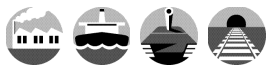


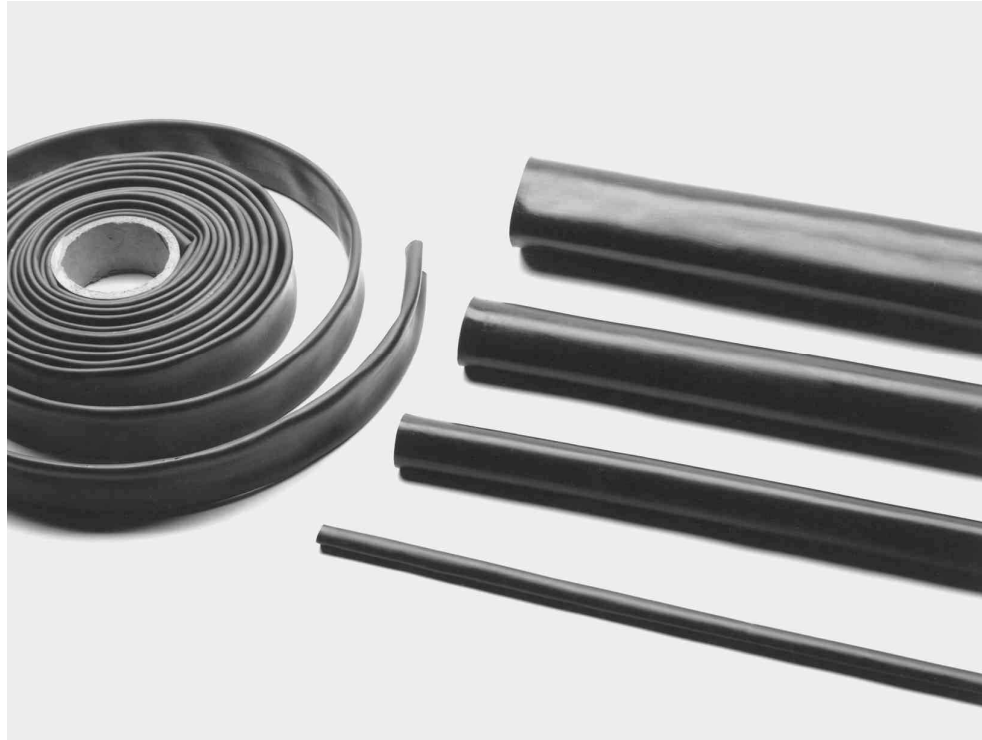
**General Purpose,
Heat-Shrinkable Tubing**

Product Facts

- Excellent thick-wall insulation and abrasion protection
- No adhesive – can be removed easily
- Expansion ratios as high as 3:1
- Availability in flame-retardant material with FR callout (see “Ordering information and Part numbering system” on the next page)
- BSTS has the following agency approvals:
 - ABS (American Bureau of Shipping)
 - DNV (Det Norske Veritas)
 - Lloyd’s (Lloyd’s Register of Shipping)



BSTS/BSTS-FR



Applications

BSTS heat-shrinkable tubing is made of a rugged polymer that resists moisture, fungus, and weathering. It also has excellent electrical properties. This tubing is useful in applications where insulation, abrasion resistance, and strain relief are important. When used with SFTS tape sealant, it can provide a watertight system in nonpressurized applications.

Installation

Minimum shrink temperature: 90°C [194°F]
 Minimum full recovery temperature: 121°C [250°F]

Operating Temperature Range

-55°C to 90°C
 [-67°F to 194°F]

Specifications/Approvals

Series	Military	Industry	Raychem
BSTS	—	—	RW-2017
BSTS-FR	AMS-DTL-23053/15*, Class 1 and Class 2**	ASTM D 685, nonburning ASTM D 2863, oxygen index IPCEAS-19-81, cable insulation and jackets	RW-2017

*Formerly MIL-I-23053/15 and MIL-DTL-23053/15.

**Except for coatings requirement. Refer to SST-FR when coating is required.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Product Dimensions

BSTS/BSTS-FR (Continued)

Size	Inside Diameter		Wall Thickness (Nominal)	
	Minimum Expanded as Supplied	Maximum recovered After Heating	Expanded as Supplied	Recovered After Heating****
BSTS-03	7.62 [0.300]	2.54 [0.100]	0.63 [0.025]	1.52 [0.060]
BSTS-04	10.16 [0.400]	3.81 [0.150]	0.63 [0.025]	1.52 [0.060]
BSTS-07M***	19.05 [0.750]	5.59 [0.220]	0.51 [0.020]	1.52 [0.060]
BSTS-07	19.05 [0.750]	5.59 [0.220]	0.76 [0.030]	2.41 [0.100]
BSTS-11M	27.94 [1.100]	9.52 [0.375]	0.76 [0.030]	2.67 [0.110]
BSTS-11	27.94 [1.100]	9.52 [0.375]	1.02 [0.040]	3.05 [0.120]
BSTS-13M	33.02 [1.300]	9.52 [0.375]	0.63 [0.025]	2.67 [0.110]
BSTS-13	33.02 [1.300]	9.52 [0.375]	0.89 [0.035]	3.05 [0.120]
BSTS-15M	38.10 [1.500]	12.70 [0.500]	0.89 [0.035]	3.05 [0.120]
BSTS-15	38.10 [1.500]	12.70 [0.500]	1.27 [0.050]	3.56 [0.140]
BSTS-17M	43.18 [1.700]	12.70 [0.500]	1.02 [0.040]	3.05 [0.120]
BSTS-17	43.18 [1.700]	12.70 [0.500]	1.14 [0.045]	3.56 [0.140]
BSTS-20M	50.80 [2.000]	19.05 [0.750]	1.27 [0.050]	3.05 [0.120]
BSTS-20	50.80 [2.000]	19.05 [0.750]	1.27 [0.050]	3.94 [0.160]
BSTS-27	65.58 [2.700]	22.86 [0.900]	1.27 [0.050]	3.94 [0.160]
BSTS-30	76.20 [3.000]	31.75 [1.250]	1.27 [0.050]	3.94 [0.160]
BSTS-35	88.90 [3.500]	31.75 [1.250]	1.27 [0.050]	3.94 [0.160]
BSTS-40	101.60 [4.000]	44.45 [1.750]	1.27 [0.050]	3.94 [0.160]
BSTS-45	114.30 [4.500]	44.45 [1.750]	1.27 [0.050]	3.94 [0.160]

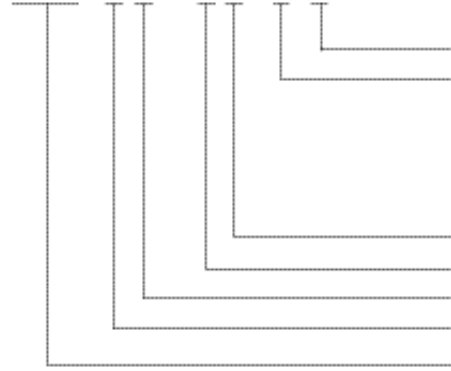
M = Medium wall tubing. *Wall thickness will be less if tubing recovery is restricted during shrinkage.

Ordering Information

Color	Standard	Black (-0)
	Nonstandard	Red (-2), white (-9), clear (-X not flame-retardant)
Size selection	Always order the largest size that will shrink snugly over the component to be covered. Special order sizes are available upon request.	
Standard packaging	1.2-meter [4-foot] or 7.5-meter [25-foot] lengths.	
Ordering description	See below.	

Part Numbering System

BSTS -11 - x 4 - / - / -



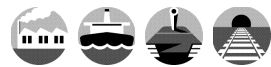
- "NM" - no mark
- Color**
- Black / leave blank (standard)
- White / WHT
- Red / RED
- Clear / CL
- "FR" - flame-retardant
- Length** in feet (4 and 25 feet standard)
- "M" medium wall
- Size**
- Family**

High-Flex, Heavy-Wall, Heat-Shrinkable Tubing

Product Facts

- Offers high flexibility
- Provides excellent insulation and abrasion-protection, per U.S. Mine Safety and Health Administration (MSHA) regulations
- Flame-retardant
- HF has the following agency approvals:
 - ABS (American Bureau of Shipping)
 - DNV (Det Norske Veritas)
 - Lloyd's (Lloyd's Register of Shipping)

HF



Applications

Developed for cable jacketing applications where cable flexibility is important, high-flex (HF) tubing is ideal for jacketing cables where sharp bends or turns are required. Also ideal for situations where the cable is subject to motion. Such situations are common for industrial machinery, transportation equipment, robotics, welding, and many other cabling applications. To complete the cable jacket seal, the ends may be sealed for further water and corrosion protection by using available tape sealant or adhesive.

Installation

Minimum shrink temperature: 80°C [176°F]
 Minimum full recovery temperature: 121°C [250°F]

Operating Temperature Range

-55°C to 90°C
 [-67°F to 194°F]

Specifications/Approvals

Series	Military	Raychem
HF	AMS-DTL-23053/15* Class 1**	RW-2023

*Formerly MIL-I-23053/15 and MIL-DTL-23053/15.

**Except for coatings requirement.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Product Dimensions

HF (Continued)

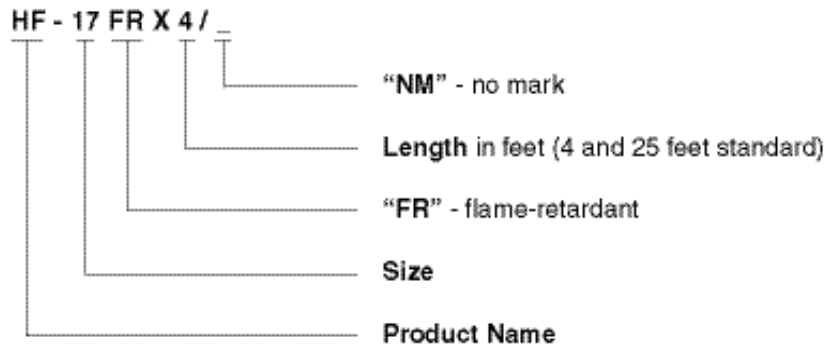
Size	Standard Nominal Length (m/ft)	Inside Diameter		Wall Thickness**
		Minimum Expanded as Supplied	Maximum Recovered After Heating	Nominal Recovered After Heating
HF04	1.2, 7.5 [4, 25]	10.16 [0.40]	3.81 [0.150]	1.52 [0.060]
HF07	1.2, 7.5 [4, 25]	19.05 [0.75]	5.59 [0.220]	1.52 [0.060]
HF11	1.2, 7.5 [4, 25]	27.94 [1.10]	9.52 [0.375]	2.67 [0.105]
HF13	1.2, 7.5 [4, 25]	33.02 [1.30]	9.52 [0.375]	2.67 [0.105]
HF15	1.2, 7.5 [4, 25]	38.10 [1.50]	12.70 [0.500]	3.05 [0.120]
HF17	1.2, 7.5 [4, 25]	43.14 [1.70]	12.70 [0.500]	3.05 [0.120]
HF20	1.2, 7.5 [4, 25]	50.80 [2.00]	19.05 [0.750]	3.56 [0.140]
HF27	1.2, 7.5 [4, 25]	68.58 [2.70]	22.86 [0.900]	3.94 [0.155]

**Wall thickness will be less if tubing recovery is restricted during shrinkage.

Ordering Information

Color	Standard	Black (-0)
Size selection	Always order the largest size that will shrink snugly over the component to be covered.	
Standard packaging	1.2-meter [4-foot] or 7.5-meter [25-foot] lengths. Nonstandard lengths are available upon request.	
Ordering description	See below.	

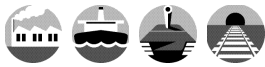
Part Numbering System



**High-Ratio,
Heat-Shrinkable Tubing**

Product Facts

- Offers toughness and durability
- Provides excellent insulation and abrasion protection
- Is available in flame-retardant material.
- Shrinks to fit (5.6:1)
- FR callouts meet the flame-retardant material requirements of AMS-DTL-23053/15*
- HRHF and HRSR have the following agency approvals:
 - ABS (American Bureau of Shipping)
 - DNV (Det Norske Veritas)
 - Lloyd's (Lloyd's Register of Shipping)



HRHF/HRNF/HRSR



Applications

High-ratio (HR) heat-shrinkable tubing, with expansion ratios as high as 5.6 to 1, is designed to accommodate large size differences between cables and cable connectors and backshells, thus simplifying repair of damaged cable. High-ratio tubing is available in semirigid flame-retardant (SR), standard (NF), or high-flex flame-retardant (HF) material and with or without factory-applied sealants

and adhesives. The waterproofing sealant provides environmental sealing and is watertight in wet and corrosive locations per USCG CGHQ-3774. The thermoplastic adhesive coating offers excellent strain relief and environmental sealing.

Installation

Minimum shrink temperature: 80°C [176°F]
Minimum full recovery temperature: 121°C [250°F]

Operating Temperature Range

-55°C to 90°C
[-67°F to 194°F]

Specifications/Approvals

Series	Military	Agency	Raychem
HRSR	AMS-DTL-23053/15*	ABS, DNV, Lloyd's	RW-2013
HRHF	AMS-DTL-23053/15*	ABS, DNV, Lloyd's	RW-2013
HRNF	—	—	—

*Formerly MIL-I-23053/15 and MIL-DTL-23053/15.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Product Dimensions

HRHF/HRNF/HRSR (Continued)

Size†	Inside Diameter		Recovered Wall Thickness†† Nominal After Heating
	Minimum Expanded as Supplied	Maximum Recovered After Heating	
HR**060	15.24 [0.60]	3.81 [0.150]	1.52 [0.060]
HR**125	31.75 [1.25]	5.59 [0.220]	1.52 [0.060]
HR**175	44.45 [1.75]	8.00 [0.315]	2.41 [0.095]
HR**200	50.80 [2.00]	9.52 [0.375]	2.67 [0.105]
HR**250	63.50 [2.50]	12.70 [0.500]	3.05 [0.120]
HR**300	76.20 [3.00]	19.05 [0.750]	3.05 [0.120]
HR**400	101.60 [4.00]	22.86 [0.900]	3.56 [0.140]

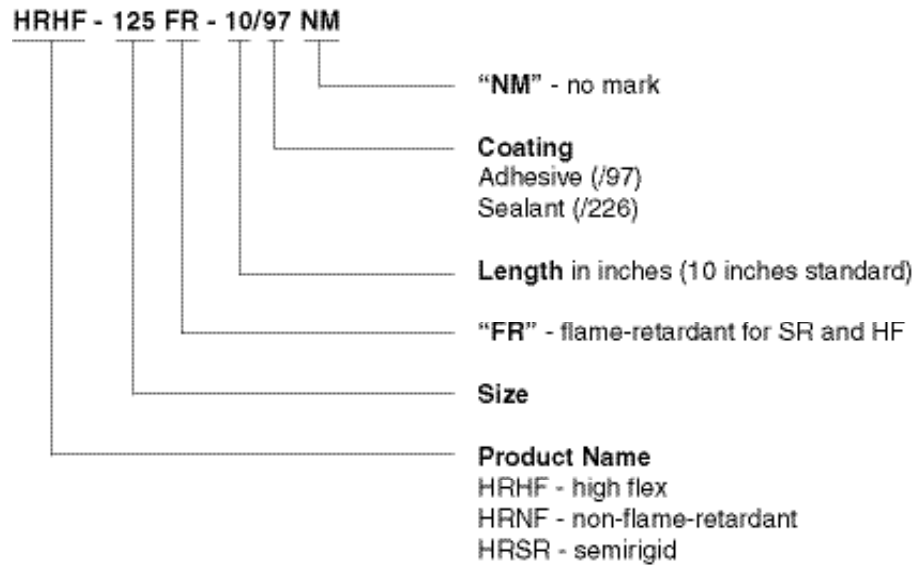
†For ** substitute HF, NF or SR for material required. Add FR to end of number for flame-retardant material.
 ††Wall thickness will be less if tubing recovery is restricted during shrinkage.

Ordering Information

Color	Standard	Black (-0)
	Nonstandard	Clear (-X) available on request (not flame-retardant)
Size selection	Always order the largest size that will shrink snugly over the component to be covered. Other sizes are available upon request.	
Standard packaging	10-inch-maximum* lengths.	
Ordering description	See below.	

*Cutting tolerance is ± .125".

Part Numbering System – Military Approved Part Numbers



Rugged, Heavy Wall, Adhesive-Lined, Polyolefin Heat-Shrinkable Tubing

Product Facts

- Withstands mechanical abuse for increased product reliability
- Highly resistant to impact and abrasion
- Provides high level of strain relief when installed on splices and joints
- Resistant to chemicals, moisture and oils
- Provides a complete moisture-proof seal preventing corrosion of underlying components



RHW



3
Heat-Shrinkable Tubing

Applications

Rugged, heavy wall RHW tubing is specifically designed for insulating, protecting and sealing electrical connections and joints in low-voltage cables. It provides splice insulation thickness equal to or greater than standard wire insulation manufactured to common industry standards.

RHW is the ideal choice for applications where maximum reliability and product performance, and simplified installation are required. Because RHW is heat-shrinkable, a minimum number of sizes are needed to cover a wide range of cables and splice diameters.

Installation

Minimum shrink temperature: 110°C [230°F]
Minimum full recovery temperature: 125°C [257°F]

Operating Temperature Range

-55°C to 110°C
[-67°F to 230°F]

Specifications/Approvals

Series	UL**	Raychem
RHW	File E115664	RHW SCD

**Sizes 9/3 through 70/21 only.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Product Dimensions

Heavy-Duty Tubing

RHW (Continued)

Size	Inside Diameter		Recovered Wall Thickness**	
	Minimum Expanded as Supplied	Recovered After Heating	Nominal Jacket Wall	Nominal Adhesive Wall
9/3	9 [0.354]	3 [0.118]	2.0 [0.079]	0.25 [0.010]
13/4	13 [0.512]	4 [0.158]	2.4 [0.094]	0.30 [0.012]
20/6	20 [0.787]	6 [0.236]	2.5 [0.098]	0.35 [0.014]
33/8	33 [1.299]	8 [0.315]	3.2 [0.126]	0.35 [0.014]
43/12	43 [1.693]	12 [0.472]	4.3 [0.169]	0.40 [0.016]
51/16	51 [2.008]	16 [0.630]	4.5 [0.177]	0.40 [0.016]
70/21	70 [2.756]	21 [0.827]	4.4 [0.173]	0.40 [0.016]
85/25	85 [3.346]	25 [0.984]	4.3 [0.169]	0.40 [0.016]
105/30	105 [4.134]	30 [1.181]	4.3 [0.169]	0.45 [0.018]
130/36	130 [5.118]	36 [1.417]	4.3 [0.169]	0.45 [0.018]
160/50	160 [6.299]	50 [1.968]	4.3 [0.169]	0.45 [0.018]
180/50	180 [7.087]	50 [1.968]	4.3 [0.169]	0.50 [0.020]

**Wall thickness will be less if tubing recovery is restricted during shrinkage.

Ordering Information

Color	Standard	Black (-0) is available in all sizes Red (-2) is available in sizes 9/3, 13/4, 20/6 and 33/8
Size selection	Always order the largest size that will shrink snugly over the component to be covered. Special order sizes are available upon request.	
Standard packaging	1200mm lengths	
Marking	Tubing will be marked with the product name, size and batch number. Sizes 9/3 through 70/21 will also be marked with the ULLogo	
Ordering description	Specify product name, size, cut length, coating option and color (for example, RHW 20/6-1200/ADH-0 (ADH = Adhesive-lined, 0= Black, 2 = Red)	

Medium Wall, Polyolefin Heat-Shrinkable Tubing

Product Facts

- Withstands mechanical abuse for increased product reliability
- Highly resistant to impact and abrasion
- Installation is fast and easy
- Resistant to chemicals and moisture
- Adhesive-lined version provides a complete moisture-proof seal preventing corrosion of underlying components



RMW



Applications

Medium wall, general purpose RMW tubing is specifically designed for use in a broad range of low-voltage applications. RMW is tough and flexible, making it particularly suited for the insulation and protection of cable joints as well as for cable repair. Uncoated RMW provides insulation and strain relief. Adhesive-lined RMW also provides an environmental seal.

RMW is the ideal choice for applications where maximum reliability and product performance, and simplified installation are required. Because RMW is heat-shrinkable, a minimum number of sizes are needed to cover a wide range of cables and splice diameters.

Installation

Minimum shrink temperature: 110°C [230°F]
 Minimum full recovery temperature: 125°C [257°F]

Operating Temperature Range

-55°C to 110°C
 [-67°F to 230°F]

Specifications/Approvals

Series	Raychem
RMW	RMW SCD

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Product Dimensions

Heavy-Duty Tubing

RMW (Continued)

Size	Inside Diameter		Recovered Wall Thickness**	
	Minimum Expanded as Supplied	Recovered After Heating	Nominal Jacket Wall	Nominal Adhesive Wall
10/3	10 [0.394]	3 [0.118]	1.0 [0.039]	0.25 [0.010]
16/5	16 [0.630]	5 [0.197]	1.4 [0.055]	0.30 [0.012]
25/8	25 [0.984]	8 [0.315]	2.0 [0.079]	0.35 [0.014]
35/12	35 [1.693]	12 [0.472]	2.0 [0.079]	0.35 [0.014]
50/16	50 [1.968]	16 [0.630]	2.0 [0.079]	0.35 [0.014]
63/19	63 [2.480]	19 [0.748]	2.4 [0.095]	0.40 [0.016]
75/22	75 [2.953]	22 [0.866]	2.7 [0.106]	0.40 [0.016]
85/25	85 [3.346]	25 [0.984]	2.8 [0.110]	0.40 [0.016]
95/29	95 [3.740]	29 [1.142]	3.1 [0.122]	0.45 [0.018]
115/34	115 [4.527]	34 [1.339]	3.1 [0.122]	0.45 [0.018]
140/42	140 [5.512]	42 [1.654]	3.1 [0.122]	0.45 [0.018]
160/50	160 [6.299]	50 [1.968]	3.2 [0.126]	0.50 [0.020]
180/60	180 [7.087]	60 [2.362]	3.2 [0.126]	0.50 [0.020]

**Wall thickness will be less if tubing recovery is restricted during shrinkage.

Ordering Information

Color	Standard Black (-0)
Size selection	Always order the largest size that will shrink snugly over the component to be covered. Special order sizes are available upon request.
Standard packaging	1200mm lengths
Marking	Tubing will be marked with the product name, size and batch number.
Ordering description	Specify product name, size, cut length, coating option and color (for example, RMW 25/8-1200/ADH-0 or RMW 75/22-1200/U-0 (ADH = Adhesive-lined, U = Uncoated, 0= Black)

**Self-Sealing,
Heat-Shrinkable Tubing**

Product Facts

- Thick adhesive liner forms an effective barrier against fluids and moisture
- Thick-wall insulation, strain relief and abrasion protection
- No need for greases, tape, or epoxy
- Expansion ratios as high as 3:1
- Available in flame-retardant material
- SST has the following agency approvals:
 - ABS (American Bureau of Shipping)
 - DNV (Det Norske Veritas)
 - Lloyd's (Lloyd's Register of Shipping)

SST/SST-FR



Applications

SST provides a simple, positive splice-sealing method that offers protection under adverse environmental conditions. Tubing supplied with standard sealant provides water sealing and environmental protection in wet or underground applications. The thermoplastic adhesive not only seals, but also provides mechanical strain relief. The polymer tubing has excellent insulating, abrasion-resistance, and strain-relief properties.

Installation

Minimum shrink temperature: 90°C [195°F]
 Minimum full recovery temperature: 121°C [250°F]

Operating Temperature Range

-55°C to 90°C
 [-67°F to 194°F]

Specifications/Approvals

Series	Military	Industry	Raychem
SST	—	—	RW- 2011
SST-FR	AMS-DTL-23053/15*, Classes 1 and 2	ASTM D 685, nonburning ASTM D 2863, oxygen index IPCEAS-19-81, cable insulation and jackets IEEE-383 Section 2.5 massive flame vertical tray ABS, DNV, Lloyd's Register	RW -2011

*Formerly MIL-I-23053/I5 and MIL-DTL-23053/15.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

Product Dimensions (inches)

SST/SST-FR (Continued)

Size†	Standard Nominal Length	Inside Diameter		Wall Thickness		Recommended Cable Range for 600-Volt Cable
		Minimum Expanded as Supplied	Maximum Recovered After Heating	Expanded	Nominal Wall After Heating††	
SST*-03	6, 30	0.300	0.100	0.025	0.060	18 through 14 AWG
SST*-04	6, 30	0.400	0.150	0.025	0.060	14 through 10 AWG
SST*-07M	6, 9, 12, 48	0.750	0.220	0.020	0.060	8 through 1 AWG
SST*-07	6, 9, 12, 48	0.750	0.220	0.030	0.095	8 through 1 AWG
SST*-11M	6, 9, 12, 48	1.100	0.375	0.030	0.105	2 through 4/0 AWG
SST*-11	6, 9, 12, 48	1.100	0.375	0.040	0.120	2 through 4/0 AWG
SST*-13M	6, 9, 12, 48	1.300	0.375	0.025	0.105	2 through 4/0 AWG
SST*-13	6, 9, 12, 48	1.300	0.375	0.035	0.120	2 through 4/0 AWG
SST*-15M	6, 9, 12, 48	1.500	0.500	0.035	0.120	2/0 AWG through 500 MCM
SST*-15	6, 9, 12, 48	1.500	0.500	0.050	0.140	2/0 AWG through 500 MCM
SST*-17M	6, 9, 12, 48	1.700	0.500	0.030	0.120	2/0 AWG through 500 MCM
SST*-17	6, 9, 12, 48	1.700	0.500	0.045	0.140	2/0 AWG through 500 MCM
SST*-20M	6, 9, 12, 48	2.000	0.750	0.040	0.120	350 MCM through 1000 MCM
SST*-20	6, 9, 12, 48	2.000	0.750	0.050	0.155	350 MCM through 1000 MCM
SST*-27	12, 18, 24, 48	2.700	0.900	0.050	0.155	500 MCM through 1250 MCM
SST*-30	12, 18, 24, 48	3.000	1.250	0.050	0.155	900 MCM through 1500 MCM
SST*-40	12, 18, 24, 48	4.000	1.750	0.050	0.155	1500 MCM through 2500 MCM
SST*-45	12, 18, 24, 48	4.500	1.750	0.050	0.155	1500 MCM through 2500 MCM

†In place of asterisk* substitute length of tubing to be ordered. For example, SST*-11, as the third column indicates, comes in 6-, 9-, 12- and 48-inch lengths, so a 9-inch cut piece of SST tubing would be SST 9-11.

The suffix M = medium-wall tubing. ††Wall thickness will be less if tubing recovery is restricted during shrinkage.

Ordering Information

Color	Standard	Black (-0)
Size selection	Always order the largest size that will shrink snugly over the component to be covered. Special order sizes are available upon request.	
Standard packaging	See Product Dimensions table.	
Ordering description	Specify product name, cut length, size and color (for example, SST48-07/FR/RS).	

Part Numbering System

SST - 48 - 07 M/FR/97/RED/NM

