sizes	10
FP-301	1/4–3/4" (6,4–19,0 mm)	Black	36613	4 each of 4 sizes	10
FP-301	1–4" (25,4–102 mm)	Black	36614	2 each of 5 sizes	10
FP-301	3/32" (2,4 mm)	Assort.	36618	5 each of 7 colors	10
FP-301	1/8" (3,18 mm)	Assort.	36619	4 each of 7 colors	10
FP-301	3/16" (4,77 mm)	Assort.	36620	3 each of 7 colors	10
FP-301	1/4" (6,4 mm)	Assort.	36621	3 each of 7 colors	10
FP-301	3/8" (9,55 mm)	Assort.	36622	2 each of 7 colors	10
FP-301	1/2" (12,7 mm)	Assort.	36623	2 each of 7 colors	10

Specification and Ordering Information for 3M™ FP-301 4' Sticks (Small Box)

Product Number	Size	Expanded/Recovered I.D.	Color	UPC (051135-)	Description	Case Qty.
FP-301	3/64" (1,17 mm)	0.046/0.023" (1,17/0,58 mm)	Black	36644	4' Sticks (1,22 m)	25
			Clear	36645		
			White	36646		
			Red	36647		
			Blue	36649		
			Yellow	36648		
FP-301	1/16" (1,60 mm)	0.063/0.031" (1,6/0,79 mm)	Black	36650	4' Sticks (1,22 m)	25
			Clear	36651		
			White	36652		
			Red	36653		
			Blue	36655		
			Yellow	36654		
FP-301	3/32" (2,36 mm)	0.093/0.046" 2,36/1,17 mm)	Black	36673	4' Sticks (1,22 m)	25
			Clear	36674		
			White	36675		
			Red	36676		
			Blue	36678		
			Yellow	36677		
FP-301	1/8" (3,18 mm)	0.125/0.062" (3,18/1,57 mm)	Black	36680	4' Sticks (1,22 m)	25
			Clear	36681		
			White	36682		
			Red	36683		
			Blue	36685		
			Yellow	36684		
FP-301	3/16" (4,75 mm)	0.187/0.093" (4,75/2,36 mm)	Black	36687	4' Sticks (1,22 m)	25
			Clear	36688		
			White	36689		
			Red	36690		
			Blue	36692		
			Yellow	36691		
FP-301	1/4" (6,35 mm)	0.250/0.125" (6,35/3,18 mm)	Black	36694	4' Sticks (1,22 m)	12
			Clear	36695		
			White	36696		
			Red	36697		
			Blue	36699		
			Yellow	36698		
FP-301	3/8" (9,53 mm)	0.375/0.187" (9,53/4,75 mm)	Black	36701	4' Sticks (1,22 m)	12
			Clear	36702		
			White	36703		
			Red	36704		
			Blue	36706		
			Yellow	36705		
FP-301	1/2" (12,7 mm)	0.500/0.250" (12,7/6,35 mm)	Black	36709	4' Sticks (1,22 m)	12
			Clear	36710		
			White	36711		
			Red	36712		
			Blue	36714		
			Yellow	36713		
FP-301	3/4" (19,05 mm)	0.750/0.375" (19,01/9,53 mm)	Black	36716	4' Sticks (1,22 m)	12
			Clear	36720		
			White	36721		
			Red	36722		
			Blue	36724		
			Yellow	36723		
			Green	37764		

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Specification and Ordering Information for 3M FP-301 4' Sticks (Small Box) (continued)

Product Number	Size	Expanded/Recovered I.D.	Color	UPC (051135-)	Description	Case Qty.
FP-301	1" (25,4 mm)	1.000/0.500" (25,4/12,7 mm)	Black	36725	4' Sticks (1,22 m)	5
			Clear	36726		
			White	36727		
			Red	36728		
			Blue	36730		
			Yellow	36729		
FP-301	1-1/2" (38,1 mm)	1.500/0.750" (38,1/19,05 mm)	Black	36731	4' Sticks (1,22 m)	5
			Clear	36732		
			White	36733		
			Red	36734		
			Blue	36736		
			Yellow	36735		
FP-301	2" (50,8 mm)	2.000/1.000" (50,8/25,4 mm)	Black	36737	4' Sticks (1,22 m)	5
			Clear	36738		
			White	36739		
			Red	36740		
			Blue	36742		
			Yellow	36741		
FP-301	3" (76,2 mm)	3.000/1.500" (76,2/38,1 mm)	Black	36743	4' Sticks (1,22 m)	2
FP-301	4" (101,6 mm)	4.000/2.000" (101,6/50,8 mm)	Black	36745	4' Sticks (1,22 m)	2
			Clear	36746		

Specification and Ordering Information for 3M™ FP-301 4' Sticks (Bulk)

Product Number	Size	Expanded/Recovered I.D.	Color	UPC (054007-)	Box Qty.	Case Qty.
FP-301	3/64" (1,17 mm)	0.046/0.023" (1,17/0,58 mm)	Black	08432	200'	1,000'
			Clear	08438		
			White	08433		
			Red	08738		
			Blue	08734		
			Yellow	58680		
FP-301	1/16" (1,60 mm)	0.063/0.031" (1,6/0,79 mm)	Black	08434	200'	1,000'
			Clear	08439		
			White	08435		
			Red	08764		
			Blue	08761		
			Yellow Green	08770 58787		
FP-301	3/32" (2,36 mm)	0.093/0.046" 2,36/1,17 mm)	Black	08436	200'	1,000'
			Clear	08440		
			White	08437		
			Red	08788		
			Blue	08787		
			Yellow Green	08791 37654*		
FP-301	1/8" (3,18 mm)	0.125/0.062" (3,18/1,57 mm)	Black	08562	200'	1,000'
			Clear	08587		
			White	36682		
			Red	08564		
			Blue	08820		
			Yellow Green	08825 58788		
FP-301	3/16" (4,75 mm)	0.187/0.093" (4,75/2,36 mm)	Black	08566	200'	1,000'
			Clear	08588		
			White	08568		
			Red	08854		
			Blue	08852		
			Yellow Green	08569 58726		
FP-301	1/4" (6,35 mm)	0.250/0.125" (6,35/3,18 mm)	Black	08570	100'	800'
			Clear	08589		
			White	08572		
			Red	38755		
			Blue	58792		
			Yellow Green	38760 58577		
FP-301	3/8" (9,53 mm)	0.375/0.187" (9,53/4,75 mm)	Black	08573	100'	500'
			Clear	08590		
			White	08576		
			Red	08575		
			Blue	38767		
			Yellow Green	08577 58725		
FP-301	1/2" (12,7 mm)	0.500/0.250" (12,7/6,35 mm)	Black	08604	100'	400'
			Clear	08591		
			White	08608		
			Red	08607		
			Blue	08606		
			Yellow Green	08609 58789		
FP-301	3/4" (19,05 mm)	0.750/0.375" (19,01/9,53 mm)	Black	08610	100'	200'
			Clear	08592		
			White	08614		
			Red	08613		
			Blue	08612		
			Yellow Green	08615 58790		

* UPC prefix 051135-
Continued on next column

Specification and Ordering Information for 3M FP-301 4' Sticks (Bulk) (continued)

Product Number	Size	Expanded/Recovered I.D.	Color	UPC (054007-)	Box Qty.	Case Qty.
FP-301	1" (25,4 mm)	1.000/0.500" (25,4/12,7 mm)	Black	08578	48'	96'
			Clear	08593		
			White	08580		
			Red	38902		
			Blue	38900		
			Yellow Green	08581 35725*		
FP-301	1-1/2" (38,1 mm)	1.500/0.750" (38,1/19,05 mm)	Black	08582	48'	96'
			Clear	08594		
			White	38916		
			Red	38914		
			Blue	38912		
			Yellow	08583		
FP-301	2" (50,8 mm)	2.000/1.000" (50,8/25,4 mm)	Black	08584	48'	96'
			Clear	08595		
			White	38923		
			Red	56829		
			Blue	38921		
			Yellow	38926		
FP-301	3" (76,2 mm)	3.000/1.500" (76,2/38,1 mm)	Black	08585	-	48'
			Clear	39030		
			White	08586		
			Red	38932		
			Blue	38931		
			Yellow	57035		
FP-301	4" (101,6 mm)	4.000/2.000" (101,6/50,8 mm)	Black	38934	-	48'
			Clear	39032		
			White	38939		
			Red	38938		
			Blue	38936		
			Yellow	59028		

* UPC prefix 051135-

Specification and Ordering Information for 3M™ FP-301 Four-Foot Lengths with Header Cards

Product No.	Size	Color	UPC (051135-)		Expanded/ Recvd. I.D.	Case Qty
			Descrpt.			
FP-301H	1/16" (1,58 mm)	Black	36748	48" Sticks (1,22 m)	0.063/0.031" (1,6/0,79 mm)	25
		Clear	36749			
		White	36750			
		Red	36751			
		Blue	36753			
		Yellow	36752			
		Green	36754			
FP-301H	3/32" (2,38 mm)	Black	36770	48" Sticks (1,22 m)	0.093/0.046" 2,36/1,17 mm)	25
		Clear	36771			
		White	36772			
		Red	36773			
		Blue	36775			
		Yellow	36774			
		Green	36776			
FP-301H	1/8" (3,18 mm)	Black	36777	48" Sticks (1,22 m)	0.125/0.062" (3,18/1,57 mm)	25
		Clear	36778			
		White	36779			
		Red	36780			
		Blue	36782			
		Yellow	36781			
		Green	36783			
FP-301H	3/16" (4,75 mm)	Black	36784	48" Sticks (1,22 m)	0.187/0.093" (4,75/2,36 mm)	25
		Clear	36785			
		White	36786			
		Red	36787			
		Blue	36789			
		Yellow	36788			
		Green	36790			
FP-301H	1/4" (6,35 mm)	Black	36791	48" Sticks (1,22 m)	0.250/0.125" (6,35/3,18 mm)	12
		Clear	36792			
		White	36793			
		Red	36794			
		Blue	36796			
		Yellow	36795			
		Green	36797			
FP-301H	3/8" (9,5 mm)	Black	36798	48" Sticks (1,22 m)	0.375/0.187" (9,53/4,75 mm)	12
		Clear	36799			
		White	36800			
		Red	36801			
		Blue	36803			
		Yellow	36802			
		Green	36804			
FP-301H	1/2" (12,7 mm)	Black	36805	48" Sticks (1,22 m)	0.500/0.250" (12,7/6,35 mm)	12
		Clear	36806			
		White	36807			
		Red	36808			
		Blue	36810			
		Yellow	36809			
		Green	36811			
FP-301H	3/4" (19,05 mm)	Black	36812	48" Sticks (1,22 m)	0.750/0.375" (19,01/9,53 mm)	12
		Clear	36813			
		White	36814			
		Red	36815			
		Blue	36817			
		Yellow	36816			
		Green	36763			
FP-301H	1" (25,4 mm)	Black	36818	48" Sticks (1,22 m)	1.000/0.500" (25,4/12,7 mm)	5
		Clear	36819			
		White	36820			
		Red	36821			
		Blue	36823			
		Yellow	36822			
		Green	37766			



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Specification and Ordering Information for 3M™ FP-301 6" Cut Pieces (Bulk)

Product Number	Size	Expanded/ Recovered I.D.	Color	UPC (051135-)	Description	Case Qty.
FP-301	1/16" (1,60 mm)	0.063/0.031" (1,6/0,79 mm)	Black Red	37491 37492	Tamper evident bulk bags	200
FP-301	3/32" (2,36 mm)	0.093/0.046" (2,36/1,17 mm)	Black Red	37493 37494	Tamper evident bulk bags	200
FP-301	1/8" (3,18 mm)	0.125/0.062" (3,18/1,57 mm)	Black Red	37495 37496	Tamper evident bulk bags	200
FP-301	3/16" (4,75 mm)	0.187/0.093" (4,75/2,36 mm)	Black Red	37497 37498	Tamper evident bulk bags	200
FP-301	1/4" (6,35 mm)	0.250/0.125" (6,35/3,18 mm)	Black Red	37499 37500	Tamper evident bulk bags	200
FP-301	3/8" (9,53 mm)	0.375/0.187" (9,53/4,75 mm)	Black Red	37501 37502	Tamper evident bulk bags	200
FP-301	1/2" (12,7 mm)	0.500/0.250" (12,7/6,35 mm)	Black Red	37503 37504	Tamper evident bulk bags	200
FP-301	3/4" (19,05 mm)	0.750/0.375" (19,05/9,52 mm)	Black Red	37505 37506	Tamper evident bulk bags	200
FP-301	1" (25,4 mm)	1.000/0.500" (25,4/12,7 mm)	Black Red	37507 37508	Tamper evident bulk bags	200

Specification and Ordering Information for 3M FP-301 12" Cut Pieces (Bulk)

Product Number	Size	Expanded/ Recovered I.D.	Color	UPC (051135-)	Description	Case Qty.
FP-301	1/16" (1,60 mm)	0.063/0.031" (1,6/0,79 mm)	Black Red	37512 37513	bulk	100
FP-301	3/32" (2,36 mm)	0.093/0.046" 2,36/1,17 mm)	Black Red	37514 37515	bulk	100
FP-301	1/8" (3,18 mm)	0.125/0.062" (3,18/1,57 mm)	Black Red	37516 37517	bulk	100
FP-301	3/16" (4,75 mm)	0.187/0.093" (4,75/2,36 mm)	Black Red	37518 37519	bulk	100
FP-301	1/4" (6,35 mm)	0.250/0.125" (6,35/3,18 mm)	Black Red	37520 37521	bulk	100
FP-301	3/8" (9,53 mm)	0.375/0.187" (9,53/4,75 mm)	Black Red	37522 37523	bulk	100
FP-301	1/2" (12,7 mm)	0.500/0.250" (12,7/6,35 mm)	Black Red	37524 37525	bulk	100
FP-301	3/4" (19,05 mm)	0.750/0.375" (19,01/9,53 mm)	Black Red	37526 37527	bulk	100
FP-301	1" (25,4 mm)	1.000/0.500" (25,4/12,7 mm)	Black Red	37528 37529	bulk	100

Specification and Ordering Information for 3M™ FP-301 Small Spools

Product No.	Size	Color	UPC (051135-)	Descrpt.	Expanded/ Recvd. I.D.	Case Qty
FP-301	3/64" (1,19 mm)	Black Clear	36027** 36028**	100' Spool (30,5 m)	0.046/0.023" (1,17/0,58 mm)	300'
FP-301	1/16" (1,6 mm)	Black Clear White Red Blue Yellow Green	35550 35555 35551 35552 35553 35554 37591	100' Spool (30,5 m)	0.063/0.031" (1,6/0,79 mm)	300'
FP-301	3/32" (2,4 mm)	Black Clear White Red Blue Yellow Green	35556 35548 35557 35558 35559 35560 37592	100' Spool (30,5 m)	0.093/0.046" (2,36/1,17 mm)	300'
FP-301	1/8" (3,2 mm)	Black Clear White Red Blue Yellow Green	35562 35567 35563 35564 35565 35566 37593	100' Spool (30,5 m)	0.125/0.062" (3,18/1,57 mm)	300'
FP-301	3/16" (4,77 mm)	Black Clear White Red Blue Yellow Green	35568 35573 35569 35570 35571 35572 37594	100' Spool (30,5 m)	0.187/0.093" (4,75/2,36 mm)	300'
FP-301	1/4" (6,4 mm)	Black Clear White Red Blue Yellow Green	35574 35579 35575 35576 35577 35578 37346	100' Spool (30,5 m)	0.250/0.125" (6,35/3,18 mm)	300'
FP-301	3/8" (9,6 mm)	Black Clear White Red Blue Yellow Green	35580 35585 35581 35582 35583 35584 37643	100' Spool (30,5 m)	0.375/0.187" (9,53/4,75 mm)	300'
FP-301	1/2" (12,7 mm)	Black Clear White Red Blue Yellow Green	35586 35591 35587 35588 35589 35590 37347	100' Spool (30,5 m)	0.500/0.250" (12,7/6,35 mm)	300'
FP-301	3/4" (19,1 mm)	Black Clear White Red Blue Yellow Green	35592 35597 35593 35594 35595 35596 37348	50' Spool (15,2 m)	0.750/0.375" (19,05/9,52 mm)	150'
FP-301	1" (25,4 mm)	Black Clear White Red Blue Yellow Green	35598 35603 35599 35600 35601 35602 37768	50' Spool (15,2 m)	1.000/0.500" (25,4/12,7 mm)	150'

* UPC prefix 054007-

** UPC prefix 051138-

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Specification and Ordering Information for 3M FP-301 Small Spools (continued)

Product No.	Size	Color	UPC (054007-)	Descrpt.	Expanded/ Recvd. I.D.	Case Qty
FP-301	1-1/2" (38,1 mm)	Black Clear White Red Blue Yellow	36026* 36025* 08515 38860 38857 08516	50' Spool (15,2 m) 100' Spool (30,5 m)	1.500/0.750" (38,1/19,05 mm)	100' 200'
FP-301	2" (50,8 mm)	Black Clear White Red Blue Yellow	36024* 36023* 08519 08518 38870 08520	50' Spool (15,2 m) 100' Spool (30,5 m)	2.000/1.000" (50,8/25,4 mm)	100' 200'
FP-301	3" (76,2 mm)	Black Clear White Red Blue Yellow	08521 38982 08522 38881 38880 38883	50' Spool (15,2 m)	3.000/1.500" (76,2/38,1 mm)	50'
FP-301	4" (101,6 mm)	Black Clear White Red Blue Yellow	38884 38986 38894 38893 58973 38895	50' Spool (15,2 m)	3.000/1.500" (101,6/50,8 mm)	50'

* UPC prefix 051138-

* UPC prefix 054007-

** UPC prefix 051138-

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Specification and Ordering Information for 3M™ FP-301 Spools (Large)

Product Number	Size	Expanded/Recovered I.D.	Color	UPC (054007-)	Description	Case Qty.
FP-301	3/64 (1,6 mm)	0.046/0.023" (1,17/0,58 mm)	Black	08458	1,000' Spool (304,8 m)	3,000'
			Clear	08523		
			White	08460		
			Red	08723		
			Blue	58613		
			Yellow	08727		
FP-301	1/16" (1,6 mm)	0.063/0.031" (1,6/0,79 mm)	Black	08461	1,000' Spool (304,8 m)	3,000'
			Clear	08524		
			White	08464		
			Red	08463		
			Blue	08746		
			Yellow Green	08465 37691*		
FP-301	3/32" (2,36 mm)	0.093/0.046" (2,36/1,17 mm)	Black	08466	500' Spool (152,4 m)	1,500'
			Clear	08525		
			White	08470		
			Red	08469		
			Blue	08468		
			Yellow Green	08471 37692*		
FP-301	1/8" (3,18 mm)	0.125/0.062" (3,18/1,57 mm)	Black	08472	500' Spool (152,4 m)	1,500'
			Clear	08526		
			White	08476		
			Red	08475		
			Blue	08474		
			Yellow Green	08477 56824		
FP-301	3/16" (4,75 mm)	0.187/0.093" (4,75/2,36 mm)	Black	08478	250' Spool (76,2 m)	750'
			Clear	08527		
			White	08483		
			Red	08482		
			Blue	08480		
			Yellow Green	08484 08840		
FP-301	1/4" (6,35 mm)	0.250/0.125" (6,35/3,18 mm)	Black	08485	200' Spool (60,96 m)	600'
			Clear	08528		
			White	08489		
			Red	08488		
			Blue	08487		
			Yellow Green	08490 56986		
FP-301	3/8" (9,53 mm)	0.375/0.187" (9,53/4,75 mm)	Black	08491	200' Spool (60,96 m)	600'
			Clear	08529		
			White	08494		
			Red	08493		
			Blue	38734		
			Yellow Green	08495 56987		
FP-301	1/2" (12,7 mm)	0.500/0.250" (12,7/6,35 mm)	Black	08496	200' Spool (60,96 m)	600'
			Clear	08530		
			White	08500		
			Red	08499		
			Blue	08498		
			Yellow Green	08501 56988		
FP-301	3/4" (19,05 mm)	0.750/0.375" (19,05/9,52 mm)	Black	08502	200' Spool (60,96 m)	600'
			Clear	08531		
			White	08506		
			Red	08505		
			Blue	08504		
			Yellow Green	08507 56642		

* UPC prefix 051135-
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Specification and Ordering Information for 3M FP-301 Spools (Large) (continued)

Product Number	Size	Expanded/Recovered I.D.	Color	UPC (054007-)	Description	Case Qty.
FP-301	1" (25,4 mm)	1.000/0.500" (25,4/12,7 mm)	Black	08508	100' Spool (30,5 m)	300'
			Clear	08532		
			White	08512		
			Red	08511		
			Blue	08510		
			Yellow Green	08513 37765*		
FP-301	1-1/2" (38,1 mm)	1.500/0.750" (38,1/19,05 mm)	Black	08514	100' Spool (30,5 m)	200'
			Clear	08533		
			White	08515		
			Red	38860		
			Blue	38857		
			Yellow	08516		
FP-301	2" (50,8 mm)	2.000/1.000" (50,8/25,4 mm)	Black	08517	100' Spool (30,5 m)	200'
			Clear	08534		
			White	08519		
			Red	08518		
			Blue	38870		
			Yellow	08520		
FP-301	3" (76,2 mm)	3.000/1.500" (76,2/38,1 mm)	Black	08521	-	50'
			Clear	38982		
			White	08522		
			Red	38881		
			Blue	38880		
			Yellow	38883		
FP-301	4" (101,6 mm)	4.000/1.500" (101,6/50,8 mm)	Black	38884	-	50'
			Clear	38986		
			White	38894		
			Red	38893		
			Blue	58973		
			Yellow	38895		

** UPC prefix 051138-

3M™ SFTW-203 Very Flexible Polyolefin Tubing

Shrink Ratio 3:1



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3M SFTW-203 Heat Shrink Tubing is a 3:1 shrink ratio tubing that offers an outstanding balance of electrical, physical and chemical properties for a wide variety of industrial and military applications. SFTW-203 is made of very flexible, heat-shrinkable polyolefin which is mechanically tough, chemical resistant and can be easily surface printed.

SFTW-203 tubing has been engineered to offer as low shrink temperature of 212°F (100°C). This allows the tubing to shrink rapidly and minimizes heat exposure and possible damage to temperature sensitive substrates.

SFTW-203 tubing meets the performance requirements of MIL-I-23053/5 Class 1, and is UL and C-UL Recognized (approved for Canada) (File No. E48398) for flame retardance. It is rated for continuous operation from -67°F (-55°C) to 275°F (135°C) and withstands elevated temperatures of 572°F (300°C) for brief periods.

The extra flexibility and low shrink temperature of 3M SFTW-203 Heat Shrink Tubing makes it ideal shrink-fit jacketing and insulation of flexible wire bundles and temperature sensitive components. The 3:1 shrink ratio makes SFTW-203 the insulation of choice for end terminations where the connector body is larger than the cable and for repair applications where the tubing must be slid over a connector. SFTW-203 can also be used to insulate an oversized component in line to the wiring.

SFTW-203 has a 3:1 shrink ratio. When freely recovered the tubing will shrink to 33% of its as-supplied inner diameter. The recovered wall thickness is proportional to the degree of recovery. For agency specifications, see page 102.

Ordering Information: Order SFTW-203 in the size equivalent to expanded inner diameter. *Example:* SFTW-203, 6 mm, black, 4 ft. lengths. Always order the largest size that will shrink-fit snugly over the item to be covered.

Standard Colors: Black. Other colors subject to factory quotation.

Standard Packaging: Boxes of four-foot lengths or large (100 feet) spools. Cut pieces subject to factory quotation.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M SFTW-203 Sticks and Spools

Product Number	Size	Color	UPC (051135-)	Description	Box Qty.	Case Qty.
SFTW-203	1/16"	Black	37091	4' Sticks	-	25
	1/8"	Black	37092	4' Sticks	-	25
	1/4"	Black	37093	4' Sticks	-	12
	3/8"	Black	37094	4' Sticks	-	12
	1/2"	Black	37095	4' Sticks	-	12
	3/4"	Black	37096	4' Sticks	-	12
	1"	Black	37097	4' Sticks	-	5
	1-1/2"	Black	37098	4' Sticks	-	5
SFTW-203	1/16"	Black	37083	Spool	1,000'	3,000'
	1/8"	Black	37084	Spool	500'	1,500'
	1/4"	Black	37085	Spool	200'	600'
	3/8"	Black	37086	Spool	200'	600'
	1/2"	Black	37087	Spool	200'	600'
	3/4"	Black	37088	Spool	200'	600'
	1"	Black	37089	Spool	100'	300'
	1-1/2"	Black	37090	Spool	100'	200'

3M™ SFTW-202-GYS Very Flexible Polyolefin-Green and Yellow Striped Tubing

Shrink Ratio 2:1

3M SFTW-202 GYS Heat Shrink Tubing is a 2:1 shrink ratio, yellow and green striped tubing that offers an outstanding balance of electrical, physical and chemical properties for a wide variety of industrial and military applications. GYS is made of very flexible, heat-shrinkable polyolefin which is mechanically tough, chemically resistant, and can be easily surface printed. It is manufactured using a special co-extrusion process.

GYS tubing has been engineered to offer a low shrink temperature of 212°F (100°C). This allows the tubing to shrink rapidly and minimizes heat exposure and possible damage to temperature-sensitive substrates.

GYS tubing meets the performance requirements of MIL-I-23053/5 Class 1 and is UL and C-UL Recognized (approved for Canada) (File No. E48398) for flame retardance. It is rated for continuous operation from -67°F (-55°C) to 275°F (135°C) and withstands elevated temperatures of 572°F (300°C) for brief periods.

3M Heat Shrink Tubing SFTW-202 GYS is primarily used for ground wire identification. The extra flexibility and low shrink temperature of GYS tubing make it ideal for shrink-fit jacketing and insulation of flexible wire bundles and temperature-sensitive components.

GYS has a 2:1 shrink ratio. When freely recovered, the tubing will shrink to 50% of its as-supplied inner diameter. The recovered wall thickness is proportional to the degree of recovery. For agency specifications, see page 102.

Ordering Information: Order SFTW-202 GYS in the size equivalent to expanded inner diameter. *Example:* SFTW-202 GYS, 1/4" spool. Always order the largest size that will shrink-fit snugly over the item to be covered.

Standard Colors: Green and yellow striped.

Standard Packaging: Large (100 feet) spools.

Cut pieces subject to factory quotation.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M SFTW 202-GYS Sticks and Spools

Product Number	Size	Color	UPC (051135-)	Description	Box Qty.	Case Qty.
202-GYS	1/8"	Gn/Yl	38871	4'	25 Sticks	1
	3/16"	Gn/Yl	38872	4'	25 Sticks	1
	1/4"	Gn/Yl	38873	4'	12 Sticks	1
	3/8"	Gn/Yl	38874	4'	12 Sticks	1
	1/2"	Gn/Yl	38877	4'	12 Sticks	1
	3/4"	Gn/Yl	38878	4'	12 Sticks	1
	1/8"	Gn/Yl	41266*	Spool	500'	1,500'
	3/16"	Gn/Yl	58724*	Spool	250'	750'
	1/4"	Gn/Yl	40111*	Spool	200'	600'
	3/8"	Gn/Yl	57025*	Spool	200'	600'
	1/2"	Gn/Yl	58852*	Spool	200'	600'
	3/4"	Gn/Yl	37262	Spool	200'	600'

* Use prefix 054007-

3M™ TP Semi-Rigid Polyolefin Tubing

Shrink Ratio 2.5:1

3M TP Heat Shrink Tubing is a semi-rigid, cross-linked polyolefin tubing used for electrical insulation and strain-relief of crimped or soldered terminals in electronic or electrical applications. Due to its high 2.5:1 shrink ratio, only four standard sizes of TP tubing are needed to cover most popular terminations and connectors.

Minimum shrink temperature for 3M TP tubing is 275°F (135°C). The tubing is flame retardant and rated for continuous operation from -67°F (-55°C) to 275°F (135°C). It will withstand temperatures up to 482°F (250°C) for short periods.

TP tubing is UL Recognized and CSA Certified for 600 volts at 257°F (125°C) (UL No. E157227, CSA No. LR38227).

TP tubing is formulated for fast recovery and is supplied in pre-cut lengths, making it ideal for use with automatic equipment for insulation and strain relief of terminals. Used with automated installation it can significantly reduce application costs while improving product quality and uniformity. TP tubing can be applied with forced hot-air or infrared shrinking tools or ovens for manual installation.

TP tubing has a 2.5:1 shrink ratio. When freely recovered, the tubing will shrink to less than 40% of its as-supplied internal diameter. The recovered wall thickness is proportional to the degree of recovery. For agency specifications, see page 102.

Standard Colors: Black. Other colors available subject to factory quotation.

Standard Packaging: Cartons of 1" cut pieces. Other cut piece lengths available subject to factory quotation.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M TP Cut Pieces (Bulk)

Product Number	Size	Color	UPC (051135-)	Case Qty.
TP-240	1"	Black	37462	15,000
TP-320	1"	Black	37463	10,000
TP-375	1"	Black	37464	10,000
TP-485	1"	Black	37465	5,000

Adhesive-Lined Tubing

3M™ MW Multiple Wall, Semi-Rigid Polyolefin Tubing

Shrink Ratio 2.5:1

3M MW Heat Shrink Tubing is a semi-rigid, 230°F (110°C) heat-shrinkable polyolefin tubing that is co-extruded and selectively cross-linked to provide an integral, meltable inner wall.

When heated in excess of 275°F (135°C), the inner meltable wall of the tubing is simultaneously softened and forced by the shrink action into intimate contact with all underlying surfaces, interstices and small voids. Upon cooling, the MW tubing provides a tough protective and insulating barrier, highly resistant to penetration by moisture and the attack of chemicals and solvents.

MW tubing is rated for continuous operation at temperatures from -67°F (-55°C) to 230°F (110°C) and will withstand higher operating temperatures for brief periods. Adhesive reflow will occur at temperatures above 176°F (80°C).

Applications for MW tubing include braided-shield pigtails, electrical wiring, mechanical assemblies, electronic components, electrical wire splices, breakouts, connections, solder joints, delicate wire terminations, end-sealing of electrical cables and rigid tubings.

For installations that may require rework, retrofit or repair in the field, MW tubing offers the extra advantage of easy removability. For circuit and component identification purposes, the tubings readily accept marking by means of print-wheel or hot-stamp techniques. For agency specifications, see page 102.

Shrink Ratio: MW tubing has a 2.5:1 shrink ratio. When fully recovered, the tubing will shrink to 40% of its original diameter. The recovered wall thickness of the tubing is proportional to the degree of recovery.

Ordering Information: Order MW tubing in the size equivalent to the expanded inside diameter required. *Example:* MW, 1/4., 4 ft., black. Order the largest size that will shrink snugly over the component to be covered. Other sizes are available subject to factory quotation.

Standard Colors: Black. MW tubing is also available, on special factory order, color-coded as follows: 1/8 - brown, 1/4 - white, 1/2 - blue, 3/16 - gray, 3/8 - red, 3/4 - yellow.

Standard Packaging: Four-foot lengths. Cut pieces and other lengths (including spooled) are available subject to factory quotation.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M MW 4' Sticks

Product Number	Size	Color	UPC (051135-)	Description	Box Qty.	Case Qty.
MW	1/8"	Black	36859	4' Sticks	-	25 Sticks
MW	3/16"	Black	36860	4' Sticks	-	12 Sticks
MW	1/4"	Black	36861	4' Sticks	-	12 Sticks
MW	3/8"	Black	36862	4' Sticks	-	12 Sticks
MW	1/2"	Black	36863	4' Sticks	-	12 Sticks
MW	3/4"	Black	36864	4' Sticks	-	5 Sticks
MW	1"	Black	36865	4' Sticks	-	5 Sticks
MW	1/8"	Black Brown	08555* 37105	4' Sticks/Bulk	200'	1,000'
MW	3/16"	Black Gray	08556 39443	4' Sticks/Bulk 4' Sticks/Bulk	200' 200'	1,000' 1,000'
MW	1/4"	Black White	08557 39447	4' Sticks/Bulk 4' Sticks/Bulk	100' 100'	800' 800'
MW	3/8"	Black Red	08558 39449	4' Sticks/Bulk	100'	500'
MW	1/2"	Black Blue	08559 37101	4' Sticks/Bulk	100'	300'
MW	3/4"	Black Yellow	08560 37102	4' Sticks/Bulk	60'	180'
MW	1"	Black	08561	4' Sticks/Bulk	48'	96'

* Use prefix 054007-

3M™ EPS-200 Thin Wall Flexible Polyolefin Adhesive-Lined Tubing

Shrink Ratio 2:1



25

3M EPS-200 Heat Shrink Tubing is a 2:1 thin-wall tubing offering the advantages of integral adhesive-lined construction. The tubing is made from a flame-retardant, flexible polyolefin with a thin layer of special thermoplastic adhesive. The heat-shrinkable outer wall is selectively cross-linked while maintaining the high flow and excellent adhesion of the inner sealant liner.

When heated in excess of 250°F (121°C), EPS-200 rapidly shrinks to a skin-tight fit, forcing the melted adhesive lining to flow and cover the substrate. The adhesive forms a flexible bond with a wide variety of rubbers, plastics and metals. Upon cooling, the adhesive solidifies forming a permanent, non-drying, flexible and waterproof barrier. EPS-200 is rated for operation at -67°F (-55°C) to 230°F (110°C). Adhesive reflow will occur at temperatures above 176°F (80°C).

3M Heat Shrink Tubing EPS-200 offers convenient protection of electronic components, wire splices, or bundling of wires. Automotive, truck and marine wiring splices and connections are quickly and easily protected from harsh environments.

EPS-200 tubing has a 2:1 shrink ratio. When freely recovered, the tubing will shrink to 50% of its original diameter. The recovered wall thickness of the tubing is proportional to the degree of recovery. For agency specifications, see page 102.

Ordering Information: Order EPS-200 tubing in the size equivalent to the expanded inside diameter. *Example:* EPS-200, 3/8", 4 ft., black. Always order the largest size that will shrink snugly over the component to be covered. Other sizes are available subject to factory quotation.

Standard Colors: Black. Other colors and clear are available subject to factory quotation. The clear tubing is not flame retardant.

Standard Packaging: Four-foot lengths. Cut pieces and other lengths (including spooled) are available subject to factory quotation.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M EPS-200 4' Sticks

Product Number	Size	Color	UPC (051135-)	Description	Box Qty.	Case Qty.
EPS-200	1/8"	Black	36866	4' Sticks	-	25 Sticks
EPS-200	3/16"	Black	36867	4' Sticks	-	12 Sticks
EPS-200	1/4"	Black	36868	4' Sticks	-	12 Sticks
EPS-200	3/8"	Black	36869	4' Sticks	-	12 Sticks
EPS-200	1/2"	Black	36870	4' Sticks	-	12 Sticks
EPS-200	3/4"	Black	36871	4' Sticks	-	5 Sticks
EPS-200	1"	Black	36872	4' Sticks	-	5 Sticks
EPS-200	1-1/2"	Black	36873	4' Sticks	-	5 Sticks
EPS-200	2"	Black	36874	4' Sticks	-	2 Sticks
EPS-200	1/8"	Black	03082*	4' Sticks/Bulk	200'	1,000'
EPS-200	3/16"	Black	40701*	4' Sticks/Bulk	200'	1,000'
EPS-200	1/4"	Black	08549*	4' Sticks/Bulk	100'	800'
EPS-200	3/8"	Black	08550*	4' Sticks/Bulk	100'	500'
EPS-200	1/2"	Black	08551*	4' Sticks/Bulk	100'	300'
EPS-200	3/4"	Black	08552*	4' Sticks/Bulk	60'	180'
EPS-200	1"	Black	08553*	4' Sticks/Bulk	48'	96'
EPS-200	1-1/2"	Black	08554*	4' Sticks/Bulk	48'	96'
EPS-200	2"	Black	36357*	4' Sticks/Bulk	48'	96'

* UPC prefix 054007-

3M™ EPS-300 Multiple Wall, Flexible Polyolefin Tubing

Shrink Ratio 3:1

3M EPS-300 Heat Shrink Tubing is thin-wall and offers the advantages of integral, adhesive-lined construction. The tubing is made from flame-retardant, flexible polyolefin with an internal layer of special thermoplastic adhesive. The heat-shrinkable outer wall is selectively cross-linked, while the adhesive maintains high flow and excellent adhesion characteristics.

When heated in excess of 250°F (121°C), EPS-300 rapidly shrinks to a skin-tight fit, forcing the melted adhesive to flow and cover the substrate. The adhesive forms a flexible bond with a wide variety of rubbers, plastics, and metals. When cool, the adhesive solidifies, forming a permanent, non-drying, flexible and waterproof barrier. EPS-300 is rated for operation at -67°F (-55°C) to 230°F (110°C). Adhesive reflow will occur at temperatures above 176°F (80°C).

3M EPS-300 Heat Shrink Tubing offers superb environmental protection for electronic components, wire splices, bundles, and harness breakouts. Vehicle and marine wire splices and harness breakouts are also quickly and easily protected from harsh environments.

EPS-300 tubing has a 3:1 shrink ratio. When freely recovered, the tubing will shrink to 33% of its original diameter. The recovered wall thickness of the tubing is proportional to the degree of recovery. For agency specifications, see page 102.

Ordering Information: Order EPS-300 tubing in the size equivalent to the expanded inside diameter required. *Example:* EPS-300, 1/2", 4 ft., black. Order the largest size that will shrink snugly over the component to be covered. Other sizes are available subject to factory quotation.

Standard Colors: Black and clear in all sizes. Red in 1/2, 3/4, and 1, only. Clear tubing is not flame retardant.

Standard Packaging: Four-foot lengths. Cut pieces and other lengths (including spooled) are available subject to factory quotation.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M™ EPS-300 Tubing with Header Cards

Product Number	Size	UPC (051135-)	Expanded/ Recvrd I.D.	Descript.	Case Qty.
EPS-300H Black	1/8" (3,2 mm)	38749	0.125/0.040" (3,18/1,02 mm)	48" Sticks (1,21 m)	25
EPS-300H Black	3/16" (4,76 mm)	38750	0.187/0.063" (4,75/1,57 mm)	48" Sticks (1,21 m)	12
EPS-300H Black	1/4" (6,35 mm)	38751	0.250/0.080" (6,35/2,03 mm)	48" Sticks (1,21 m)	12
EPS-300H Black	3/8" (9,53 mm)	38752	0.375/0.120" (9,53/3,05 mm)	48" Sticks (1,21 m)	12
EPS-300H Black	1/2" (12,7 mm)	38753	0.500/0.160" (12,7/4,06 mm)	48" Sticks (1,21 m)	12
EPS-300H Red	1/2" (12,7 mm)	38754	0.500/0.160" (12,7/4,06 mm)	48" Sticks (1,21 m)	12
EPS-300H Black	3/4" (19,05 mm)	38755	0.750/0.250" (19,05/6,35 mm)	48" Sticks (1,21 m)	5
EPS-300H Red	3/4" (19,05 mm)	38756	0.750/0.250" (19,05/6,35 mm)	48" Sticks (1,21 m)	5
EPS-300H Black	1" (25,4 mm)	38757	1.000/0.320" (25,4/8,13 mm)	48" Sticks (1,21 m)	5
EPS-300H Red	1" (25,4 mm)	38758	1.000/0.320" (25,4/8,13 mm)	48" Sticks (1,21 m)	5

Note: Bulk 48" sticks and special cut lengths are available subject to quotation.

Specification and Ordering Information for 3M EPS-300 4' Sticks (Small Box and Bulk)

Product Number	Size	Expanded/ Recovered I.D.	Color	UPC (051135-)	Box Qty.	Case Qty.
EPS-300	1/8" (3,2 mm)	0.125/0.040" (3,18/1,02 mm)	-	37483	-	25
EPS-300	3/16" (4,76 mm)	0.187/0.063" (4,75/1,57 mm)	-	36875	-	12
EPS-300	1/4" (6,35 mm)	0.250/0.080" (6,35/2,03 mm)	-	36876	-	12
EPS-300	3/8" (9,53 mm)	0.375/0.120" (9,53/3,05 mm)	-	36877	-	12
EPS-300	1/2" (12,7 mm)	0.500/0.160" (12,7/4,06 mm)	-	36878	-	12
EPS-300	3/4" (19,05 mm)	0.750/0.250" (19,05/6,35 mm)	-	36879	-	5
EPS-300	1" (25,4 mm)	1.000/0.320" (25,4/8,13 mm)	-	36880	-	5
EPS-300	1-1/2" (38,1 mm)	1.500/0.500" (38,1/12,95 mm)	-	36881	-	5
EPS-300	1/8" (3,2 mm)	0.125/0.040" (3,18/1,02 mm)	Black Clear	37902 37903	200' 200'	1,000' 1,000'
EPS-300	3/16" (4,76 mm)	0.187/0.063" (4,75/1,57 mm)	Black Clear	36105 36106	200' 200'	1,000' 1,000'
EPS-300	1/4" (6,35 mm)	0.250/0.080" (6,35/2,03 mm)	Black Clear	36107 36108	100' 100'	800' 800'
EPS-300	3/8" (9,53 mm)	0.375/0.120" (9,53/3,05 mm)	Black Clear	36109 36110	100' 100'	500' 500'
EPS-300	1/2" (12,7 mm)	0.500/0.160" (12,7/4,06 mm)	Black Clear Red	36111 36112 36113	100' 100' 100'	300' 300' 300'
EPS-300	3/4" (19,05 mm)	0.750/0.250" (19,05/6,35 mm)	Black Clear Red	36114 36115 36116	60' 60' 60'	180' 180' 180'
EPS-300	1" (25,4 mm)	1.000/0.320" (25,4/8,13 mm)	Black Clear Red	36117 36118 36119	48' 48' 48'	96' 96' 96'
EPS-300	1-1/2" (38,1 mm)	1.500/0.500" (38,1/12,95 mm)	Black Clear	36120 36121	48' 48'	96' 96'

Note: Special cut lengths are available subject to quotation.

Specification and Ordering Information for 3M EPS-300 Tubing Kit and Refill Packs

Product Number	Size	Expanded/ Recovered I.D.	Color	UPC (051135-)	Description	Case Qty.
EPS-300	1/2" - 1"	-	Black Red	38444	Tubing Kit (42 Pieces)	5
EPS-300	1/2" (12,7 mm)	0.500/0.160" (12,7/4,06 mm)	Black Red	36595 38441	6" Pieces, 14/Bag (15,2 cm)	10 10
EPS-300	3/4" (19,05 mm)	0.750/0.250" (19,05/6,35 mm)	Black Red	36596 38442	6" Pieces, 12/Bag (15,2 cm)	10 10
EPS-300	1" (25,4 mm)	1.000/0.320" (25,4/8,13 mm)	Black Red	36597 38443	6" Pieces, 8/Bag (15,2 cm)	10 10

3M™ EPS-400 Multiple Wall, Semi-Rigid Polyolefin Tubing

Shrink Ratio 4:1

3M EPS-400 Heat Shrink Tubing is a medium-wall, semi-rigid tubing offering the advantages of integral, adhesive-lined construction. The tubing is made from flame-retardant, flexible polyolefin with an internal layer of special thermoplastic adhesive. The heat-shrinkable outer wall is selectively cross-linked, while the adhesive maintains high flow and excellent adhesion characteristics.

When heated in excess of 250°F (121°C), EPS-400 rapidly shrinks to a skin-tight fit, forcing the melted adhesive to flow and cover the substrate. When cool, the adhesive solidifies, forming a permanent, non-drying, flexible and water-proof barrier. EPS-400 is rated for operation at -67°F (-55°C) to 230°F (110°C). Adhesive reflow will occur at temperatures above 176°F (80°C).

3M Heat Shrink Tubing EPS-400 offers superb environmental protection for electronic components, wire splices, bundles, and harness breakouts. Automotive, heavy truck, and marine wire splice and harness breakouts are also quickly and easily protected from harsh environments.

EPS-400 tubing has a 4:1 shrink ratio. When freely recovered, the tubing will shrink to 25% of its as-supplied diameter. The recovered wall thickness of the tubing is proportional to the degree of recovery. For agency specifications, see page 102.

Ordering Information: Order EPS-400 tubing in the size equivalent to the expanded inside diameter required. *Example:* EPS-400, 3/8", 4 ft., black. Order the largest size that will shrink snugly over the component to be covered.

Standard Color: Black.

Standard Packaging: Four-foot lengths. Cut pieces are available subject to factory quotation.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M EPS-400 4' Sticks

Product Number	Size	Color	UPC (051135-)	Description	Box Qty.	Case Qty.
EPS-400	0.30"	Black	36882	4' Sticks	-	12 Sticks
EPS-400	0.35"	Black	36883	4' Sticks	-	12 Sticks
EPS-400	0.45"	Black	36884	4' Sticks	-	12 Sticks
EPS-400	0.70"	Black	36885	4' Sticks	-	5 Sticks
EPS-400	0.30"	Black	58713*	4' Sticks/Bulk	100'	500'
EPS-400	0.35"	Black	55947*	4' Sticks/Bulk	100'	500'
EPS-400	0.45"	Black	55948*	4' Sticks/Bulk	100'	300'
EPS-400	0.70"	Black	55949*	4' Sticks/Bulk	60'	180'

*UPC prefix 054007-

3M™ TMW Translucent, Semi-Rigid Polyolefin Tubing

Shrink Ratio 2.5:1

3M TMW Heat Shrink Tubing is a semi-rigid, translucent heat-shrinkable polyolefin tubing that is co-extruded and selectively cross-linked to provide an integral, meltable inner wall.

When heated in excess of 275°F (135°C), the inner meltable wall of the tubing is simultaneously softened and forced by the shrink action into contact with all underlying surfaces, interstices and small voids. Upon cooling, TMW tubing provides a touch protective and insulating barrier, highly resistant to penetration by moisture and the attack of chemicals and solvents.

TMW tubing is rated for continuous operation at temperatures from -67°F (-55°C) to 230°F (110°C) and will withstand higher operating temperatures for brief periods.

The primary application for 3M Heat Shrink Tubing TMW is in the manufacture of butt connectors, disconnects, ring terminals and fork terminals. Other applications include braided-shield pigtails, mechanical assemblies, electronic components, electrical wire splices, breakouts, solder joints, delicate wire terminations, end-sealing of electrical cables and rigid tubings. For agency specifications, see page 102.

Ordering Information: Order TMW in the size equivalent to the expanded inside diameter required.

Example: TMW Red, 183-1.50. Order the largest size that will shrink snugly over the component to be covered. Other sizes are available subject to factory quotation.

Standard Colors: Red, Blue, Yellow and Pink.

Standard Packaging: TMW supplied in cut pieces.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M TMW Tubing

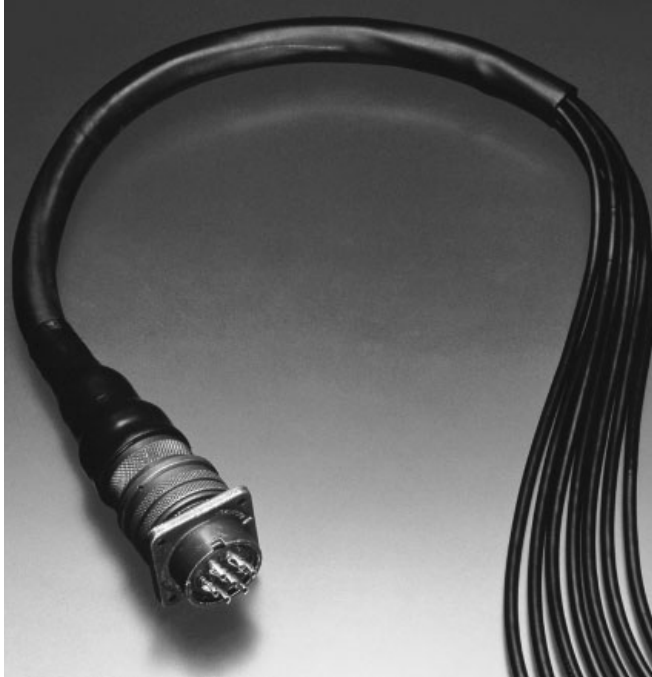
Product Number	Size (diameter)	Color	Description (diameter x length)	Expanded/Recovered I.D.	UPC (051135-)	Inner Unit Pack	Case Qty.
TMW	0.183"	Red	0.183" - 0.750"	0.183/0.060" (4,65/1,52 mm)	41872*	100/bag	10
TMW	0.183"	Red	0.183" - 1.500"	0.183/0.060" (4,65/1,52 mm)	41873*	100/bag	10
TMW	0.220"	Blue	0.220" - 0.750"	0.220/0.070" (5,59/1,78 mm)	41874*	100/bag	10
TMW	0.220"	Blue	0.220" - 1.500"	0.220/0.070" (5,59/1,78 mm)	41875*	100/bag	10
TMW	0.225"	Yellow	0.225" - 0.875"	0.225/0.095" (5,72/2,41 mm)	41876*	100/bag	10
TMW	0.225"	Yellow	0.225" - 1.700"	0.225/0.095" (5,72/2,41 mm)	41877*	100/bag	10
TMW-183 RD	0.183"	Red	0.183" - 0.750"	0.183/0.060" (4,65/1,52 mm)	37622	-	10,000
TMW-183 RD	0.183"	Red	0.183" - 1.500"	0.183/0.060" (4,65/1,52 mm)	37884	-	10,000
TMW-220 BU	0.220"	Blue	0.220" - 0.750"	0.220/0.070" (5,59/1,78 mm)	37623	-	10,000
TMW-220 BU	0.220"	Blue	0.220" - 1.500"	0.220/0.070" (5,59/1,78 mm)	37885	-	10,000
TMW-225 YL	0.225"	Yellow	0.225" - 0.875"	0.225/0.095" (5,72/2,41 mm)	37624	-	10,000
TMW-225 YL	0.225"	Yellow	0.225" - 1.700"	0.225/0.095" (5,72/2,41 mm)	37886	-	10,000
TMW-330 PK	0.330"	Pink	0.330" - 1.000"	0.330/0.165" (8,38/4,19 mm)	37625	-	10,000
TMW-330 PK	0.330"	Pink	0.330" - 1.850"	0.330/0.165" (8,38/4,19 mm)	37887	-	10,000

* UPC prefix (054007-)

Special Purpose Tubing

3M™ Kynar® Modified Polyvinylidene Fluoride Tubing

Shrink Ratio 2:1



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3M Kynar Heat Shrink Tubing is a cross-linked, thin-walled, heat-shrinkable tubing offering a high degree of mechanical strength and high-temperature resistance. Fabricated from polyvinylidene fluoride, the tubing has outstanding abrasion resistance and cut-through properties in combination with high dielectric strength. It is inherently flame retardant, semi-rigid, and highly resistant to most industrial fuels, chemicals and solvents. When heated in excess of 347°F (175°C), Kynar tubing rapidly shrinks to a skin-tight fit. Kynar tubing is rated for continuous operation from -67°F (-55°C) to 347°F (175°C).

Kynar tubing is recommended for shrink-fit protection and strain relief of wires, solder joints, terminals and connections. Suggested applications include automotive wiring, jackets, fuse coverings and military wire markers. Because the tubing is transparent, it allows see-through inspection and identification and is ideal for use as a jacketing for components such as resistors and capacitors. The tubing is readily marked by hot-stamp and print-wheel equipment.

Kynar tubing has a 2:1 shrink ratio. When freely recovered, the tubing will shrink to 50% of its as-supplied internal diameter. The recovered wall thickness of the tubing is proportional to the degree of recovery. For agency specifications, see page 102.

Ordering Information: Order Kynar tubing in the size equivalent to expanded inside diameter. *Example:* Kynar, 3/8", 4 ft., clear. Always order the largest size that will shrink snugly over the item to be covered.

Standard Color: Clear, Colors available subject to factory quotation.

Standard Packaging: Four-foot lengths.

Specification and Ordering Information for 3M Kynar Sticks

Product Number	Size	Color	UPC (051135-)	Description	Box Qty.	Case Qty.
Kynar	3/64"	Clear	36886	4' Sticks	-	25
Kynar	1/16"	Clear	36887	4' Sticks	-	25
Kynar	3/32"	Clear	36888	4' Sticks	-	25
Kynar	1/8"	Clear	36889	4' Sticks	-	25
Kynar	3/16"	Clear	36890	4' Sticks	-	12
Kynar	1/4"	Clear	36891	4' Sticks	-	12
Kynar	3/8"	Clear	36892	4' Sticks	-	12
Kynar	1/2"	Clear	36893	4' Sticks	-	5
Kynar	3/4"	Clear	36894	4' Sticks	-	5
Kynar	3/64"	Clear	40928*	4' Sticks	200'	1,000'
Kynar	1/16"	Clear	40929*	4' Sticks	200'	1,000'
Kynar	3/32"	Clear	40930*	4' Sticks	200'	1,000'
Kynar	1/8"	Clear	40931*	4' Sticks	200'	1,000'
Kynar	3/16"	Clear	40932*	4' Sticks	100'	800'
Kynar	1/4"	Clear	40933*	4' Sticks	100'	500'
Kynar	3/8"	Clear	40934*	4' Sticks	100'	500'
Kynar	1/2"	Clear	40937*	4' Sticks	100'	400'
Kynar	5/8"	Clear	03168	4' Sticks	100'	200'
Kynar	3/4"	Clear	40935*	4' Sticks	100'	200'
Kynar	1"	Clear	40936*	4' Sticks	60'	120'
Kynar	1-1/2"	Clear	40938*	4' Sticks	48'	96'
Kynar	2"	Clear	03169	4' Sticks	48'	48'

* Use prefix 054007-

Technical Information of Typical Properties, see pages 102-103.

3M™ Kynar® Heat Shrink, Cross-linked, Thin-walled, Modified Polyvinylidene Fluoride Tubing

3M Kynar tubing is a cross-linked, thin-walled, heat-shrinkable tubing offering a high degree of mechanical strength and high-temperature resistance. Fabricated from polyvinylidene fluoride, the tubing has outstanding abrasion resistance and cut-through properties in combination with high dielectric strength. It is inherently flame retardant, semi-rigid and highly resistant to most industrial fuels, chemicals and solvents. When heated in excess of 347°F (175°C), Kynar tubing rapidly shrinks to a skintight fit. Kynar tubing is rated for continuous operation from -67°F (-55°C) to 347°F (175°C).

Kynar tubing is recommended for shrink-fit protection and strain relief of wires, solder joints, terminals and connections. Kynar tubing has a 2:1 shrink ratio. Standard color is clear. Standard packaging is 4-foot lengths. Order Kynar tubing by product name, size equivalent to the expanded inside diameter, package type and color. Applicable Specifications: MIL-DTL-23053/8, MIL-DTL-23053/18, Class 1; AMS-3632; UL File E-39100, VW-1; CSA LR 38227, OFT.

Kynar® is a registered trademark of Elf Atochem North America, Inc.



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Specification and Ordering Information for 3M Kynar® Tubing with Header Cards

Product Number	Size	UPC (051135-)	Description	Expanded/Recovered I.D.	Broken Case Qty.	Case Qty.
Kynar-H	1/16"	38759	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	0.063/0.031" (1,60/0,79 mm)	—	25
Kynar-H	3/32"	38760	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	0.093/0.046" (2,36/1,17 mm)	—	25
Kynar-H	1/8"	38761	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	0.125/0.062" (3,18/1,57 mm)	—	25
Kynar-H	3/16"	38762	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	0.187/0.093" (4,75/2,36 mm)	—	12
Kynar-H	1/4"	38763	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	0.250/0.125" (6,35/3,18 mm)	—	12
Kynar-H	3/8"	38764	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	0.375/0.187" (9,53/4,75 mm)	—	12
Kynar-H	1/2"	38765	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	0.500/0.250" (12,70/6,35 mm)	—	5
Kynar-H	3/4"	38766	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	0.750/0.375" (19,05/9,53 mm)	—	5
Kynar-H	1"	38767	Modified Polyvinylidene Fluoride 48" Sticks w/Header Small Box	1.000/0.500" (25,40/12,70 mm)	—	5

*See your 3M sales representative for bulk 4' stick packages.

Medium- and Heavy-Duty Tubing

3M™ MDT Medium-Duty Polyolefin

Shrink Ratio 3:1

3M™ MDT Heat Shrink Tubing offers increased flexibility in combination with excellent abrasion, corrosion and environmental resistance properties and meets MIL-I-23053/15, Class 2.

3M MDT medium-duty tubing is designed to provide reliable performance as well as excellent mechanical and environmental protection. These flame-retardant products combine the important advantages of easy handling and installation with maximum operating reliability and system protection. MDT comes with a factory-applied sealant. This sealant is a heat-activated thermoplastic material that remains soft and flexible over long periods under adverse environmental conditions. During heating the sealant softens, bonds to underlying surfaces and fills small voids that might be present. When cool, the sealant forms a barrier against water, moisture, dirt and other environmental contaminants.

MDT tubing installs easily and has shrink ratios to accommodate effective insulating and sealing over large transitions, splices and battery cables. For agency specifications, see page 102.

Ordering Information: Order MDT tubing in the size equivalent to expanded inside diameter required.

Example: MDT-1100-48A, 4 ft., black.

Standard Color: All sizes available in black.

MDT-0400, -0800 and -1100 are also available in red.

Standard Packaging: Four-foot lengths. Other lengths are available subject to special quotation.

Technical Information of Typical Properties, see pages 102-103.

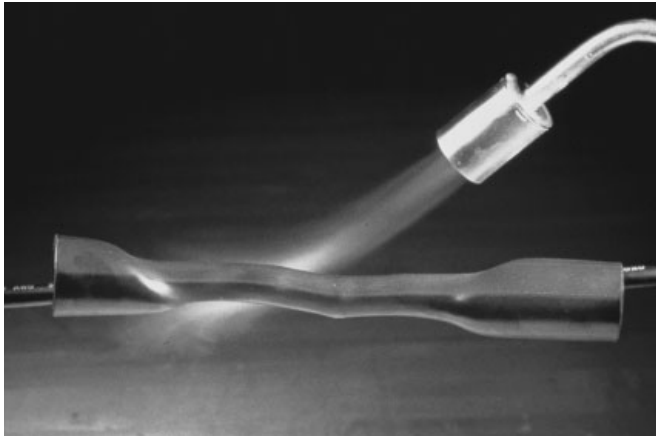
Specification and Ordering Information for 3M MDT 4' Sticks

Product Number	Size	Color	UPC (054007-)	Description	Case Qty.
MDT-0400	48A	Black Red	40672 36246*	4' Sticks	20
MDT-0800	48A	Black Red	40673 36248*	4' Sticks	20
MDT-1100	48A	Black Red	40674 36250*	4' Sticks	20
MDT-1300	48A	Black	40675	4' Sticks	20
MDT-1500	48A	Black	40676	4' Sticks	20
MDT-1700	48A	Black	40677	4' Sticks	20
MDT-2000	48A	Black	40678	4' Sticks	15
MDT-3000	48A	Black	40679	4' Sticks	15
MDT-4300	48A	Black	40680	4' Sticks	10

* Use prefix 051135-

3M™ HDT Heavy-Duty, Polyolefin Tubing

Shrink Ratio 3:1



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Heavy-duty 3M HDT Heat Shrink Tubing is designed to provide reliable performance as well as excellent mechanical and environmental protection. This flame-retardant product combines the important advantage of easy handling and installation with maximum operating reliability and system protection. HDT tubing comes with a factory-applied sealant. This sealant is a heat-activated thermoplastic material that remains soft and flexible over long periods under adverse environmental conditions. During heating the sealant softens, bonds to underlying surfaces and fills small voids that might be present. When cool, the sealant forms a barrier against water, moisture, dirt and other environmental contaminants.

Heavy-duty tubing is fabricated from specially formulated cross-linked polyolefin, assuring long-term environmental protection. The tubing is also highly chemical, abrasion and split resistance. Meets MIL-I-230563/15, Class 1. For agency specifications, see page 102.

Ordering Information: Order in the size equivalent to expanded inside diameter required. *Example:* HDT-1100-48A, 4 ft., black.

Standard Color: All sizes available in black. HDT-0300, -0400, 0800 and -1100 are also available in red.

Standard Packaging: Four-foot lengths. Other lengths are available subject to special quotation.

Technical Information of Typical Properties, see pages 102-103.

Specification and Ordering Information for 3M HDT 4' Sticks

Product Number	Size	Color	UPC (054007-)	Description	Case Qty.
HDT-0300	48A	Black Red	37041 37043	4' Sticks	20
HDT-0400	48A	Black Red	40649 36239*	4' Sticks	20
HDT-0800	48A	Black Red	40650 36242*	4' Sticks	20
HDT-1100	48A	Black Red	40651 36243*	4' Sticks	20
HDT-1500	48A	Black	40652	4' Sticks	20
HDT-2000	48A	Black	40654	4' Sticks	10
HDT-3000	48A	Black	40655	4' Sticks	10
HDT-4500	48A	Black	40656	4' Sticks	5
HDT-6000	48A	Black	40657	4' Sticks	5
HDT-7000	48A	Black	36632*	4' Sticks	5

* Use prefix 051135-

Specification and Ordering Information for HDT-A Large Diameter

Product Number	Size	Color	UPC (051135-)	Description	Case Qty.
HDT-A	85 mm	Black	38907	1,200 mm Sticks	8
HDT-A	115 mm	Black	38908	1,200 mm Sticks	5

3M™ Heat Shrinkable Cable Breakout Boots



3M Heat Shrinkable HDBB cable breakout boots are designed for dependable insulating and sealing of cable breakouts in multiconductor armored or sheathed cables and conduit ends. HDBB boots are made from flame retardant, cross-linked polyolefin and meet

the material requirements of MIL-I-81765-1. The boots provide excellent electrical and mechanical protection and are supplied with an internal coating of adhesive for reliable environmental sealing.

Product Referral Generator

- Insulating pg. 101
 - Heat Shrinkable Tubing
- Sealing pg. 124
 - Heat Shrink End Caps pg. 124

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Specifications and Ordering Information for Heat Shrinkable Cable Breakout Boots

Product Number	Cross Section	UPC (054007-)	Cable Entry End (Max. to Min.)	Conductor Legs (Max. to Min.)	Case Qty.
HDBB-205-1-250		58793	0.80 - 0.37" (20,32 - 9,40 mm)	0.33 - 0.11" (8,38 - 2,79 mm)	1 each
HDBB-210-1-250		35992*	1.20 - 0.60" (30,38 - 15,24 mm)	0.50 - 0.17" (12,70 - 4,32 mm)	1 each
HDBB-220-1-250		46654**	1.90 - 0.90" (48,26 - 22,86 mm)	0.75 - 0.30" (19,05 - 7,62 mm)	1 each
HDBB-230-1-250		35993*	3.00 - 1.50" (76,20 - 38,10 mm)	1.45 - 0.50" (38,10 - 12,70 mm)	1 each
HDBB-310-1-250		35994*	0.90 - 0.36" (2,86 - 9,14 mm)	0.33 - 0.12" (8,38 - 3,05 mm)	1 each
HDBB-320-1-250		35995*	1.20 - 0.50" (30,38 - 12,70 mm)	0.50 - 0.16" (12,70 - 4,06 mm)	1 each
HDBB-321-1-250		35996*	1.50 - 0.69" (38,10 - 17,53 mm)	0.65 - 0.18" (16,51 - 4,57 mm)	1 each
HDBB-325-1-250		35997*	1.70 - 0.90" (43,18 - 22,86 mm)	0.82 - 0.30" (20,83 - 7,62 mm)	1 each
HDBB-335-1-250		03409*	2.40 - 1.40" (60,96 - 35,56 mm)	1.25 - 0.50" (31,75 - 12,70 mm)	1 each
HDBB-340-1-250		35998*	3.20 - 2.00" (81,28 - 50,80 mm)	1.45 - 0.75" (38,10 - 19,05 mm)	1 each
HDBB-345-1-250		58794	4.90 - 2.32" (124,46 - 5,93 mm)	2.00 - 1.00" (50,80 - 25,40 mm)	1 each
HDBB-405-1-250			58795	0.90 - 0.43" (22,86 - 10,92 mm)	0.28 - 0.11" (7,11 - 2,79 mm)
HDBB-410-1-250	35999*		1.25 - 0.80" (31,75 - 20,32 mm)	0.50 - 0.19" (1,70 - 4,83 mm)	1 each
HDBB-415-1-250	58855		1.75 - 0.98" (43,18 - 24,89 mm)	0.79 - 0.28" (20,07 - 7,11 mm)	1 each
HDBB-420-1-250	36000*		2.35 - 1.00" (59,69 - 2,4 mm)	1.00 - 0.35" (25,40 - 8,89 mm)	1 each
HDBB-425-1-250	58797		2.65 - 1.40" (67,31 - 35,56 mm)	1.20 - 0.53" (30,48 - 13,46 mm)	1 each
HDBB-430-1-250	58798		5.25 - 3.00" (133,35 - 76,20 mm)	1.35 - 0.55" (34,29 - 13,97 mm)	1 each
HDBB-505-1-250		46648**	2.36 - 0.96" (59,94 - 24,38 mm)	1.18 - 0.29" (70,73 - 7,36 mm)	1 each
HDBB-605-1-250		36001*	2.39 - 1.45" (60,71 - 38,10 mm)	0.80 - 0.35" (20,32 - 8,89 mm)	1 each

*UPC prefix 051135-
 **UPC prefix 051138-

Note: Breakout boots are flame retardant and supplied with a factory-applied sealant. Unlined boots are available on special order. All boots are black in color. Standard package is one and multiples of one.

Specifications and Ordering Information for Cold Shrink EC-Series End Caps

Product Number	UPC (051138-)	Use Range Inches (mm)	Inner Unit Pack
EC-1	52440	0.46 - 0.82 (11,6 - 20,9)	10/box
EC-2	52441	0.63 - 1.18 (15,9 - 30,1)	10/box
EC-3	52442	1.02 - 1.94 (26,0 - 49,2)	10/box
EC-4	52443	1.79 - 3.32 (45,5 - 84,3)	10/box
EC-1	52444	0.46 - 0.82 (11,6 - 20,9)	40/bag
EC-2	52445	0.63 - 1.18 (15,9 - 30,1)	40/bag
EC-3	52446	1.02 - 1.94 (26,0 - 49,2)	40/bag
EC-4	52447	1.79 - 3.32 (45,5 - 84,3)	40/bag

Specifications and Ordering Information for Heavy-Duty SKE End Caps

Part Number	UPC (051138-)	H Dia.		J Dia.	P ±10% R	R ±10% R	W ±20% R	For Cable Diameters	Case Qty.
		Min. X	Max. R	Max. R					
SKE 4/10	48153	0.39 (10,0)	0.16 (4,0)	0.12 (3,0)	1.32 (33,5)	1.18 (30,0)	0.08 (2,0)	0.16 - 0.31 (4 - 8)	50 each
SKE 8/20	48154	0.79 (20,0)	0.30 (7,5)	0.26 (6,5)	2.18 (55,3)	1.97 (50,0)	0.09 (2,3)	0.31 - 0.43 (8 - 11)	50 each
SKE 15/40	48155	1.57 (40,0)	0.59 (15,0)	0.41 (10,5)	3.54 (90,0)	3.15 (80,0)	0.12 (3,0)	0.59 - 1.26 (15 - 32)	10 each
SKE 25/63	48156	2.48 (63,0)	0.98 (25,0)	0.63 (16,0)	5.63 (143,3)	5.12 (130,0)	0.13 (3,3)	1.00 - 1.97 (25 - 50)	10 each
SKE 30/76	48157	2.99 (76,0)	1.18 (30,0)	0.67 (17,0)	6.22 (158,0)	5.91 (150,0)	0.16 (4,0)	1.18 - 2.36 (30 - 60)	10 each
SKE 45/100	48158	3.94 (100,0)	1.77 (45,0)	1.02 (26,0)	6.40 (162,5)	5.50 (140,0)	0.16 (4,0)	1.77 - 3.15 (45 - 80)	10 each

NOTES:

- All dimensions in both inches and metric - all angles in degrees.
- Dimensions in table: X= Expanded (Minimum) R= Recovered (Maximum)
- Color: Black