

### SCL

Semirigid, Encapsulant-Lined, Polyolefin Tubing

#### **Product Facts**

- 3:1 shrink ratio
- Splash-resistant, moistureresistant covering; not intended for use where immersion in fluids is required
- Rugged protection against abrasion, vibration, and flexing
- Excellent strain relief and insulation of weak points
- RoHS compliant



#### **Applications**

Encapsulates components, splices, and terminations where moisture resistance and mechanical protection are required. Encapsulant melts and flows to fill surface irregularities of the substrate. While still hot, the tubing can be blocked to form a wire breakout.

#### Installation

Minimum shrink temperature: 125°C [257°F] Minimum full recovery temperature: 135°C [275°F]

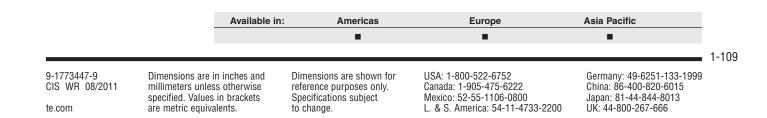
#### **Operating Temperature Range**

-55°C to 110°C [-67°F to 230°F]

#### **Specifications/Approvals**

Series	UL <b>N</b>	Military	Raychem
SCL	E85381 600 V, 125°C	AMS-DTL-23053/4*, Class 1	RT-1301

\*Formerly MIL-I-23053/4 and MIL-DTL-23053/4.





### SCL (Continued)

#### **Product Dimensions**

		Inside D	Jiameter	Recovered Wall Th	ickness**
Size	Additional Standard Color	Minimum Expanded as Supplied	Maximum Recovered After Heating	Total Wall After Heating	Meltable Wall After Heating (Nominal)
1/8	Brown	3.2 [0.125]	0.6 [0.023]	0.96 ± 0.15 [0.038 ± 0.006]	0.51 [0.020]
3/16	Gray	4.8 [0.187]	1.5 [0.060]	1.09 ± 0.15 [0.043 ± 0.006]	0.64 [0.025]
1/4	White	6.4 [0.250]	2.0 [0.080]	1.19 ± 0.15 [0.047 ± 0.006]	0.69 [0.027]
3/8	Red	9.5 [0.375]	3.4 [0.135]	1.27 ± 0.18 [0.050 ± 0.007]	0.76 [0.030]
1/2	Blue	12.7 [0.500]	5.0 [0.195]	1.39 ± 0.18 [0.055 ± 0.007]	0.89 [0.035]
3/4	Yellow	19.1 [0.750]	8.0 [0.313]	1.65 ± 0.18 [0.065 ± 0.007]	1.02 [0.040]
1	N/A	25.4 [1.000]	10.2 [0.400]	1.90 ± 0.18 [0.075 ± 0.007]	1.02 [0.040]

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

#### **Ordering Information**

Color	Standard	Black (-0) for all sizes, plus one additional color per size per Product Dimensions table.
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	In 1.2-meter [4-foot] lengths.	
Ordering description***	Specify product name, size ar	nd color (for example, SCL 1/4-0).

\*\*\*Europe only. For supply to MIL spec., Def Stan and BS add -MS, -DS or -BS to ordering description.

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents. Dimensions are shown for reference purposes only. Specifications subject to change. USA: 1-800-522-6752 Canada: 1-905-475-6222 Mexico: 52-55-1106-0800 L. & S. America: 54-11-4733-2200

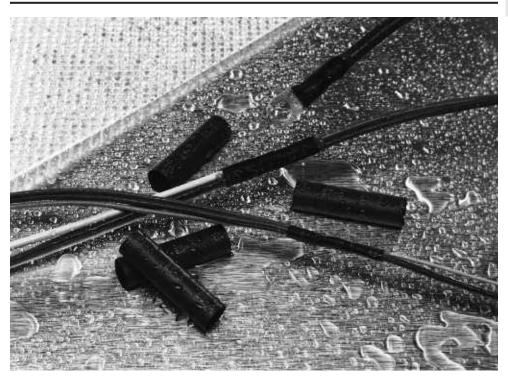


### SCT

Flame-Retardant, Adhesive-Lined, Semirigid Polyolefin Tubing (Extended Temperature Range)

### **Product Facts**

- 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters
- Flame-retardant and mechanically tough, the tubing provides strain relief and abrasion protection of wire splices, terminals, and other components
- Thick adhesive liner forms an effective barrier against fluids and moisture and performs well at an extended temperature range
- RoHS compliant



#### **Applications**

Specially designed to insulate and seal automotive wire splices and components in an under-the-hood automotive environment. Specially formulated to function at an extended temperature range.

#### Installation

Minimum shrink temperature: 110°C [230°F] Minimum full recovery temperature: 135°C [266°F]

#### **Operating Temperature Range**

-40°C to 150°C [-40°F to 302°F]

Specifications/Approvals	Series	Raychem
	SCT	SCT SCD

	Availab	ole in: Americas	Europe	Asia Pacific	
			•		
					1-111
9-1773447-9 CIS WR 08/2011	Dimensions are in inches an millimeters unless otherwise specified. Values in brackets	reference purposes only.	USA: 1-800-522-6752 Canada: 1-905-475-6222 Mexico: 52-55-1106-0800	Germany: 49-6251-133-1999 China: 86-400-820-6015 Japan: 81-44-844-8013	
te.com	are metric equivalents.	to change.	L. & S. America: 54-11-4733-2200	UK: 44-800-267-666	



### **SCT** (Continued)

#### **Product Dimensions**

Inside Diame		Diameter	Recovered Wal	d Wall Thickness*	
Part Number	Minimum Expanded as Supplied	Maximum Recovered After Heating	Total Wall After Heating	Meltable Wall After Heating (Nominal)	
SCT No. 1	7.6 [0.300]	1.7 [0.065]	1.52 ± 0.30 [0.060 ± 0 .012]	0.76 [0.030]	
SCT No. 2	9.0 [0.355]	2.3 [0.090]	1.52 ± 0.30 [0.060 ± 0 .012]	0.76 [0.030]	
SCT No. 3	11.6 [0.455]	2.5 [0.100]	2.29 ± 0.30 [0.090 ± 0.012]	1.40 [0.055]	
SCT No. 4	17.8 [0.700]	4.4 [0.175]	2.54 ± 0.30 [0.100 ± 0.012]	1.52 [0.060]	

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

#### **Ordering Information**

Color	Black	
Size selection	Always order the largest size that will shrink snugly over the component being covered. Special order sizes are available upon request.	
Standard packaging	Cut pieces.	
Marking	Tubing will be printed with its numbered size (such as SCT-1, SCT-2, SCT-3, SCT-4).	
Ordering description	Specify product name, numbered size, color and cut length (for example, SCT-NO.3-E3-0-75MM).	

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### SFR

Very Flexible, Flame-Retardant, Silicone Elastomer Tubing

#### **Product Facts**

- Outstanding low-temperature flexibility
- Resistance to hydraulic fluids, fuel, and lubricating oil
- Very good ablative characteristics: when exposed to flame, surface turns to insulative char or "ablates"
- RoHS compliant



#### **Applications**

Provides cable jacketing, harness protection, and strain relief for electronic components, semiconductor leads, and wire splices. Suitable for applications that require flexibility over a wide range of operating temperatures.

#### Installation

Minimum shrink temperature: 135°C [285°F] Minimum full recovery temperature: 175°C [347°F]

#### **Operating Temperature Range**

-75°C to 180°C [-103°F to 356°F]

#### Specifications/Approvals

Series	Military	Raychem
SFR	AMS-DTL-23053/10* MIL-PRF-46846, Type II, Class 1	RT-1140

\*Formerly MIL-I-23053/10 and MIL-DTL-23053/10.





### SFR (Continued)

#### **Product Dimensions**

	Inside Diameter		Recovered Wall Thickness**
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	After Heating
1/4	6.4 [0.250]	3.6 [0.143]	0.88 ± 0.25 [0.035 ± 0.010]
3/8	9.5 [0.375]	5.4 [0.214]	1.02 ± 0.25 [0.040 ± 0.010]
1/2	12.7 [0.500]	7.3 [0.286]	1.21 ± 0.38 [0.048 ± 0.015]
5/8	15.9 [0.625]	9.1 [0.357]	1.32 ± 0.38 [0.052 ± 0.015]
3/4	19.1 [0.750]	10.9 [0.428]	1.44 ± 0.38 [0.057 ± 0.015]
7/8	22.2 [0.875]	12.7 [0.500]	1.65 ± 0.38 [0.065 ± 0.015]
1	25.4 [1.000]	14.5 [0.570]	1.77 ± 0.51 [0.070 ± 0.020]
1 1/4	31.8 [1.250]	18.1 [0.714]	2.21 ± 0.51 [0.087 ± 0.020]
1 1/2	38.1 [1.500]	21.8 [0.857]	2.41 ± 0.51 [0.095 ± 0.020]
1 3/4	44.5 [1.750]	25.4 [1.000]	2.71 ± 0.51 [0.107 ± 0.020]
2	50.8 [2.000]	29.0 [1.140]	2.79 ± 0.51 [0.110 ± 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	On spools.		
Ordering description***	Specify product name, size and color (for example, SFR 1/4-0).		

\*\*\*Europe only. For supply to MIL spec., Def Stan and BS add -MS, -DS or -BS to ordering description.

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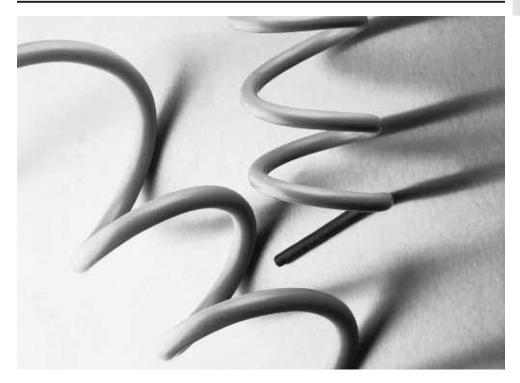


### SRFR

Highly Flexible, Silicone Rubber Tubing

#### **Product Facts**

- Highly flame-retardant
- Extremely flexible at high and low temperatures
- Shrink ratio 1.5:1 minimum except sizes 4/2.9 and 29/20
- RoHS compliant



#### **Applications**

Highly flexible and resistant to high and low temperatures. Unlike other silicone materials, SRFR displays outstanding physical strength. It resists extreme heat shocks, and exhibits good thermal insulation. SRFR is nonburning and has outstanding ablative properties as well as excellent physical and electrical properties. SRFR is used in medical equipment where its key properties are outstanding flexibility and ability to withstand exposure to sterilization conditions. Other applications include thyristor power cable insulation, heating element and bus bar insulation, fiber optic bundle sheathing, and rocketry support cable protection.

#### Installation

Minimum shrink temperature: 135°C [275°F] Minimum full recovery temperature: 175°C [347°F]

#### **Operating Temperature Range**

-75°C to 200°C [-103°F to 392°F]

Series	ul 💫	Raychem	
SRFR	E85381 VW-1 600V, 200°C	RT-1142 RW-2057	





### SRFR (Continued)

#### **Product Dimensions**

	Inside Diameter		Recovered Wall Thickness*
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	After Heating
2.9/1.7	2.9 [0.114]	1.7 [0.067]	1.0 ± 0.50 [0.039 ± 0.020]
4/2.9	4.0 [0.158]	2.9 [0.114]	1.0 ± 0.50 [0.039 ± 0.020]
7.8/4.6	7.8 [0.307]	4.6 [0.181]	1.0 ± 0.50 [0.039 ± 0.020]
10/6.5	10.0 [0.394]	6.5 [0.256]	1.5 ± 0.50 [0.059 ± 0.020]
15/9.6	15.0 [0.591]	9.6 [0.378]	1.5 ± 0.50 [0.059 ± 0.020]
21/13	21.0 [0.827]	13.0 [0.512]	2.0 ± 0.75 [0.079 ± 0.030]
29/20	29.0 [1.142]	20.0 [0.787]	2.0 ± 0.75 [0.079 ± 0.030]
41/27	41.0 [1.614]	27.0 [1.063]	3.0 ± 1.00 [0.118 ± 0.039]
51/33	51.0 [2.008]	33.0 [1.299]	3.0 ± 1.00 [0.118 ± 0.039]

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

#### **Ordering Information**

Color	Standard	Gray (-8)
Size selection	Always order the la	rgest size that will shrink snugly over the component to be covered.
Standard packaging	On spools.	
Ordering description	Specify product na	me, size and color (for example, SRFR 2.9/1.7-8).

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## SST/SST-FR

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)
    Lloyd's (Lloyd's Register of
  - Lloyd's (Lloyd's Register of Shipping)
- RoHS compliant



#### 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 110°C [-67°F to 230°F]

#### **Specifications/Approvals**

Series	Military	Industry	Agency	Raychem
SST	—	—		RW-2011
SST-FR	AMS-DTL-23053/15*, Classes 1 and 2	ASTM D 685, nonburning	ABS, Lloyd's	RW-2011

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





### SST/SST-FR (Continued)

#### **Product Dimensions**

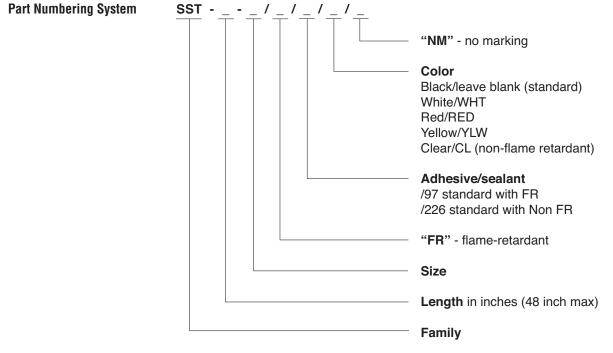
		Inside D	iameter	Wall Th	ickness	Recommended
Size†	Standard Nominal Length	Minimum Expanded as Supplied	Maximum Recovered After Heating	Expanded	Nominal Wa After Heating††	II Cable Range for 600-Volt Cable
SST*-03	30**, 48	0.300	0.100	0.025	0.070	18 through 14 AWG
SST*-04	30**, 48	0.400	0.150	0.025	0.070	14 through 10 AWG
SST*-07	48	0.750	0.220	0.030	0.095	8 through 1 AWG
SST*-11	48	1.100	0.375	0.040	0.120	2 through 4/0 AWG
SST*-13	48	1.300	0.375	0.035	0.120	2 through 4/0 AWG
SST*-15	48	1.500	0.500	0.050	0.140	2/0 AWG through 500 MCM
SST*-17	48	1.700	0.500	0.045	0.140	2/0 AWG through 500 MCM
SST*-20	48	2.000	0.750	0.050	0.160	350 MCM through 1000 MCN
SST*-27	48	2.700	0.900	0.050	0.160	500 MCM through 1250 MCM
SST*-30	48	3.000	1.250	0.050	0.160	900 MCM through 1500 MCM
SST*-40	48	4.000	1.750	0.050	0.160	1500 MCM through 2500 MC
SST*-45	48	4.500	1.750	0.050	0.160	1500 MCM through 2500 MCI

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

11 Wall thickness will be less if tubing recovery is restricted during shrinkage.
\*\*30-inch length standard for /226 coating only.

#### **Ordering Information**

Color	Standard	Black	
	Nonstandard	White, Red, Yellow and Clear (Clear is non-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	See Product Dimensions table.		
Ordering description	Specify product name,	cut length, size and color (for example, SST 48-07/FR/97).	



#### Example: SST-48-07/FR/97/NM

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.





### **TAT-125**

Adhesive-Lined, Flexible, **Polyolefin Tubing** 

**Product Facts** 

- 2:1 shrink ratio
- Thin adhesive lining that bonds to outer tubing and surface below, forming a positive environmental seal
- Flexibility of both tubing and adhesive
- Moisture seal that is resistant to bending of the substrate
- Good mechanical strength and cut-through resistance
- Adhesive that bonds to a wide variety of plastics, rubbers, and metals, including polyethylene, neoprene, lead, and steel
- RoHS compliant



#### **Applications**

Seals and protects simple in-line splices, bimetallic joints, and components from fluids, moisture, and corrosion. Repairs damaged wire insulation, especially where flexibility is required. Provides onestep electrical insulation and moisture sealing.

#### Installation

Minimum shrink temperature: 95°C [203°F] Minimum full recovery temperature: 121°C [250°F]

#### **Operating Temperature Range**

-55°C to 110°C [-67°F to 230°F]

#### Specifications/Approvals

Series	UL* <b>SN</b>	Military	Raychem		
TAT-125 Type 1 (colors)	E85381 600 V, 125°C	AMS-DTL-23053/4*, Class 2	RW-3032		
TAT-125 Type 2 (clear)	—	—	RW-3032		

Formerly MIL-I-23053/4 and MIL-DTL-23053/4. Sizes 1/4" through 1 1/2" only.





### TAT-125 (Continued)

#### **Product Dimensions**

	Inside I	Diameter	Recovered Wall Thickness**		
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	Total Wall After Heating (Nominal)	Adhesive Wall After Heating (Nominal)	
1/8	3.2 [0.125]	1.6 [0.062]	0.69 [0.027]	0.23 [0.009]	
3/16	4.8 [0.187]	2.4 [0.093]	0.71 [0.028]	0.25 [0.010]	
1/4	6.4 [0.250]	3.2 [0.125]	0.74 [0.029]	0.13 [0.005]	
3/8	9.5 [0.375]	4.8 [0.187]	0.74 [0.029]	0.13 [0.005]	
1/2	12.7 [0.500]	6.4 [0.250]	0.76 [0.030]	0.15 [0.006]	
3/4	19.1 [0.750]	9.5 [0.375]	0.89 [0.035]	0.15 [0.006]	
1	25.4 [1.000]	12.7 [0.500]	1.07 [0.042]	0.20 [0.008]	
1 1/2	38.1 [1.500]	19.1 [0.750]	1.19 [0.047]	0.28 [0.011]	

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

### **Ordering Information**

Color	Standard	Black (-0)		
	Nonstandard	White (-9), red (-2), blue (-6), yellow (-4), green (-5), brown (-1), orange (-3), violet (-7), gray (-8), 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	In 1.2-meter [4-foot] lengths.			
Ordering description	Specify product name, size and color (for example, TAT-125 1/4-0).			

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### **TC Caps**

Semirigid, Flame-**Retardant Polyolefin Caps** 

#### **Product Facts**

- 2.5:1 shrink ratio
- Flame-retardant
- Permanent or temporary method to terminate wires
- Rapid, simple installation
- Rugged protection against abrasion, vibration, and flexing

Specifications/Approvals

RoHS compliant



#### **Applications**

Widely used for wire terminations because of their light weight, small size and durability. Vibration-proof caps are used to insulate and terminate dead-end electrical cables, fixtures, connectors, and other electrical equipment. Also used to protect the ends of wire during storage.

#### Installation

Minimum shrink temperature: 110°C [230°F] Minimum full recovery temperature: 135°C [275°F]

#### **Operating Temperature Range**

-55°C to 135°C [-67°F to 275°F]

Series	UL ှ	Raychem
TC Caps	E85381 600 V, 125°C	TC Caps SCD





### TC Caps (Continued)

#### **Product Dimensions**

	Color	L	.ength	Inside I	Diameter	Recovered Wall Thickness**
Size		Nominal Overall as Supplied	Minimum Open Barrel after Recovery*	Minimum Expanded as Supplied	Maximum Recovered After Heating	After Heating
TC 4001	White (-9)	19.1 (0.750)	10.2 (0.400)	1.6 (0.063)	0.8 (0.030)	0.51 ± 0.12 (0.020 ± 0.005)
TC 4003	Red (-2)	25.4 (1.000)	14.0 (0.550)	3.2 (0.125)	1.3 (0.050)	0.64 ± 0.12 (0.025 ± 0.005)
TC 4005	Gray (-8)	28.6 (1.125)	14.0 (0.550)	6.4 (0.250)	2.5 (0.100)	0.69 ± 0.12 (0.027 ± 0.005)

\*See glossary for definition of "barrel". \*\*Wall thickness will be less if tubing recovery is restricted during shrinkage.

### **Ordering Information**

Color	Standard One color per size per the Product Dimensions table.
Size selection	Always order the largest size that will shrink snugly over the component to be covered.
Standard packaging	In pieces.
Ordering description	Specify product name, size and color (for example, TC-CAPS-4003-2).

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

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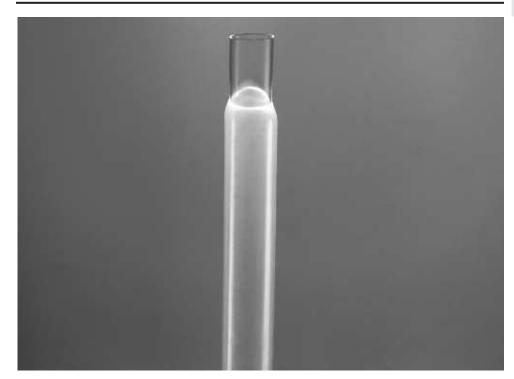


## **TFE and TFER**

High-Temperature, **Chemically Inert, Modified Tubing made of PTFE** 

**Product Facts** 

- Shrink ratio: 1.8:1 (TFE) 3.2:1 (TFER)
- High flame-resistance
- Excellent chemical resistance
- RoHS compliant



#### **Applications**

Designed to provide insulation and mechanical protection in severe chemical and thermal environments. Used to cover hydraulic hose and couplings to prevent contamination and corrosion. The high mechanical strength and extremely low coefficient of friction make it good for reducing damage to bearing shafts and similar applications.

#### Installation

Minimum shrink temperature: 330°C [625°F] Minimum full recovery temperature: 340°C [644°F]

#### **Operating Temperature Range**

-67°C to 250°C	
[-88.6°F to 482°F	]

#### **Specifications/Approvals**

Series	Military	Raychem
TFE, TFER	AMS-DTL-23053/12*, Classes 3 and 5 Def. Stan. 59-97 Type 5A (TFE) Def. Stan. 59-97 Type 5B (TFER)	RW-2055 (TFE) RW-2054 (TFER)
Earmorly MIL 1 22052/12 and	MIL DTL 22052/12	

\*Formerly MIL-I-23053/12 and MIL-DTL-23053/12.





### TFE and TFER (Continued)

#### Product Dimensions TFE

	Inside I	Inside Diameter	
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	Nominal Recovered After Heating
30	0.8 [0.032]	0.38 [0.015]	0.23 [0.009]
28	0.9 [0.035]	0.46 [0.018]	0.23 [0.009]
26	1.1 [0.043]	0.56 [0.022]	0.25 [0.010]
24	1.2 [0.047]	0.68 [0.027]	0.25 [0.010]
22	1.4 [0.055]	0.81 [0.032]	0.30 [0.012]
20	1.5 [0.059]	0.99 [0.039]	0.30 [0.012]
18	1.9 [0.075]	1.24 [0.049]	0.30 [0.012]
16	2.3 [0.091]	1.55 [0.061]	0.30 [0.012]
14	3.0 [0.118]	1.83 [0.072]	0.30 [0.012]
12	3.8 [0.150]	2.26 [0.089]	0.30 [0.012]
10	4.8 [0.189]	2.84 [0.112]	0.30 [0.012]
8	6.1 [0.240]	3.58 [0.141]	0.38 [0.015]
6	7.6 [0.299]	4.52 [0.178]	0.38 [0.015]
4	9.4 [0.370]	5.69 [0.224]	0.38 [0.015]
2	10.9 [0.429]	7.06 [0.278]	0.38 [0.015]
0	11.9 [0.469]	8.81 [0.347]	0.38 [0.015]

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

TFER

	Inside I	Inside Diameter	
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	Nominal Recovered After Heating
5/64	2.0 [0.079]	0.6 [0.024]	0.23 [0.009]
1/8	3.2 [0.126]	1.0 [0.039]	0.25 [0.010]
1/4	6.4 [0.252]	1.6 [0.063]	0.30 [0.012]
3/8	9.5 [0.374]	2.4 [0.095]	0.30 [0.012]
1/2	12.7 [0.500]	3.7 [0.146]	0.38 [0.015]
5/8	15.9 [0.626]	4.5 [0.177]	0.38 [0.015]
3/4	19.0 [0.748]	5.7 [0.224]	0.38 [0.015]
1	25.4 [1.000]	7.1 [0.230]	0.38 [0.015]
1-1/4	32.0 [1.260]	8.8 [0.347]	0.38 [0.015]

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

### **Ordering Information**

Color	Standard Clear (-X)
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	In 1.2-meter [4-foot] lengths.
Ordering description***	Specify product name, size and color (for example, TFE 22-X).

\*\*\*Europe only. For supply to MIL spec., Def Stan and BS add -MS, -DS or -BS to ordering description.

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9-1773447-9 CIS WR 08/2011 Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents. Dimensions are shown for reference purposes only. Specifications subject to change.



### **Tubing Kits and Mini-Spools**

#### **Smaller Packaging Options** for Single Wall and Adhesive-Lined Tubing **Products**

**Product Facts** 

- VERSAFIT and RNF-100 tubing: 2:1 shrink ratio
- DWP-125: 3:1 shrink ratio
- ES1000: 4:1 shrink ratio
- VERSAFIT tubing's low full recovery temperature reduces installation time and the risk of damage to temperature-sensitive components
- RNF-100 offers excellent physical, chemical, and electrical properties that meet or exceed commercial, industrial and military standards for highly reliable, general purpose tubing
- DWP-125 and ES1000 have high-shrink-ratios to allow for insulation and sealing of irregular shapes; few sizes cover a wide range of diameters
- RoHS compliant



#### **Applications**

Single wall VERSAFIT and RNF-100 tubing provide electrical insulation and strain relief of in-line components, electrical connections, wire terminations, and splices. They can be used to bundle wires for flexible light duty harnesses. Also to identify or color code wires, cables, terminals and electronic components.

Adhesive-lined DWP-125 and ES1000 environmentally seal and protect a

wide variety of electrical applications, including wire splices, terminations, breakouts and connector-tocable transitions.

#### Installation

Minimum full recovery temperature: VERSAFIT: 90°C [194°F] RNF-100: 121°C [250°F] DWP-125: 125°C [257°F] ES1000: 135°C [275°F]

#### **Operating Temperature Range**

VERSAFIT and RNF-100: -55°C to 135°C [-67°F to 275°F] DWP-125: -40°C to 110°C [-40°F to 230°F] ES1000: -40°C to 130°C [-40°F to 266°F]

Heat-shrinkable Tubing

#### Specifications/Approvals

Series	ul <b>N</b> î	CSA 🚯	Raychem
VERSAFIT	E35586 VW-1 600 V, 125°C	LR31929 VW-1 600 V, 125°C	RW-3009
RNF-100	E35586 600 V, 125°C	LR31929 600 V, 125°C	RT-350
DWP-125	E35586 600 V, 125°C	_	DWP-125 SCD
ES1000	E85381 600 V, 125°C	—	RT-1113

	Available in:	Americas	Europe	Asia Pacific	
					1-1
Dimensions are millimeters unles specified. Values are metric equiv	ss otherwise in brackets	Dimensions are shown for reference purposes only. Specifications subject to change.	USA: 1-800-522-6752 Canada: 1-905-475-6222 Mexico: 52-55-1106-0800 L. & S. America: 54-11-4733-2200		

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### Tubing Kits and Mini-Spools (Continued)

**Single Wall Tubing** KIT 1 – 2 to 1 Shrink Ratio • Black • 600V, 125°C, UL/CSA VW-1 (KIT 1 PN: A55251-000)

KIT 2 - 2 to 1 Shrink Ratio • 7 Colors\*\* • 600V, 125°C, UL/CSA VW-1 (except clear) (KIT 2 PN: D54859-000)

Expanded I.D.	Quantity (6 Inch Pieces)	Fits Wire Gauge Size	Refill Part Number
VERSAFIT-3/16"	30	18 – 14 AWG	D76139-000
VERSAFIT-1/4"	28	12 – 10 AWG	F37063-000
VERSAFIT-3/8"	24	8 AWG	D27573-000
VERSAFIT-1/2"	20	6 –3 AWG	C02462-000
VERSAFIT-3/4"	14	2 – 1/0 AWG	A92664-000
VERSAFIT-1"	10	2/0 – 4/0 AWG	C21270-000

Expanded I.D.	Quantity (6 Inch Pieces)	Fits Wire Gauge Size	Refill Part Number
VERSAFIT-3/32"	35	18 AWG	E31091-000
VERSAFIT-1/8"	28	16 AWG	349256-000
VERSAFIT-3/16"	21	14 AWG	C53800-000
VERSAFIT-1/4"	21	12 – 10 AWG	C87605-000
VERSAFIT-3/8"	14	8 AWG	A82691-000
VERSAFIT-1/2"	14	6 – 3 AWG	E10896-000

Adhesive-Lined Tubing KIT 3 - Black/White/Red/Clear • 600V, 125°C, UL (KIT 3 PN: E42160-000)

Expanded I.D.	Quantity (6 Inch Pieces)	Fits Wi	re Gauge Size	Refill Part Number
DWP-125-1/8"	25	20 – 16 AWG	(3 to 1 Shrink Ratio)	D14889-000
DWP-125-3/16"	25	14 –10 AWG	(3 to 1 Shrink Ratio)	E87367-000
DWP-125-1/4"	24	12 –10 AWG	(3 to 1 Shrink Ratio)	F91864-000
DWP-125-1/2"	10	6 –3 AWG	(3 to 1 Shrink Ratio)	F41454-000
DWP-125-3/4"	5	2 – 1/0 AWG	(3 to 1 Shrink Ratio)	C67617-000
DWP-125-1"	3	2/0 – 4/0 AWG	(3 to 1 Shrink Ratio)	F66623-000
ES1000-NO.1	6	16 – 12 AWG	(4 to 1 Shrink Ratio)	
ES1000-NO.2	5	12 – 10 AWG	(4 to 1 Shrink Ratio)	
ES1000-NO.3	5	10 – 8 AWG	(4 to 1 Shrink Ratio)	
ES1000-NO.4	3	6 –3 AWG	(4 to 1 Shrink Ratio)	

KITS 1, 2 and 3 are comprised of a durable six section plastic box with hinged lid. Inside the lid are product selection guidelines. Ask your Sales Representative about KIT 4 and KIT 6, our Economy Tubing Kits in a reclosable plastic bag, also used on "point of sale" racks. Here are Part Numbers for those Kits and their content: KIT 4: E32151-000 (Three pieces each of 3/16", 1/4", 3/8", 1/2", 3/4" and 1" Black tubing in 6 inch pieces) KIT 6: C72402-000 (Three pieces each of 3/64", 1/16", 3/32" and 1/8" Black tubing in 6 inch pieces)

Expanded I.D.	Quantity (Feet)	Part Number
VERSAFIT-3/64"	100	C16404-000
VERSAFIT-1/16"	75	E40870-000
VERSAFIT-3/32	65	D70981-000
VERSAFIT-1/8"	60	C17600-000
VERSAFIT-3/16"	50	F27135-000
VERSAFIT-1/4"	40	F64479-000
VERSAFIT-3/8"	35	D57591-000
VERSAFIT-1/2"	30	E37316-000
VERSAFIT-3/4"	25	449582-000
VERSAFIT-1"	15	F27156-000

VERSAFIT is a very flexible, highly flame-retardant polyolefin tubing, 90°C full recovery temperature, good fluid resistance with a UL 224/CSA VW-1 flammability rating.

#### **RNF-100 MINI-SPOOLS** 2 to 1 Shrink Ratio • Black • 600V, 125°C, UL/CSA

**VERSAFIT MINI-SPOOLS** 

2 to 1 Shrink Ratio • Black • 600V, 125°C, UL/CSA VW-1

Expanded I.D.	Quantity (Feet)	Part Number
RNF-100-3/64"	100	D00409-000
RNF-100-1/16"	75	A66551-000
RNF-100-3/32	65	D42391-000
RNF-100-1/8"	60	F56629-000
RNF-100-3/16"	50	E77288-000
RNF-100-1/4"	40	F75818-000
RNF-100-3/8"	35	D12330-000
RNF-100-1/2"	30	A81736-000
RNF-100-3/4"	25	E40866-000
RNF-100-1"	15	E62131-000

RNF-100 is a flexible, flame-retardant polyolefin tubing, 121°C full recovery temperature, excellent fluid resistance with a UL 224/CSA All Tubing flammability rating.

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millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are in inches and

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752 Canada: 1-905-475-6222 Mexico: 52-55-1106-0800 L. & S. America: 54-11-4733-2200



### **TUGA-GP**

Shiny, Non-Flame-Retardant, Polyolefin Tubing

#### **Product Facts**

- 2:1 shrink ratio
- Can be easily hot-stamped
- Bright, shiny surface
- Semiflexible, non-flameretardant, halogen-free
- Conforms to substrates more uniformly and with less longitudinal change than most **PVC**-based materials
- RoHS compliant



#### **Applications**

TUGA-GP is a commercial grade tubing for general applications where a flame-retardant product is not needed but where electrical insulation and mechanical performance are important. TUGA-GP makes an attractive covering for many automotive, appliance, and consumergoods applications.

#### Installation

Minimum shrink temperature: 85°C [85°F] Minimum full recovery temperature: 110°C [230°F]

### **Operating Temperature Range** -55°C to 125°C

[-67°F to 257°F]

#### Specifications/Approvals

Series	Raychem
TUGA-GP	RW-2201



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### TUGA-GP (Continued)

#### **Product Dimensions**

	Inside Diameter		Wall Thickness*
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	Nominal After Heating
1.2/0.6	1.2 [0.046]	0.6 [0.023]	0.4 [0.016]
1.6/0.8	1.6 [0.062]	0.8 [0.031]	0.4 [0.016]
2.4/1.2	2.4 [0.093]	1.2 [0.046]	0.5 [0.019]
3/1.5	3.0 [0.118]	1.5 [0.059]	0.5 [0.019]
5/2.5	5.0 [0.197]	2.5 [0.098]	0.5 [0.019]
6.4/32	6.4 [0.250]	3.2 [0.125]	0.6 [0.024]
8/4	8.0 [0.315]	4.0 [0.157]	0.6 [0.024]
9.5/4.8	9.5 [0.375]	4.8 [0.187]	0.6 [0.024]
11/5.5	11.0 [0.433]	5.5 [0.217]	0.6 [0.024]
12.7/6.4	12.7 [0.500]	6.4 [0.250]	0.6 [0.024]
15/7.5	15.0 [0.591]	7.5 [0.295]	0.8 [0.031]
20/10	20.0 [0.787]	10.0 [0.394]	0.8 [0.031]
5.4/12.7	25.4 [1.000]	12.7 [0.500]	0.9 [0.035]
38/19	38.0 [1.496]	19.0 [0.748]	1.0 [0.039]

\*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 Special order sizes available	that will shrink snugly over the component to be covered. upon request.
Standard packaging	On spools.	
Ordering description	Specify product name, size a	nd color (for example, TUGA 3/1.5-0).

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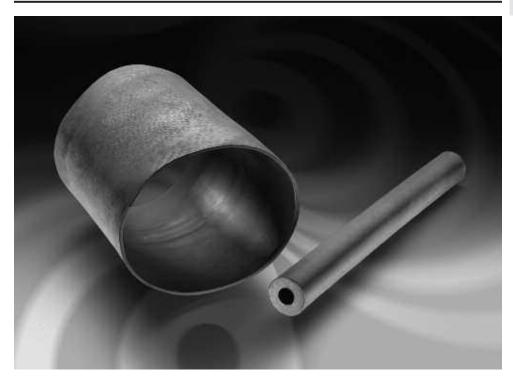


### URHT

Ultra-High-Ratio, Flame-Retardant, Polyolefin Heat-Shrinkable Tubing

#### **Product Facts**

- Shrink ratios as high as 8:1
- Specially formulated for thick wall insulation, strain relief and abrasion protection
- Flame-retardant passing **ASTM D 635**
- Excellent performance in both hot and cold environments
- Optional factory applied adhesive provides watertight environmental sealing in wet and corrosive locations
- RoHS compliant



#### **Applications**

-

Ultra-high-shrink-ratio, heatshrinkable tubing, with expansion ratios as high as 8-to-1, is designed to conform to odd shapes and shrink over large transitions, allowing for the repair and sealing of cable connectors and equipment. Cable harnesses can be repaired and released without disassembly. This product can be used to seal the back end of a connector or

simply repair a damaged outer insulation of a cable or wire.

URHT tubing is available with or without a hot melt adhesive lining.

#### Installation

Minimum shrink temperature: 135°C [275°F] Minimum full recovery temperature: 150°C [302°F]

#### **Operating Temperature Range**

-55°C to 135°C [-67°F to 275°F]

Series	Military	Raychem	
URHT	SAE-AS81765/1, Type II*	URHT SCD	
*heat-shrinkable, cross	slinked, flexible polyolefin		





### **RAYCHEM Tubing Products**

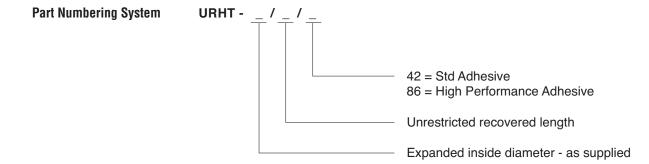
## URHT (Continued)

#### **Product Dimensions**

	Inside Diameter		Wall Thickness		
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	Nominal Recovered After Heating	Unrestricted Full Recovered Length ± 6.35 (.250)	
URHT-200	50.80 (2.000)	5.84 (0.230)	3.56 (0.140)	7.62, 101.60, 152.40, 254.00 (3, 4, 6, 10)	
URHT-300	76.20 (3.000)	8.64 (0.340)	3.56 (0.140)	7.62, 101.60, 152.40, 254.00 (3, 4, 6, 10)	

#### **Ordering Information**

Color	Standard	Black (-0)
Size selection	Always order the largest si	ze that will shrink snugly over the component to be covered.
Standard packaging	In pieces.	
Ordering description	Specify product name, size	e, cut length and color (for example, URHT-200-10-0).



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9-1773447-9 CIS WR 08/2011 Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752 Canada: 1-905-475-6222 Mexico: 52-55-1106-0800 L. & S. America: 54-11-4733-2200

### Versafit

Highly Flame-Retardant, Very Flexible, Low-Shrink-Temperature, Polyolefin Tubing

#### **Product Facts**

- 2:1 shrink ratio
- Low shrink temperature reduces installation time and the risk of damage to temperature-sensitive components
- Very flexible; doesn't easily wrinkle when bent
- Highly flame-retardant
- Hot stamps extremely well
- Higher temperature rating, better thermal stability, and higher resistance to physical abuse than noncrosslinked materials
- Free of polybrominated biphenyls (PBBs) and polybrominated biphenyl oxides and ethers (PBBOs and PBBEs), which are classified as environmentally hazardous substances
- RoHS compliant



#### Applications

Cost-effective choice for many commercial and military applications; electrically insulates and protects in-line components, disconnect terminals, and splices. Bundles wires for very flexible light-duty harnesses. Strain-relieves electrical wire connections for commercial applications. Identifies or colorcodes wires, cables, terminals, and components.

#### Installation

Minimum shrink temperature: 70°C [158°F] Minimum full recovery temperature: 90°C [194°F]

#### **Operating Temperature Range**

-55°C to 135°C [-67°F to 275°F]

# Specifications/Approvals Series UL CSA (): Versafit E35586 VW-1 LR31929 VW-1

Series	UL <b>AN</b>	CSA SP	Military	Raychem
Versafit	E35586 VW-1 600 V, 125°C	LR31929 VW-1 600 V, 125°C	AMS-DTL-23053/5* Classes 1 & 3	RW-3009
*Eormorby MIL	220E2/E and MIL DTL 22	052/5		

\*Formerly MIL-I-23053/5 and MIL-DTL-23053/5.





### Versafit (Continued)

#### **Product Dimensions**

	Inside D	iameter	Recovered Wall Thickness**
Size	Expanded as Supplied	Maximum Recovered After Heating	After Heating
3/64	1.63 ± 0.2 [0.064 ± 0.008]	0.6 [0.023]	0.40 ± 0.08 [0.016 ± 0.003]
1/16	1.85 ± 0.2 [0.073 ± 0.008]	0.8 [0.031]	0.43 ± 0.08 [0.017 ± 0.003]
3/32	2.79 ± 0.2 [0.110 ± 0.008]	1.2 [0.046]	0.51 ± 0.08 [0.020 ± 0.003]
1/8	3.43 ± 0.2 [0.135 ± 0.008]	1.6 [0.062]	0.51 ± 0.08 [0.020 ± 0.003]
3/16	5.21 ± 0.3 [0.205 ± 0.010]	2.4 [0.093]	0.51 ± 0.08 [0.020 ± 0.003]
1/4	7.11 ± 0.3 [0.280 ± 0.010]	3.2 [0.125]	0.64 ± 0.08 [0.025 ± 0.003]
3/8	10.16 ± 0.4 [0.400 ± 0.015]	4.8 [0.187]	0.64 ± 0.08 [0.025 ± 0.003]
1/2	13.72 ± 0.4 [0.540 ± 0.015]	6.4 [0.250]	0.64 ± 0.08 [0.025 ± 0.003]
5/8***	16.90 ± 0.4 [0.665 ± 0.015]	8.0 [0.315]	0.76 ± 0.08 [0.030 ± 0.003]
3/4	20.45 ± 0.4 [0.805 ± 0.015]	9.5 [0.375]	0.76 ± 0.08 [0.030 ± 0.003]
1	26.80 ± 0.4 [1.055 ± 0.015]	12.7 [0.500]	0.89 ± 0.12 [0.035 ± 0.005]
1/4***	33.40 ± 0.7 [1.315 ± 0.025]	15.9 [0.625]	1.02 ± 0.15 [0.040 ± 0.006]
1 1/2	39.88 ± 0.8 [1.570 ± 0.030]	19.1 [0.750]	1.02 ± 0.15 [0.040 ± 0.006]
2	52.83 ± 1.0 [2.080 ± 0.040]	25.4 [1.000]	1.14 ± 0.16 [0.045 ± 0.007]
3	78.49 ± 1.0 [3.090 ± 0.040]	38.1 [1.500]	1.27 ± 0.20 [0.050 ± 0.008]
4	104.14 ± 1.3 [4.100 ± 0.050]	50.8 [2.000]	1.40 ± 0.23 [0.055 ± 0.009]

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

\*\*\*Nonstandard size; available by special order only.

#### **Ordering Information**

Color	Standard	Black (-0), white (-9), red (-2), blue (-6), yellow (-4)
	Nonstandard	Brown (-1), orange (-3), green (-5), violet (-7), gray (-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****	On spools.	
Ordering description*****	Specify product name, size and color (for example, Versafit 1/4-0).	

\*\*\*\*Available in the convenient Mini-Spool packaging/dispensing system, for sizes 3/64" up to 1" (black only). \*\*\*\*\*Europe only. For supply to MIL, Def Stan and BS add -MS, -DS or -BS to ordering description.

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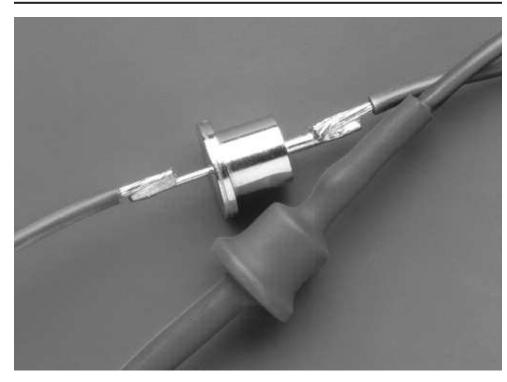


### Versafit-3X

Very Flexible, High-Shrink-Ratio, Highly Flame-Retardant, Low-Shrink-Temperature, Polyolefin Tubing

#### **Product Facts**

- Highly flame-retardant
- 3:1 shrink ratio easily accommodates irregular shapes; few sizes cover a wide range of diameters
- Low shrink temperature reduces installation time and the risk of damage to temperature-sensitive components
- Free of polybrominated biphenyls (PBBs) and polybrominated biphenyl oxides and ethers (PBBOs and PBBEs) which are classified as environmentally hazardous substances
- RoHS compliant



#### Applications

Provides electrical insulation and strain relief of in-line components, electrical connections, wire terminations, and splices. Bundles wires for flexible light duty harnesses. Identifies or color codes wires, cables, terminals and electrical and electronic components.

#### Installation

Minimum shrink temperature: 70°C [158°F] Minimum full recovery temperature: 90°C [194°F]

#### **Operating Temperature Range**

-55°C to 135°C [-67°F to 275°F]

Series	UL <b>N</b> °	CSA 🚯	Raychem	
Versafit-3X	E35586 VW-1 600 V, 125°C	LR31929 VW-1 600 V, 125°C	RW-3009	





### Versafit-3X (Continued)

#### **Product Dimensions**

	Inside Diameter		Recovered Wall Thickness*
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	After Heating
1/8	3.2 (0.125)	1.1 (0.042)	0.58 ± 0.08 (0.023 ± 0.003)
1/4	6.4 (0.250)	2.2 (0.083)	0.58 ± 0.08 (0.023 ± 0.003)
3/8	9.5 (0.375)	3.2 (0.125)	0.61 ± 0.08 (0.024 ± 0.003)
1/2	12.7 (0.500)	4.3 (0.166)	0.61 ± 0.08 (0.024 ± 0.003)
3/4	19.1 (0.750)	6.4 (0.250)	0.61 ± 0.08 (0.024 ± 0.003)
1	25.4 (1.000)	8.5 (0.333)	$0.64 \pm 0.08 \ (0.025 \pm 0.003)$

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

#### **Ordering Information**

Color	Standard	Black (-0)	
	Nonstandard	White (-9), red (-2), blue (-6), yellow (-4), green (-5), brown (-1), orange (-3), violet (-7), gray (-8)	
Size selection	Always order the largest size that will shrink snugly over the component to be covered.		
Standard packaging	On spools.		
Ordering description	Specify product name, size and color (for example, Versafit-3X-1/4-0).		

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millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are in inches and

Dimensions are shown for reference purposes only. Specifications subject to change. USA: 1-800-522-6752 Canada: 1-905-475-6222 Mexico: 52-55-1106-0800 L. & S. America: 54-11-4733-2200



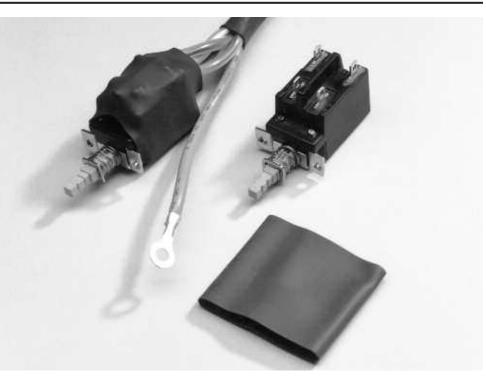


### Versafit V2

Highly Flame-Retardant, Very Flexible, Low-Shrink-Temperature, Polyolefin Tubing

#### **Product Facts**

- 2:1 shrink ratio
- Low shrink temperature reduces installation time and the risk of damage to temperature-sensitive components
- Very flexible; doesn't easily wrinkle when bent
- Highly flame-retardant
- Hot stamps extremely well
- Higher temperature rating, better thermal stability, and higher resistance to physical abuse than noncrosslinked materials
- Free of polybrominated biphenyls (PBBs) and polybrominated biphenyl oxides and ethers (PBBOs and PBBEs), which are classified as environmentally hazardous substances
- RoHS compliant



#### **Applications**

Cost-effective choice for many commercial applications; electrically insulates and protects in-line components, disconnect terminals, and splices. Bundles wires for very flexible light-duty harnesses. Strain-relieves electrical wire connections. Identifies or color-codes wires, cables, terminals, and components.

#### Installation

Minimum shrink temperature: 70°C [158°F] Minimum full recovery temperature: 90°C [194°F]

#### **Operating Temperature Range**

-30°C to 125°C [-22°F to 257°F]

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Specifications/Approvals	Serie

Series	ul <b>M</b>	CSA 🚯	Raychem	
Versafit V2	E35586 VW-1 600 V, 125°C	LR31929 VW-1 600 V, 125°C	RW-3023	





### Versafit V2 (Continued)

#### **Product Dimensions**

	Inside Diame	eter	Wall Thi	ickness
Size	Expanded as Supplied	Maximum Recovered After Heating	Expanded as Supplied (Nominal)	Recovered* After Heating (Minimum)
1.0	1.5 ± 0.2 [0.059 ± 0.008]	0.50 [0.020]	0.20 [0.008]	0.33 [0.013]
1.5	2.1 ± 0.2 [0.075 ± 0.008]	0.75 [0.030]	0.20 [0.008]	0.35 [0.014]
2.0	2.6 ± 0.2 [0.102 ± 0.008]	1.00 [0.039]	0.25 [0.010]	0.43 [0.017]
2.5	3.1 ± 0.2 [0.122 ± 0.008]	1.25 [0.049]	0.25 [0.010]	0.43 [0.017]
3.0	3.6 ± 0.2 [0.142 ± 0.008]	1.50 [0.059]	0.25 [0.010]	0.43 [0.017]
3.5	4.1 ± 0.3 [0.161 ± 0.012]	1.75 [0.069]	0.25 [0.010]	0.43 [0.017]
4.0	4.6 ± 0.3 [0.181 ± 0.012]	2.00 [0.079]	0.25 [0.010]	0.43 [0.017]
5.0	5.6 ± 0.3 [0.221 ± 0.012]	2.50 [0.098]	0.30 [0.012]	0.56 [0.022]
6.0	6.6 ± 0.3 [0.260 ± 0.012]	3.00 [0.118]	0.30 [0.012]	0.56 [0.022]
7.0	7.6 ± 0.3 [0.299 ± 0.012]	3.50 [0.138]	0.30 [0.012]	0.56 [0.022]
8.0	8.6 ± 0.3 [0.339 ± 0.012]	4.00 [0.158]	0.30 [0.012]	0.56 [0.022]
9.0	9.6 ± 0.3 [0.378 ± 0.012]	4.50 [0.177]	0.30 [0.012]	0.56 [0.022]
10.0	10.4 ± 0.3 [0.409 ± 0.012]	5.00 [0.197]	0.30 [0.012]	0.56 [0.022]
11.0	11.4 ± 0.3 [0.449 ± 0.012]	5.50 [0.217]	0.30 [0.012]	0.56 [0.022]
12.0	12.7 ± 0.3 [0.500 ± 0.012]	6.00 [0.236]	0.30 [0.012]	0.56 [0.022]
13.0	13.5 ± 0.3 [0.532 ± 0.012]	6.50 [0.256]	0.35 [0.014]	0.66 [0.026]
14.0	14.4 ± 0.4 [0.567 ± 0.016]	7.00 [0.276]	0.35 [0.014]	0.68 [0.027]
15.0	15.7 ± 0.4 [0.618 ± 0.016]	7.50 [0.295]	0.35 [0.014]	0.68 [0.027]
16.0	$16.9 \pm 0.4 \ [0.665 \pm 0.016]$	8.00 [0.315]	0.35 [0.014]	0.68 [0.027]
18.0	19.0 ± 0.4 [0.748 ± 0.016]	9.00 [0.354]	0.40 [0.016]	0.76 [0.030]
20.0	21.4 ± 0.4 [0.843 ± 0.016]	10.00 [0.394]	0.40 [0.016]	0.76 [0.030]
22.0	23.2 ± 0.4 [0.913 ± 0.016]	11.00 [0.433]	0.45 [0.018]	0.89 [0.035]
25.0	26.8 ± 0.4 [1.055 ± 0.016]	12.50 [0.492]	0.45 [0.018]	0.89 [0.035]
27.0	28.2 ± 0.5 [1.110 ± 0.020]	12.50 [0.492]	0.45 [0.018]	0.89 [0.035]
28.0	30.0 ± 0.5 [1.181 ± 0.020]	14.00 [0.551]	0.45 [0.018]	0.89 [0.035]
30.0	32.1 ± 0.5 [1.264 ± 0.020]	15.00 [0.591]	0.45 [0.018]	0.89 [0.035]

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

#### **Ordering Information**

Color	Standard	Black (-0)	
	Nonstandard	White (-9), red (-2), blue (-6), yellow (-4), green (-5), orange (-3), violet (-7), brown (-1), gray (-8)	
Size selection		rgest size that will shrink snugly over the component to be covered. are available upon request.	
Standard packaging	On spools.	On spools.	
Ordering description	Specify product nar	Specify product name, size and color (for example, V2-3.0-0).	

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millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are in inches and

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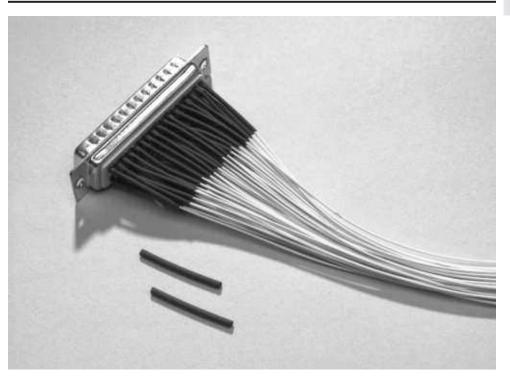


### Versafit V4

Very-Thin-Wall, Very Flexible, Highly Flame-Retardant, Polyolefin Tubing

#### **Product Facts**

- 2:1 shrink ratio
- Very thin wall provides space savings and rapid shrinking
- Low shrink temperature further reduces installation time and risk of damage to temperature-sensitive components
- Very flexible; doesn't easily wrinkle when bent
- Free of polybrominated biphenyls (PBBs) and polybrominated biphenyl oxides and ethers (PBBOs and PBBEs), which are classified as environmentally hazardous substances
- RoHS compliant



#### Applications

Typically used where space saving is important. Offers the ability to pack components more closely than is possible with standard tubings. Costeffective choice for many commercial applications; electrically insulates and protects in-line components, disconnect terminals, and splices. Used for strain relief on high-density connectors.

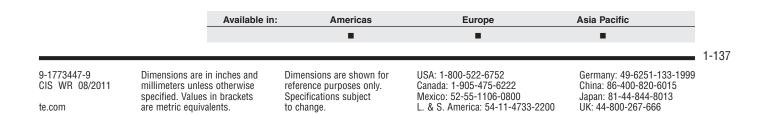
#### Installation

Minimum shrink temperature: 70°C [158°F] Minimum full recovery temperature: 90°C [194°F]

#### **Operating Temperature Range**

-30°C to 125°C [-22°F to 257°F]

Series	UL <b>SN</b>	CSA 🚯	Raychem	
Versafit V4	E85381 VW-1 300 V, 125°C	LR31929 VW-1 150 V, 125°C	RW-3023	





### Versafit V4 (Continued)

#### **Product Dimensions**

	Inside Diame	eter	Wall Th	ickness
Size	Expanded as Supplied	Maximum Recovered After Heating	Expanded as Supplied (Nominal)	Recovered* After Heating (Minimum)
0.6	0.95 ± 0.25 [0.037 ± 0.010]	0.30 [0.012]	0.10 [0.004]	0.25 [0.010]
0.8	1.20 ± 0.25 [0.047 ± 0.010]	0.40 [0.016]	0.10 [0.004]	0.25 [0.010]
1.0	1.40 ± 0.25 [0.055 ± 0.010]	0.50 [0.020]	0.10 [0.004]	0.25 [0.010]
1.5	1.90 ± 0.25 [0.075 ± 0.010]	0.75 [0.030]	0.10 [0.004]	0.25 [0.010]
2.0	2.30 ± 0.25 [0.091 ± 0.010]	1.00 [0.039]	0.10 [0.004]	0.25 [0.010]
2.5	2.80 ± 0.25 [0.110 ± 0.010]	1.25 [0.049]	0.15 [0.006]	0.25 [0.010]
3.0	3.30 ± 0.25 [0.130 ± 0.010]	1.50 [0.059]	0.15 [0.006]	0.25 [0.010]
3.5	3.80 ± 0.25 [0.150 ± 0.010]	1.75 [0.069]	0.15 [0.006]	0.25 [0.010]
4.0	4.40 ± 0.25 [0.173 ± 0.010]	2.00 [0.079]	0.15 [0.006]	0.25 [0.010]
5.0	5.50 ± 0.25 [0.217 ± 0.010]	2.50 [0.098]	0.15 [0.006]	0.25 [0.010]
6.0	6.50 ± 0.40 [0.256 ± 0.016]	3.00 [0.118]	0.15 [0.006]	0.28 [0.011]
7.0	7.50 ± 0.40 [0.295 ± 0.016]	3.50 [0.138]	0.15 [0.006]	0.28 [0.011]
8.0	8.50 ± 0.40 [0.335 ± 0.016]	4.00 [0.158]	0.15 [0.006]	0.28 [0.011]
9.0	9.50 ± 0.40 [0.374 ± 0.016]	4.50 [0.177]	0.15 [0.006]	0.28 [0.011]
10.0	10.50 ± 0.50 [0.413 ± 0.020]	5.00 [0.197]	0.15 [0.006]	0.28 [0.011]
	Inside Diamete	r	Recovered V	Vall Thickness*
nch Size		imum Recovered After Heating		fter ating
8/64	1.2 [0.046]	0.6 [0.023]	0.30 ± 0.05	[0.012 ± 0.002]
/16	1.6 [0.062]	0.8 [0.031]	0.30 ± 0.05	[0.012 ± 0.002]
3/32	2.4 [0.093]	1.2 [0.046]	$0.30 \pm 0.05$	[0.012 ± 0.002]
1/8	3.2 [0.125]	1.6 [0.062]	$0.33 \pm 0.05$	[0.013 ± 0.002]
8/16	4.8 [0.187]	2.4 [0.093]	0.33 ± 0.05	[0.013 ± 0.002]
1/4	6.4 [0.250]	3.2 [0.125]	0.36 ± 0.08	[0.014 ± 0.003]
3/8	9.5 [0.375]	4.8 [0.187]	0.36 ± 0.08	[0.014 ± 0.003]
1/2	12.7 [0.500]	6.4 [0.250]	0.36 ± 0.08	[0.014 ± 0.003]
3/4	19.1 [0.750]	9.5 [0.375]	0.43 ± 0.08	[0.017 ± 0.003]
1	25.4 [1.000]	12.7 [0.500]	0.51 ± 0.08	[0.020 ± 0.003]

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

#### **Ordering Information**

Standard	Black (-0)		
Nonstandard	Other colors available upon request.		
Always order the la Special order sizes	argest size that will shrink snugly over the component to be covered. s are available upon request.		
g On spools.	On spools.		
Marked with UL/C	Marked with UL/CSA/-F- legends (metric sizes) or unmarked (inch sizes).		
n Specify product na	ame, size (mm or in.) and color (for example, V4-1.0-0).		
	Nonstandard Always order the la Special order size: On spools. Marked with UL/C		

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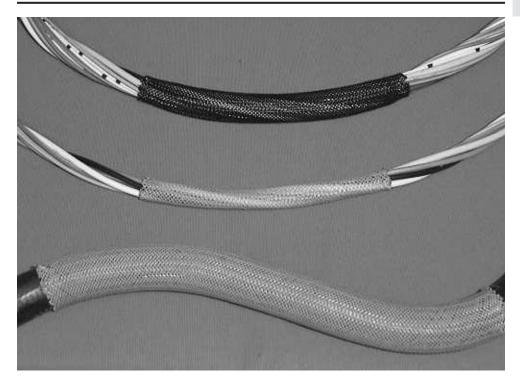


### Versaflex

Expandable, Braided, Polyester Sleeving

#### **Product Facts**

- Excellent abrasion and cutthrough resistance
- Lightweight
- Flexible (even at low temperatures)
- Fungus proof
- Not affected by most chemical and solvents, non-hygroscopic
- Versaflex-FR sleeving meets UL VW-1 and is selfextinguishing
- Wide range of sizes available
- RoHS compliant



#### **Applications**

Versaflex sleeving is suited for the mechanical protection of wire harnesses, hoses, and all other applications where exceptional flexibility combined with superior abrasion/cut resistance is required. It also serves as an economical means for wire bundling that will not trap heat or moisture; expanding easily to fit over irregular shapes, then contracting to conform and grip. To prevent fraying, these products should be cut to length using a hot knife.

#### Installation

This product is cold applied.

#### **Operating Temperature Range**

-50°C to 150°C [-58°F to 302°F] (220°C [-58°F to 302°F] for short periods)

Series	UL <b>N</b>	Raychem	
Versaflex-FR	E306976 VW-1, 125°C		
Versaflex	_	RK-6772	





### Versaflex (Continued)

### **Product Dimensions**

Versaflex (metric)			
Nominal Size	Size I	Range	
	Minimum	Maximum	
3 (0.118)	1 (0.039)	5 (0.197)	
4 (0.158)	2 (0.079)	7 (0.276)	
5 (0.197)	3 (0.118)	9 (0.354)	
6 (0.236)	4 (0.158)	12 (0.472)	
8 (0.315)	5 (0.197)	12 (0.472)	
10 (0.394)	7 (0.276)	15 (0.591)	
12 (0.472)	8 (0.315)	17 (0.669)	
15 (0.591)	10 (0.394)	20 (0.787)	
20 (0.787)	14 (0.551)	26 (1.024)	
25 (0.984)	18 (0.709)	34 (1.339)	
30 (1.181)	20 (0.787)	40 (1.575)	
40 (1.575)	30 (1.181)	50 (1.969)	
50 (1.969)	40 (1.575)	60 (2.362)	

Versaflex (Imperial)			
Size	Nominal Size	Size Range	
1/8	3 (0.118)	2.4 - 6.4 (0.094 - 0.252)	
1/4	6 (0.236)	3.2 - 9.5 (0.125 - 0.375)	
3/8	10 (0.394)	4.7 - 16 (0.185 - 0.630)	
1/2	13 (0.512)	6.4 - 19 (0.252 - 0.748)	
3/4	19 (0.748)	13-32 (0.512-1.260)	
1-1/4	32 (1.256)	19-45 (0.748-1.772)	
1-3/4	45 (1.772)	32 - 70 (1.260 - 2.756)	
2	51 (2.008)	38-76 (1.496-2.992)	

Versa	Versaflex-FR flame retardant, expandable polyester braid		
Size	Nominal Size	Size Range	
1/8	3 (0.118)	2.4 - 6.4 (0.094 - 0.252)	
1/4	6 (0.236)	3.2 - 9.5 (0.125 - 0.375)	
3/8	10 (0.394)	4.7 - 16 (0.185 - 0.630)	
1/2	13 (0.512)	6.4 - 19 (0.252 - 0.748)	
3/4	19 (0.748)	13 - 32 (0.512 - 1.260)	
1-1/4	32 (1.256)	19-45 (0.748-1.772)	
1-3/4	45 (1.772)	32 - 70 (1.260 - 2.756)	
2	51 (2.008)	38 - 76 (1.496 - 2.992)	

#### **Ordering Information**

Color	Standard	Versaflex (metric) : Black (-0) Grey (-8) Versaflex (imperial) : Black (-0) Versaflex-FR : Black with a white X tracer (-09)
Standard packaging	On spools.	
Ordering description	Specify product name,	size and color (for example, VERSAFLEX-FR-1/4-09-SP)

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### **XFFR**

Halogen-Free, Flame-Retardant, Heat-Shrinkable Tubing

**Product Facts** 

- Emits minimal amounts of toxic or acid gasses during combustion
- Meets performance requirements of MIL-C-24640 and MIL-C-24643 cable jackets
- Resists moisture, fungus, and weathering
- Available in expansion ratios as high as 3:1
- XFFR has the following approvals:
  - ABS (American Bureau of Shipping)
  - Lloyd's (Lloyd's Register of Shipping)
- RoHS compliant



#### **Applications**

XFFR halogen-free tubing can be used for rejacketing and repairing halogen-free cables in any enclosed area where a flame-retardant, halogen-free environment is required. These environments include tunnels, buildings, mass transit vehicles, and ships. When installed with S-1305 tape, the tubing can also be used in applications requiring water sealing and protection from abrasion and corrosion.

#### Installation

Minimum shrink temperature: 70°C [158°F] Minimum full recovery temperature: 121°C [250°F]

#### **Operating Temperature Range**

-55°C to 110°C [-67°F to 230°F]

Series	Military	Industry	Raychem	
XFFR	MIL-C-24640 MIL-C-24643	NES 713 NES 711	RW-2016	





### XFFR (Continued)

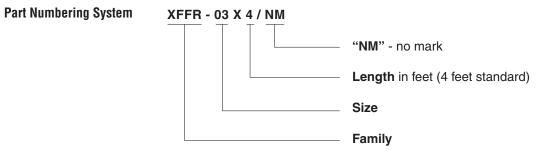
#### **Product Dimensions**

	Inside I	Diameter	Recovered Wall Thickness*
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	After Heating (Nominal)
XFFR-03	7.62 [0.300]	2.54 [0.100]	2.03 [0.080]
XFFR-04	10.16 [0.400]	3.81 [0.150]	2.03 [0.080]
XFFR-07	19.05 [0.750]	5.59 [0.220]	2.03 [0.080]
XFFR-11	27.94 [1.100]	9.52 [0.375]	2.67 [0.105]
XFFR-15	38.10 [1.500]	12.70 [0.500]	3.05 [0.120]
XFFR-20	50.80 [2.000]	19.05 [0.750]	3.05 [0.120]
XFFR-30	76.20 [3.000]	31.75 [1.250]	4.06 [0.160]

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

#### **Ordering Information**

Color	Standard	Black (-0)
Size selection	Always order the la	argest 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.



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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents. Dimensions are shown for reference purposes only. Specifications subject to change. USA: 1-800-522-6752 Canada: 1-905-475-6222 Mexico: 52-55-1106-0800 L. & S. America: 54-11-4733-2200



### ZH2

Flexible, Highly Flame-Retardant, Low Recovery Temperature, ZEROHAL Polyolefin Tubing

#### **Product Facts**

- 2:1 shrink ratio
- Highly flame-retardant; UL/CSA VW-1 flammability rating
- Environmentally friendly tubing essentially free of halogens
- Emits minimal amounts of toxic or acid gasses when burned
- RoHS compliant



#### Applications

Electrical insulation and strain relief of connections and terminations in computers, appliances, and other commercial electronic products. Jacketing and bundling of light duty harnesses in rail and mass transit vehicles, buildings, and other enclosed areas where emission of toxic gasses from burning materials containing halogens is very undesirable.

#### Installation

Minimum shrink temperature: 70°C [158°F] Minimum full recovery temperature: 90°C [194°F]

#### **Operating Temperature Range**

-30°C to 125°C [-22°F to 257°F]

Series	UL <b>N</b>	CSA 🚯	Raychem	
ZH2	E35586 VW-1 600 V, 125°C	LR31929 VW-1 600 V, 125°C	RW-3036	





### ZH2 (Continued)

#### **Product Dimensions**

	Inside Diam	eter	Wall Thi	ickness
Size	Expanded as Supplied	Maximum Recovered After Heating	Expanded as Supplied (Nominal)	Recovered* After Heating (Minimum)
0.8	1.2 ± 0.2 [0.047 ± 0.008]	0.40 [0.016]	0.20 [0.008]	0.33 [0.013]
1.0	1.5 ± 0.2 [0.059 ± 0.008]	0.50 [0.020]	0.20 [0.008]	0.33 [0.013]
1.5	2.1 ± 0.2 [0.075 ± 0.008]	0.75 [0.030]	0.20 [0.008]	0.34 [0.013]
2.0	2.6 ± 0.2 [0.102 ± 0.008]	1.00 [0.039]	0.25 [0.010]	0.43 [0.017]
2.5	3.1 ± 0.2 [0.122 ± 0.008]	1.25 [0.049]	0.25 [0.010]	0.43 [0.017]
3.0	3.6 ± 0.2 [0.142 ± 0.008]	1.50 [0.059]	0.25 [0.010]	0.43 [0.017]
3.5	4.1 ± 0.3 [0.161 ± 0.012]	1.75 [0.069]	0.25 [0.010]	0.43 [0.017]
4.0	4.6 ± 0.3 [0.181 ± 0.012]	2.00 [0.079]	0.25 [0.010]	0.43 [0.017]
5.0	5.6 ± 0.3 [0.221 ± 0.012]	2.50 [0.098]	0.30 [0.012]	0.56 [0.022]
6.0	6.6 ± 0.3 [0.260 ± 0.012]	3.00 [0.118]	0.30 [0.012]	0.56 [0.022]
7.0	7.6 ± 0.3 [0.299 ± 0.012]	3.50 [0.138]	0.30 [0.012]	0.56 [0.022]
8.0	8.6 ± 0.3 [0.339 ± 0.012]	4.00 [0.158]	0.30 [0.012]	0.56 [0.022]
9.0	9.6 ± 0.3 [0.378 ± 0.012]	4.50 [0.177]	0.30 [0.012]	0.56 [0.022]
10.0	10.4 ± 0.3 [0.409 ± 0.012]	5.00 [0.197]	0.30 [0.012]	0.56 [0.022]
11.0	11.4 ± 0.3 [0.449 ± 0.012]	5.50 [0.217]	0.30 [0.012]	0.56 [0.022]
12.0	12.7 ± 0.3 [0.500 ± 0.012]	6.00 [0.236]	0.30 [0.012]	0.56 [0.022]
13.0	13.5 ± 0.3 [0.532 ± 0.012]	6.50 [0.256]	0.35 [0.014]	0.66 [0.026]
14.0	14.4 ± 0.4 [0.567 ± 0.016]	7.00 [0.276]	0.35 [0.014]	0.68 [0.027]
15.0	15.7 ± 0.4 [0.618 ± 0.016]	7.50 [0.295]	0.35 [0.014]	0.68 [0.027]
16.0	16.9 ± 0.4 [0.665 ± 0.016]	8.00 [0.315]	0.35 [0.014]	0.68 [0.027]
18.0	19.0 ± 0.4 [0.748 ± 0.016]	9.00 [0.354]	0.40 [0.016]	0.76 [0.030]
20.0	21.4 ± 0.4 [0.843 ± 0.016]	10.00 [0.394]	0.40 [0.016]	0.76 [0.030]
22.0	23.2 ± 0.4 [0.913 ± 0.016]	11.00 [0.433]	0.45 [0.018]	0.89 [0.035]
25.0	26.8 ± 0.4 [1.055 ± 0.016]	12.50 [0.452]	0.45 [0.018]	0.89 [0.035]
27.0	28.2 ± 0.5 [1.110 ± 0.020]	12.50 [0.452]	0.45 [0.018]	0.89 [0.035]
28.0	30.0 ± 0.5 [1.181 ± 0.020]	14.00 [0.551]	0.45 [0.018]	0.89 [0.035]
30.0	32.1 ± 0.5 [1.264 ± 0.020]	15.00 [0.591]	0.45 [0.018]	0.89 [0.035]

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

#### **Ordering Information**

Color	Standard	Black (-0)
Size selection	Always order the larg	est size that will shrink snugly over the component to be covered.
Standard packaging	On spools.	
Ordering description	Specify product nam	e, size and color (for example, ZH2-6.0-0).

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are metric equivalents.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets to change.

Dimensions are shown for reference purposes only. Specifications subject



### ZH4

Very-Thin-Wall, Very Flexible, Highly Flame-Retardant, Low Recovery Temperature, ZEROHAL Polyolefin Tubing

#### **Product Facts**

- 2:1 shrink ratio
- Highly flame-retardant; UL/CSA VW-1 flammability rating
- Very thin wall provides space savings and rapid shrinking
- Low shrink temperature further reduces installation time and risk of damage to temperature-sensitive components
- Environmentally friendly tubing essentially free of halogens
- Emits minimal amounts of toxic or acid gasses when burned
- RoHS compliant



#### **Applications**

Electrical insulation and protection of in-line components, disconnect terminals, and splices in computers, appliances, and other commercial electronic products. Typically used where space saving is important. Offers the ability to pack components more closely than is possible with standard tubings. Used for strain relief on high-density connectors. Suitable for use in rail and mass transit vehicles, buildings, and other enclosed areas where emission of toxic gasses from burning materials containing halogens is very undesirable.

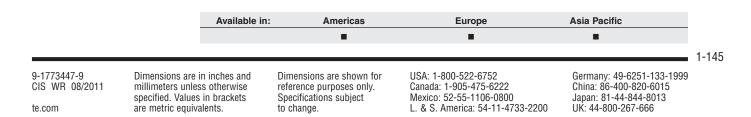
#### Installation

Minimum shrink temperature: 70°C [158°F] Minimum full recovery temperature: 90°C [194°F]

#### **Operating Temperature Range**

-30°C to 125°C [-22°F to 257°F]

Series	UL 🔊	CSA 🚯	Raychem	
ZH4	E85381 VW-1 300 V, 125⁰C	LR31929 VW-1 150 V, 125ºC	RW-3036	





### ZH4 (Continued)

#### **Product Dimensions**

	Inside Diame	Inside Diameter		ickness
Size	Expanded as Supplied	Maximum Recovered After Heating	Expanded as Supplied (Nominal)	Recovered* After Heating (Minimum)
0.6	0.95 ± 0.25 [0.037 ± 0.010]	0.30 [0.012]	0.10 [0.004]	0.25 [0.010]
0.8	1.20 ± 0.25 [0.047 ± 0.010]	0.40 [0.016]	0.10 [0.004]	0.25 [0.010]
1.0	1.40 ± 0.25 [0.055 ± 0.010]	0.50 [0.020]	0.10 [0.004]	0.25 [0.010]
1.5	1.90 ± 0.25 [0.075 ± 0.010]	0.75 [0.030]	0.10 [0.004]	0.25 [0.010]
2.0	2.30 ± 0.25 [0.091 ± 0.010]	1.00 [0.039]	0.10 [0.004]	0.25 [0.010]
2.5	2.80 ± 0.25 [0.110 ± 0.010]	1.25 [0.049]	0.15 [0.006]	0.25 [0.010]
3.0	3.30 ± 0.25 [0.130 ± 0.010]	1.50 [0.059]	0.15 [0.006]	0.25 [0.010]
3.5	3.80 ± 0.25 [0.150 ± 0.010]	1.75 [0.069]	0.15 [0.006]	0.25 [0.010]
4.0	4.40 ± 0.25 [0.173 ± 0.010]	2.00 [0.079]	0.15 [0.006]	0.25 [0.010]
5.0	5.50 ± 0.25 [0.217 ± 0.010]	2.50 [0.098]	0.15 [0.006]	0.25 [0.010]
6.0	6.50 ± 0.40 [0.256 ± 0.016]	3.00 [0.118]	0.15 [0.006]	0.28 [0.011]
7.0	7.50 ± 0.40 [0.295 ± 0.016]	3.50 [0.138]	0.15 [0.006]	0.28 [0.011]
8.0	8.50 ± 0.40 [0.335 ± 0.016]	4.00 [0.158]	0.15 [0.006]	0.28 [0.011]
9.0	9.50 ± 0.40 [0.374 ± 0.016]	4.50 [0.177]	0.15 [0.006]	0.28 [0.011]
10.0	10.50 ± 0.50 [0.413 ± 0.020]	5.00 [0.197]	0.15 [0.006]	0.28 [0.011]

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

#### **Ordering Information**

Color	Standard	Black (-0)
Size selection	Always order the larg	gest size that will shrink snugly over the component to be covered.
Standard packaging	On spools.	
Ordering description	Specify product nam	e, size and color (for example, ZH4-2.0-0).

9-1773447-9 CIS WR 08/2011 Dimensions are shown for reference purposes only. Specifications subject to change.

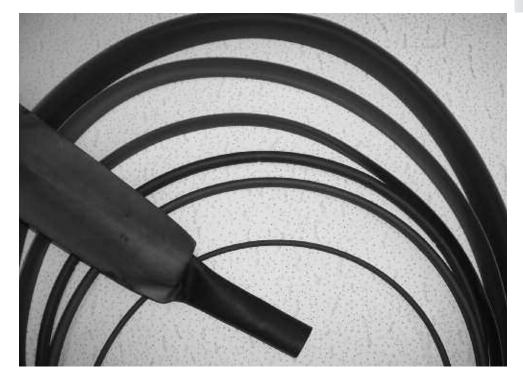


### ZH-100

Flexible, Thin-Wall, Low-Fire-Hazard Tubing

### **Product Facts**

- 2:1 shrink ratio
- Low smoke emissions
- Flexible, flame-retardant
- No added halogens
- Low evolution of acid gases
- RoHS compliant



#### **Applications**

ZH-100 is a flexible, thin-wall, heat-shrinkable tubing designed for lowfire-hazard applications. ZH-100 contains no added halogens, and exhibits excellent fire safety characteristics combined with low evolution of acid gases, while retaining good mechanical and fluid resistance properties.

#### Installation

Minimum shrink temperature: 80°C [176°F] Minimum full recovery temperature: 120°C [248°F]

#### **Operating Temperature Range**

-30°C to 105°C [-22°F to 221°F]

Specifications/Approva	ls s	Seri

Series	Industry	Raychem
ZH-100	BR 1326A	RW-2031





### ZH-100 (Continued)

#### **Product Dimensions**

	Inside Diameter		Recovered Wall Thickness*
Size	Minimum Expanded as Supplied	Maximum Recovered After Heating	After Heating
1/8	3.2 [0.125]	1.6 [0.062]	0.50 ± 0.10 [0.019 ± 0.004]
3/16	4.8 [0.187]	2.4 [0.093]	0.50 ± .0.10 [0.019 ± 0.004]
1/4	6.4 [0.250]	3.2 [0.125]	0.65 ± 0.15 [0.026 ± 0.006]
3/8	9.5 [0.375]	4.8 [0.187]	0.65 ± 0.15 [0.026 ± 0.006]
1/2	12.7 [0.500]	6.4 [0.250]	0.65 ± 0.15 [0.026 ± 0.006]
3/4	19.0 [0.750]	9.5 [0.375]	0.75 ± 0.15 [0.030 ± 0.006]
1	25.4 [1.000]	12.7 [0.500]	0.90 ± 0.15 [0.035 ± 0.006]
1 1/2	38.0 [1.500]	19.0 [0.750]	1.00 ± 0.20 [0.039 ± 0.008]
2	51.0 [2.000]	25.4 [1.000]	1.15 ± 0.25 [0.045 ± 0.010]

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

### **Ordering Information**

Color	Standard	Black (-0)
Size selection		est size that will shrink snugly over the component to be covered. re available upon request.
Standard packaging	On spools.	
Ordering description	Specify product name	e, size and color (for example, ZH-100 1/8-0).

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te.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents. Dimensions are shown for reference purposes only. Specifications subject to change. USA: 1-800-522-6752 Canada: 1-905-475-6222 Mexico: 52-55-1106-0800 L. & S. America: 54-11-4733-2200

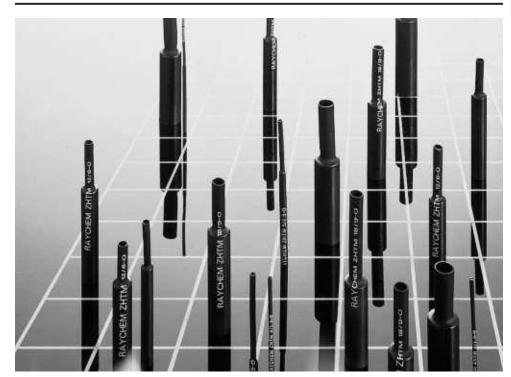


### ZHTM

#### Heat-Shrinkable, Flexible Tubing with Low Toxicity for **Fire Safety Applications**

**Product Facts** 

- 2:1 shrink ratio
- Low smoke emission
- System 100 tubing
- RoHS compliant



#### **Applications**

A flexible, thick-wall, heatshrinkable tubing to be used in conjunction with -100 molded parts and Zerohal cable to form Raychem System 100. This material exhibits excellent fire safety characteristics combined with low smoke emission and low evolution of acid gases while retaining good mechanical and fluid-resistance

properties. Used for insulation and protection of cables, harnesses, and electrical and electronic components in enclosed spaces, such as in marine applications, mass transit systems, and offshore installations, to reduce toxicity risks, or where equipment would be irreparably damaged by corrosive products of combustion.

#### Installation

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

#### **Operating Temperature Range**

-30°C to 105°C [-22°F to 221°F]

Series	Military	Agency	Industry	Raychem
ZHTM	Def. Stan. 59-97 Issue 3 Type 8	BS 4G-198 Part 3 Type 15 VG 95343 Part 5 Type L VDE 0341/Pt 9005	BR 1326A	RW-2058





### ZHTM (Continued)

#### **Product Dimensions**

Size	Inside Diameter		Recovered Wall Thickness
	Minimum Expanded as Supplied	Maximum Recovered After Heating	After Heating
3/1.5	3.0 [0.118]	1.5 [0.059]	0.70 ± 0.10 [0.028 ± 0.004]
5/2.5	5.0 [0.197]	2.5 [0.098]	0.75 ± 0.12 [0.030 ± 0.005]
8/4	8.0 [0.315]	4.0 [0.157]	0.80 ± 0.15 [0.031 ± 0.006]
12/6	12.0 [0.472]	6.0 [0.236]	0.90 ± 0.15 [0.035 ± 0.006]
18/9	18.0 [0.709]	9.0 [0.354]	1.00 ± 0.18 [0.039 ± 0.007]
24/12	24.0 [0.945]	12.0 [0.472]	1.10 ± 0.20 [0.043 ± 0.008]
40/20	40.0 [1.575]	20.0 [0.789]	1.30 ± 0.23 [0.051 ± 0.009]
50/30	50.0 [1.969]	30.0 [1.181]	1.50 ± 0.28 [0.059 ± 0.011]

\*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	On spools.		
Ordering description**	Specify product name, size and color (for example, ZHTM 8/4-0).		

\*Europe only. For supply to Def Stan and BS add -DS or -BS to ordering description.

1-150

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are metric equivalents.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets

Dimensions are shown for reference purposes only. Specifications subject to change.

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