HEAT SHRINKABLE TUBING
FOR EUROPE

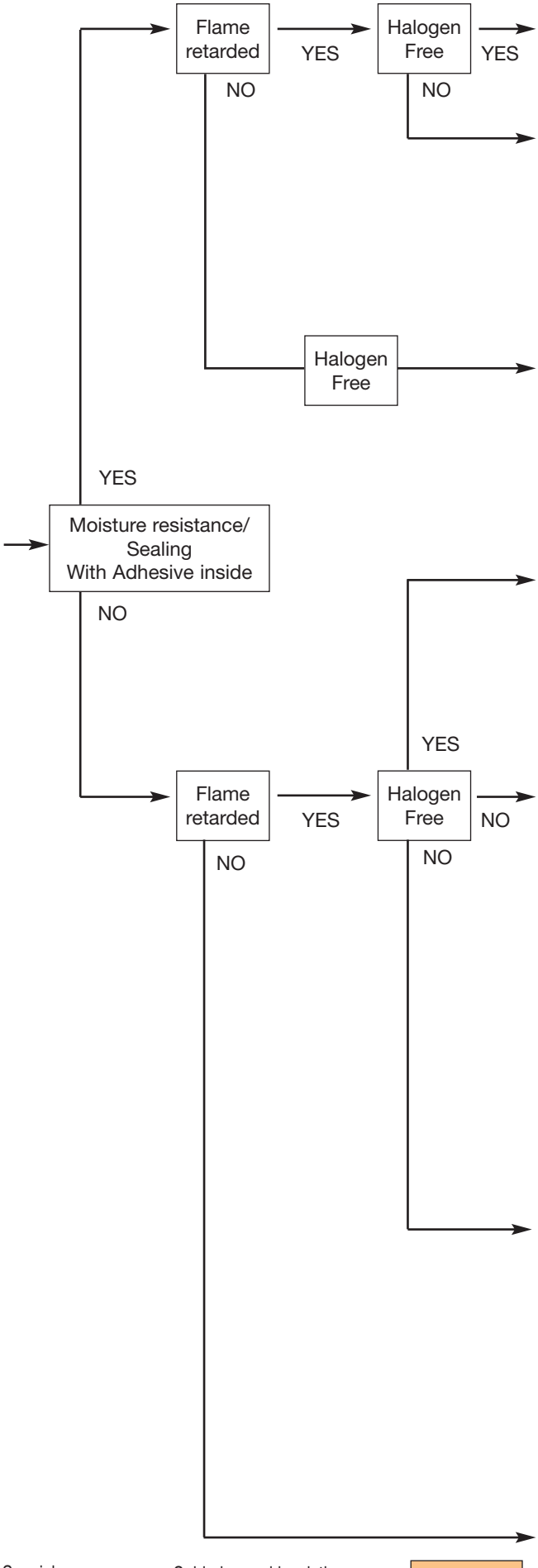
SUMITOMO ELECTRIC
Schrumpf-Produkte GmbH

Production and Distribution Center, Norderstedt

Sumitomo Electric Fine Polymer, Inc.–Japan

In 1985 SUMITOMO ELECTRIC INDUSTRIES Ltd. established a German branch in Hamburg to bring heatshrink technology to Europe. Within a few years it was decided to change this business from a trading house to a full production and distribution facility.
A purpose-built premises was established in nearby Norderstedt, a suburb of Hamburg. This area is noted for excellent access and communications. The new factory was opened in December 1989. The company is now called SUMITOMO ELECTRIC Schrumpf-Produkte GmbH (SESP) and is proud to have achieved the following in the period leading up to the new millennium:

- Succeeded in changing from a trading house to a full-scale manufacturer in its own right. We market our products and serve our customers all over Europe. All necessary production processes and operations (extrusion, irradiation, expansion and rewinding/cutting) are carried out on site.
- Opened a second production facility at nearby Wedel, on the river Elbe. This second plant includes additional warehousing.
- Increased the levels of local production and product types, to distinguish it from Japanese production.
- The SESP Quality Management System is certified in accordance with ISO 9001:2000.
  This assists to maintain and improve the product quality and customer service together with all the associated aspects



DUAL-WALL Polyolefin

Max. Operation Temperature				
105°			3:1	W3NH
110°	Commercial		3:1	W5B11 W5B11(4X) W3B2 W3B2(4X)
	Commercial		4:1	
125°	UL/CSA/SAE-AMS		3:1	
	UL/CSA		4:1	
130°	Commercial		3:1	SA2
105°	Commercial		3:1	W5C W5C(4X)
	Commercial		4:1	
110°	Semi-rigid			W5DL
	Flexible, Medium Wall			SCM2

SINGLE-WALL Polyolefin

Max. Operation Temperature				
105°	Normal wall thickness		2:1	NH NH(TW) NH(3X)
	Thin wall thickness		2:1	
	Nomal wall thickness		3:1	
125°	Commercial		2:1	B11 B11(3X) F2(Z) F4(Z)
	Commercial		3:1	
	UL/CSA		2:1	
	Thin wall UL/CSA		2:1	
135°	UL/CSA/SAE-AMS		2:1	B2, B2(Y/G) B2(3X) B2(4X)
	UL/CSA		3:1	
	UL		4:1	
150°	SAE-AMS		2:1	BR10

Special (Fluoropolymer, Elastomer)

Max. Operation Temperature				
120°	SAE-AMS	Elastomer		R10
175°	UL/CSA/SAE-AM	Cut		K K2
	UL/SAE-AMS	Spool		
200°	SAE-AMS/UL	Fluoroplastic		KH200 KH200(TW)
	SAE-AMS	Fluoroplastic	Thin wall	
	SAE-AMS	Fluoro Elastomer		FE3
230°	SAE-AMS	Fluoroplastic		KH230 KH230(TW)
	SAE-AMS	Fluoroplastic	Thin wall	
250°	Silicone Rubber			SR

SINGLE-WALL Polyolefin

Max. Op. Temp.				
105°	Commercial			A
135°	SAE-AMS Clear		2:1	A2 A2(3X) B55
	SAE-AMS Clear		3:1	
	Thin wall Automotive			

Sumitube®

SUMITOMO ELECTRIC'S diverse range of SUMITUBE® heat shrinkable tubing are manufactured in more than ten colours. Their range of sizes offer a vast field of applications. The base for most of our SUMITUBE® thin wall tubing is irradiated cross-linked polyolefin. SUMITUBE® has been approved for worldwide standards and applications.

Products		Characteristics	Min. Shrink Temp. (°C)
Single Wall Polyolefin Tubings	B11	Flexible, commercial grade, flame retardant	90
	B11(3X)	Flexible, commercial grade, flame retardant, high-srink ratio	90
	B2	Very flexible, high grade, highly flame retardant	90
	B2(3X), B2(4X)	Very flexible, high grade, highly flame retardant, high-srink ratio	90
	NH, NH(TW)	Flexible, halogen free flame retardant, low smoke emission	115
	NH(3X)	Flexible, halogen free flame retardant, low smoke emission, high-srink ratio	115
	BR10	Very flexible, high temp. (150C) grade, highly flame retardant, PBB & PBBO free	100
	B55	Very flexible, light weight vor Automotive application,Halogen free	90
	F2(Z)	Very flexible, highly flame retardant, PBB & PBBO free, marking on tubing	90
	F4(Z)	Very flexible, highly flame retardant, PBB & PBBO free, marking on tubing ultra thin wall	90
	A	Flexible, commercial grade, halogen free	115
	A2, A2(3X)	Flexible, clear, clear purpose, halogen free	110
Dual Wall Polyolefin Tubings	W5B11,W5B11(4X)	Flexible, commercial grade, flame retardant, inner liner of hot melt adhesive	110
	W3B2,W3B2(4X)	Flexible, flame retardant, inner liner of hot melt adhesive	110
	W3NH	Flexible, halogen free flame retardant, low smoke emission, inner liner of hot melt adhesive	115
	SA2	Semi rigid, flame retardant, thick inner liner of hot melt adhesive	110
	W5C, W5C(4X)	Flexible, clear, inner liner of hot melt adhesive, Halogen free	110
	W5DL	Semi rigid, meltable polyolefin inner liner, Halogen free	150
Fluoro-plastics	K	Semi rigid, highly flame retardant, Polyvinylidenfluoride (Kynar)	170
	K2	Semi rigid, highly flame retardant, spool, Polyvinylidenefluoride (Kynar)	160
	KH200, KH200(TW)	Very flexible, clear, highly flame retardant, Fluorpolymer	130
	KH230, KH230(TW)	Very flexible, colour, highly flame retardant, Fluorpolymer	130
Elastomers	R10	Flexible, highly flame retardant, Elastomer	150
	FE3	Very flexible, highly flame retardant, Fluorpolymer	150
Specials	SR	Flame retardant, silicon rubber HS Tubing	140
	Sumiseal	Crimp sealing sleeve, Halogen free	150
	STS HC, LC	Solder Termination Sleeve	185, 145
	SCM2	Flexible, medium wall, inner liner of hot melt adhesive, Halogen free	90
	SCR100	Stress control sleeve for medium voltage application	150

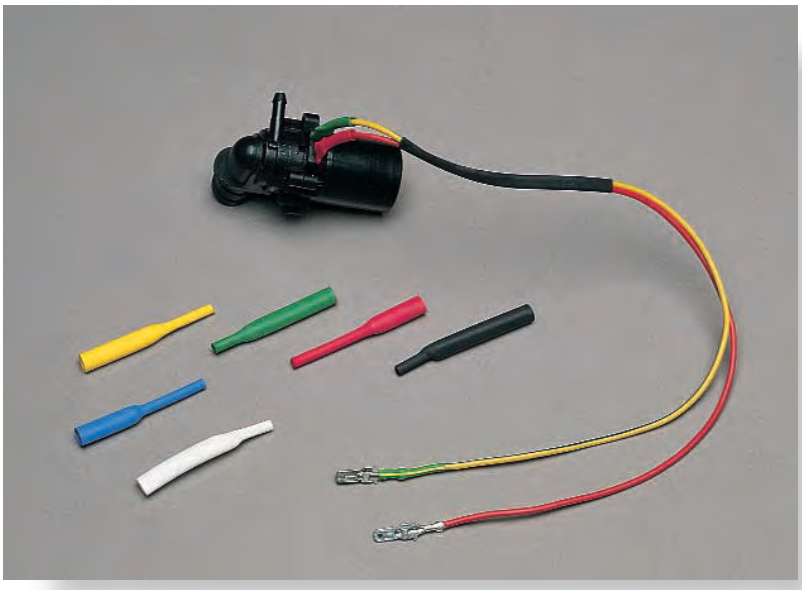
Product Overview

Operating Temp. (°C)	Size Rang (mm)	Shrink Ratio	Main Specifications	Page
-55 ~ 125	1.2 ~ 101.6	2:1		5
-55 ~ 125	3 ~ 24	3:1		6
-55 ~ 135	1.2 ~ 101.6	2:1	UL224 125°C 600V VW-1, CSA C22.2 No. 198.1 125°C 600V VW-1, SAE-AMS-DTL-23053/5 Class1	7
-55 ~ 135	1.5 ~ 101.6	3:1, 4:1	UL224 125°C 600V VW-1, CSA C22.2 No. 198.1 125°C 600V VW-1(B2(3X only)	8
-40 ~ 105	1.2 ~ 101.6	2:1	DEF-STAN 59.97 Type 8(NH only) London underground Spec. E1042-A6-March 2002	9
-40 ~ 105	1.5 ~ 40	3:1	London underground Spec. E1042-A6-March 2002	10
-55 ~ 150	3.2 ~ 25.4	2:1	SAE-AMS-DTL-23053/5 Class 1	11
-70 ~ 135	1.2 ~ 76.2	2:1		12
-55 ~ 125	1.2 ~ 50.8	2:1	UL224 125°C 600V VW-1, CSA C22.2 No. 198.1 125°C 600V VW-1	13
-55 ~ 125	1.2 ~ 25.4	2:1	UL224 125°C 300V VW-1, CSA C22.2 No. 198.1 125°C 150V VW-1	14
-55 ~ 105	1.2 ~ 76.2	2:1		15
-55 ~ 135	1.2 ~ 101.6	2:1, 3:1	SAE-AMS-DTL-23053/5 Class 2, Def stan 59-97 Type 2B (A2 only)	16
-55 ~ 110	3 ~ 40	3:1, 4:1		17
-55 ~ 110	3 ~ 52	3:1, 4:1	UL224 125°C 600V VW-1, CSA C22.2 No. 198.1 125°C 600V (Only W3B2), SAE-DTL-23053/4 Class 3	18
-55 ~ 105	3.2 ~ 25.4	3:1	London underground Spec. E1042-A6-March 2002	19
-40 ~ 130	5.8 ~ 17.8	4:1		20
-55 ~ 105	3 ~ 40	3:1, 4:1		21
-55 ~ 110	3.2 ~ 25.4	3:1	SAE-AMS-DTL-23053/4 Class 1	22
-55 ~ 175	1.2 ~ 50.8	2:1	UL224 150°C 600V VW-1, CSA C22.2No.198.1 150°C 600V VW-1, SAE-AMS-DTL-23053/8, Def-Stan 59-92 Type3, VG95343/5 F-1	23
-55 ~ 175	1.2 ~ 50.8	2:1	UL224 VW-1, SEA-AMS-DTL-23053/18 class 3	24
-55 ~ 200	3.2 ~ 25.4	2:1	SAE-AMS-DTL-23053/13, UL224 VW-1(KH200), SAE-AMS-DTL-23053/18 class 3 (KH200(TW)),	25
-55 ~ 230	3.2 ~ 25.4	2:1	SAE-AMS-DTL-23053/13(KH230), SAE-AMS-DTL-23053/18 class 3 (KH230(TW))	26
-75 ~ 120	3.2 ~ 50.8	2:1	UL224 105°C 600V VW-1,SAE-AMS-DTL-23053/1 Class2	27
-55 ~ 200	3.2 ~ 50.8	2:1	SEA-AMS-DTL-23053/13, MIL-R-46848 Type III class 1	28
-60 ~ 250	2.9 ~ 70	2:1		29
-55 ~ 105	4.2 ~ 6.4	3:1		30
-54 ~ 150, 105	2.5 ~ 13.8	2:1	NAS 1745, NAS 1747, SAE-AS83519	31
-55 ~ 110	10.2 ~ 125	3:1		32
~ 90	16 ~ 95	2:1		33

Sumitube® B11

Commercial grade flame retardant flexible polyolefin tubing. Versatile, approved for many industrial applications.

SINGLE WALL POLYOLEFIN



Characteristics

- Operating Temperature: -55°C–125°C
- Min. Shrink Temperature: 90°C
  Shrinking start at 60°C
- Shrink Ratio: 2:1
- Dielectric Strength: 28kV/mm
- Standard Colour(s):
  Black, Red, Yellow, Green, Blue, White

Application Fields

General insulation, cable bundling, mechanical protection in electric and automotive industries. Colour coding of cable harnesses.

Remarks

Other colours and 1.2m cut length available upon request.

Table of Standard Sizes and Packaging

B11 Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered (nom.)	Quantity per Spool / Box (m)
3/64	1.20	0.60	0.41	300/900
1/16	1.60	0.80	0.43	300/900
3/32	2.40	1.20	0.51	150/900
1/8	3.20	1.60	0.51	150/900[1]
3/16	4.80	2.40	0.51	60/600[2]
1/4	6.4	3.20	0.64	60/300[3]
3/8	9.5	4.80	0.64	60/300
1/2	12.7	6.4	0.64	60/300
3/4	19.1	9.5	0.76	60/180
1	25.4	12.7	0.89	60/180
1-1/4	31.8	15.9	1.01	60/180
1-1/2	38.1	19.1	1.02	60/180
2	50.8	25.4	1.14	60/120
3	76.2	38.1	1.27	60/60
4	101.6	50.8	1.40	60/60

Packaging of black colour:
1 = 300/900
2 = 150/600
3 = 100/300

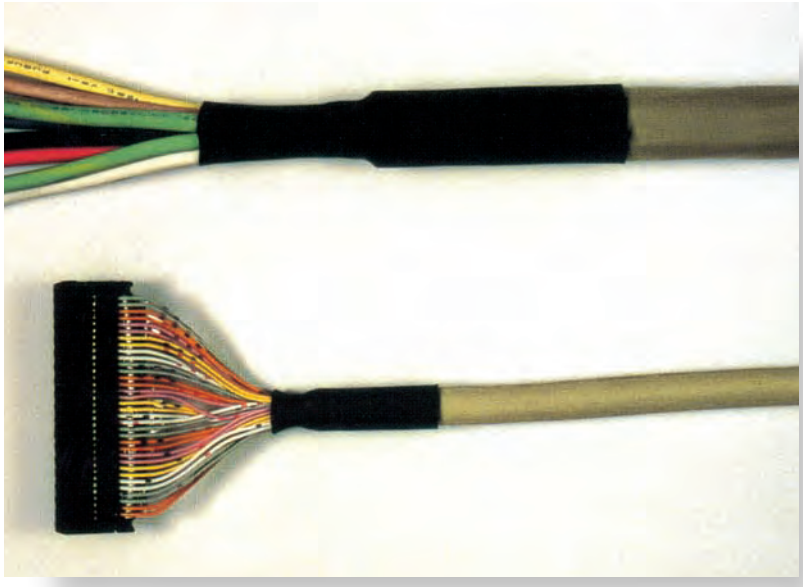
Sumitube® B11(3X)

Commercial grade flame retardant flexible polyolefin tubing with 3:1 shrink ratio

Characteristics

- Operating Temperature: -55°C–125°C
- Min. Shrink Temperature: 90°C
  Shrinking start at 60°C
- Shrink Ratio: 3:1
- Dielectric Strength: 25 kV/mm
- Standard Colour(s): Black

SINGLE WALL POLYOLEFIN



Application Fields

General insulation, cable bundling, mechanical protection in electric and automotive industries. Where high expansion ratio's are needed.

Table of Standard Sizes and Packaging

B11 Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered (nom.)	Quantity per Spool / Box (m)
3/1	3.00	1.00	0.60	150/900
6/2	6.0	2.00	0.70	60/300
9/3	9.0	3.00	0.80	60/300
12/4	12.0	4.00	0.85	60/300
18/6	18.0	6.0	1.00	60/180
24/8	24.0	8.0	1.20	60/180

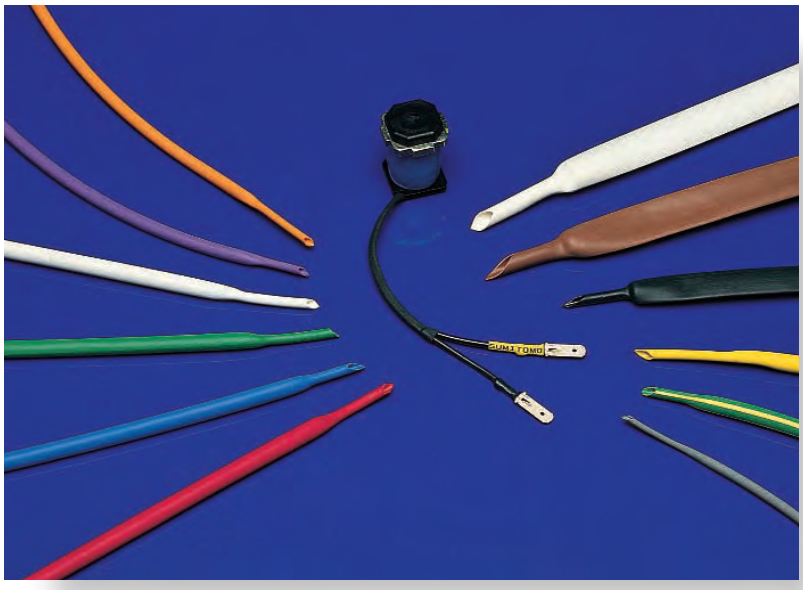
Sumitube® B2

Very flexible highly flame retardant high grade polyolefin tubing. SAE-AMS UL and CSA recognised. Meets the requirements of a wide range of industrial and high tech standards. Very versatile through excellent balance of chemical, electrical and mechanical properties. Yellow-green striped version available.

Characteristics

- Operating Temperature: -55°C–135°C
- Min, Shrink Temperature: 90°C
  Shrinking start at 60°C
- Shrink Ratio: 2:1
- Dielectric Strength: 37 kV/mm
- Standard Colour(s):
  Black, Red, Yellow, Blue, White, Yellow-green stripyed (B2(Y/G))
- Specifications:
  SAE-AMS-DTL-23053/5 class 1
  UL224 125°C 600V VW-1, CSA C22.2 No. 198.1 125°C 600V VW-1

SINGLE WALL POLYOLEFIN



Application Fields

Wire and harness marking sleeves, colour coding, insulation, covering and jacketing of quality demanding harness systems in electrical, automotive and aeronautic industries.

Remarks

Non-standard colours and cut length of 1.2m available upon request.

Table of Standard Sizes and Packaging

B2 Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered	Quantity per Spool / Box (m)
3/64	1.20	0.60	0.41 +/-0.07	300/900
1/16	1.60	0.80	0.43 +/-0.07	300/900
3/32	2.40	1.20	0.51 +/-0.07	150/900
1/8	3.20	1.60	0.51 +/-0.07	150/900
3/16	4.80	2.40	0.51 +/-0.07	60/600
1/4	6.4	3.20	0.64 +/-0.07	60/300
3/8	9.5	4.80	0.64 +/-0.07	60/300
1/2	12.7	6.4	0.64 +/-0.07	60/300
3/4	19.1	9.5	0.76 +/-0.07	60/180
1	25.4	12.7	0.89 +/-0.12	60/180
1-1/2	38.1	19.1	1.02 +/-0.15	60/180
2	50.8	25.4	1.14 +/-0.17	60/120
3	76.2	38.1	1.27 +/-0.20	60/60
4	101.6	50.8	1.40 +/-0.22	30/30

Sumitube® B2(3X), B2(4X)

Very flexible highly flame retardant high grade polyolefin tubing. UL and CSA recognised. High shrink ratios cover large bore differences, such as harness with pre-installed connections and pre-fabricated cables.

Characteristics

- Operating Temperature: -55°C–135°C
- Min. Shrink Temperature: 90°C
  Shrinking start at 60°C
- Shrink Ratio: 3:1, 4:1
- Dielectric Strength: 37 kV/mm
- Standard Colour(s):
  Black, Red, Yellow, Blue, White, Yellow-green striped (B2(Y/G, 3X)); Black (B2(4X))
- Specifications: UL224 125°C 600V VW-1, CSA C22.2 No. 198.1 125°C 600V OFT (B2 (3X) only)

SINGLE WALL POLYOLEFIN

Application Fields

Repair of cables with installed connectors, electrical insulation especially to cover large diameter gaps, bundling and harnessing. Yellow-green striped version where identification of the ground lead is intended.

Remarks

Non-standard colours are available upon request.

Table of Standard Sizes and Packaging

B2(3X) Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered (nom.)	Quantity per Spool / Box (m)
1.5/0.5	1.50	0.50	0.50	300/900
3/1	3.00	1.00	0.60	150/900
4.8/1.6	4.80	1.60	0.65	100/500
6/2	6.0	2.00	0.70	60/300
9/3	9.0	3.00	0.80	60/300
12/4	12.0	4.00	0.85	60/300
18/6	18.0	6.0	1.00	60/180
24/8	24.0	8.0	1.20	60/180
40/13	40.0	13.0	1.25	60/180
B2(4X) (Inch)				**Bag / Box (m)**
1	25.4	6.6	1.52	18/90
1-1/2	38.1	9.5	1.52	12/60
2	50.8	12.7	1.52	12/60
3	76.2	19.1	1.52	4.5/27*
4	101.6	25.4	1.52	4.5/27*

Remarks

1” to 2”:
Cut length 1.2 m in bags/boxes,
*3” and 4” in cut length of 0.9 m in bags/boxes

Sumitube® NH, NH(TW)

Halogen free flame retardant flexible polyolefin tubing. Low smoke index to meet strict fire security standards in electrical insulation and protection in public areas. Thin wall version.

Characteristics

- Operating Temperature: -40°C–105°C
- Min.Shrink Temperature: 115°C
  Shrinking start at 60°C
- Shrink Ratio: 2:1
- Dielectric Strength: 30 kV/mm
- Standard Colour(s):
  Black, Red, Yellow, Green, Blue, White
- Specifications:
  DEF-STAN 59-97 Type 8

SINGLE WALL POLYOLEFIN

Application Fields

In all smoke sensitive areas such as public buildings, public transport, power plants, hospitals, airports and submarines. London underground Spec. E1042-A6-March 2002

Remarks
Non-standard colours are available upon request.

Table of Standard Sizes and Packaging

NH Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered (nom.)	Quantity per Spool / Box (m)
1/8	3.20	1.60	0.70+/-0.10	150/600
3/16	4.80	2.40	0.85+/-0.15	60/300
1/4	6.4	3.20	0.90+/-0.15	60/300
3/8	9.5	4.80	1.00+/-0.15	30/150
1/2	12.7	6.4	1.20+/-0.18	30/150
3/4	19.1	9.5	1.40+/-0.25	30/90
1	25.4	12.7	1.80+/-0.30	30/90
NH(TW)				
1/8	3.20	1.60	0.51	150/600
3/16	4.80	2.40	0.51	60/300
1/4	6.4	3.20	0.64	60/300
3/8	9.5	4.80	0.64	60/300
1/2	12.7	6.4	0.64	30/300
3/4	19.1	9.5	0.76	60/180
1	25.4	12.7	0.89	60/180
1-1/2	38.1	19.1	1.02	60/180
2	50.8	25.4	1.14	60/120
3	76.2	38.1	1.27	60/60
4	101.6	50.8	1.40	30/30

Remarks
Non-standard colours are available upon request.

Sumitube® NH(3X)

Halogen free flame retardant flexible polyolefin tubing. Low smoke index to meet strict fire security standards in electrical insulation and protection in public areas. Thin wall version. 3:1 shrink ratio version.

Characteristics

- Operating Temperature: -40°C–105°C
- Min.Shrink Temperature: 115°C
  Shrinking start at 60°C
- Shrink Ratio: 3:1
- Dielectric Strength: 30 kV/mm
- Standard Colour(s): Black

SINGLE WALL POLYOLEFIN

Application Fields

In all smoke sensitive areas such as public buildings, public transport, power plants, hospitals, airports and submarines. Especially for easy installation to parts with large deminsional differences.
London underground spec. E1042-A6-March 2002

Remarks

Non-standard colours are available upon request.

Table of Standard Sizes and Packaging

NH(3X) Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Inside Diameter (mm) Recovered (max.)	Wall Thickness (mm) Recovered (nom.)	Quantity per Bag / Box (m)
1.5/0.5	1.50	0.50	0.50	60/600
3/1	3.00	1.00	0.60	60/600
6/2	6.00	2.00	0.70	60/300
9/3	9.0	3.00	0.80	60/300
12/4	12.0	4.00	0.85	30/120
18/6	18.0	6.00	1.00	30/60
24/8	24.0	8.0	1.20	12/60
40/13	40.0	13.0	1.25	12/60

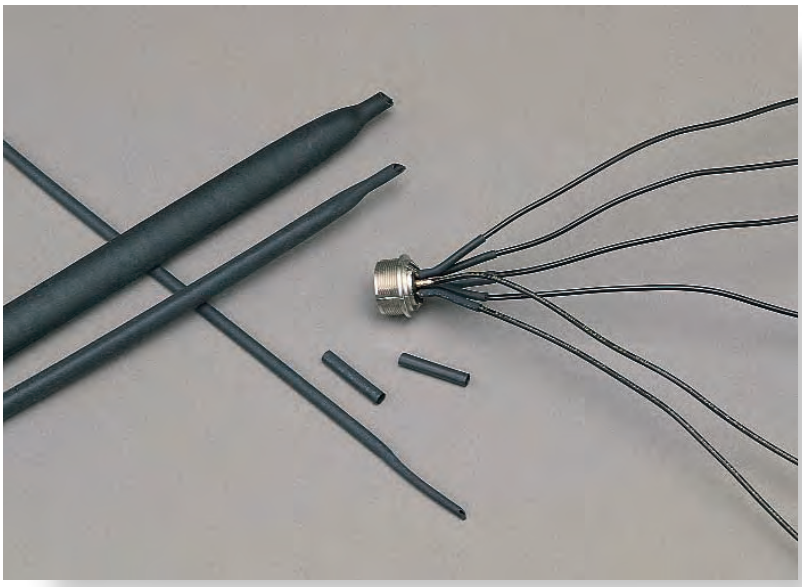
Sumitube® BR10

150°C operating temperatupe is the top rating for polyolefin heat shrinkable tubing. The increasing environmental demands sre met by not containing PBB's and PBBO's

Characteristics

- Operating Temperature: -55°C–150°C
- Min.Shrink Temperature: 100°C
  Shrinking start at 70°C
- Shrink Ratio: 2:1
- Dielectric Strength: 33 kV/mm
- Standard Colour(s): Black
- Specifications:
  SAE-AMS-DTL-23053/5C Class1

SINGLE WALL POLYOLEFIN



Application Fields

For the use in all application where 150°C operating temperature is needed end environmental protection is required. The low shrink temperature offers economic advantages during instalation.

Table of Standard Sizes and Packaging

BR10 Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered	Quantity per Spool / Box (m)
1/8	3.20	1.60	0.51 +/-0.07	150/900
3/16	4.80	2.40	0.51 +/-0.07	60/600
1/4	6.4	3.20	0.64 +/-0.07	60/300
3/8	9.5	4.80	0.64 +/-0.07	60/300
1/2	12.7	6.4	0.64 +/-0.07	60/300
3/4	19.1	9.5	0.76 +/-0.07	60/180
1	25.4	12.7	0.89 +/-0.12	60/180

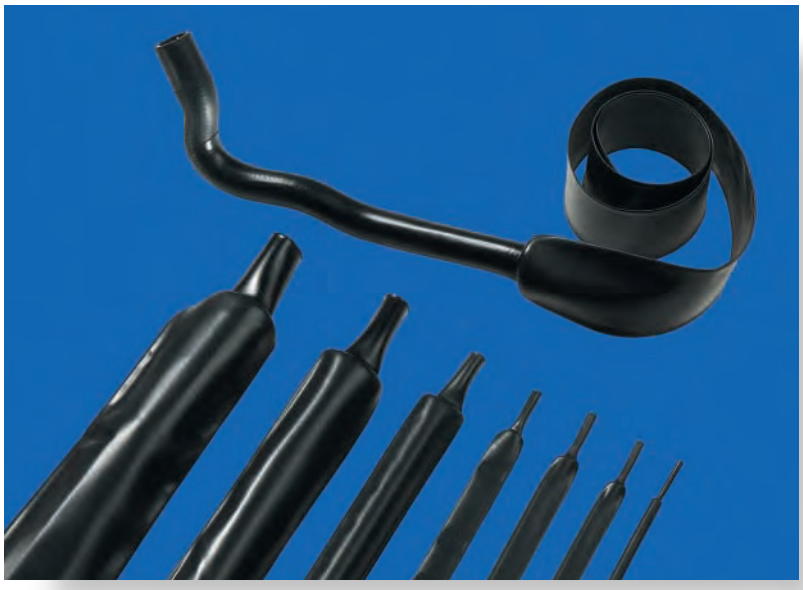
Sumitube® B55

Very flexible light weight polyolefin tubing. Flame retardant to automotive standard and halogen free. Specially designed to meet the requirements of the automotive industry. Nevertheless very versatile.

Characteristics

- Operating Temperature: -70°C–135°C
- Min. Shrink Temperature: 90°C
  Shrinking start at 60°C
- Shrink Ratio: 2:1
- Dielectric Strength: 22 kV/mm
- Standard Colour(s): Black

SINGLE WALL POLYOLEFIN



Application Fields

Electrical insulation of cable harnessing and other components. Protection of pipes in automobiles. For all applications where a light weight halogen free tubing is required. The light weight supports weight reducing efforts in today's automobile industries.

Table of Standard Sizes and Packaging

B55 Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered	Quantity per Spool / Box (m)
1.2	1.20	0.60	0.31 +/-0.07	500/2500
1.6	1.60	0.80	0.33 +/-0.07	500/2000
2.4	2.40	1.20	0.36 +/-0.07	500/2000
3.2	3.20	1.60	0.39 +/-0.07	300/1500
4.8	4.80	2.40	0.42 +/-0.07	150/750
6.4	6.4	3.20	0.45 +/-0.07	100/500
9.5	9.5	4.80	0.48 +/-0.07	100/500
12.7	12.7	6.4	0.52 +/-0.07	100/500
19.1	19.1	9.5	0.58 +/-0.07	100/500
25.4	25.4	12.7	0.67 +/-0.12	100/500
38.1	38.1	19.1	0.76 +/-0.15	100/300
50.8	50.8	25.4	0.85 +/-0.17	100/200
76.2	76.2	38.1	0.95 +/-0.20	80/80

Sumitube® F2(Z)

Very flexible highly flame retardant polyolefin tubing. UL and CSA recognised and marked. Low shrink temperature. Free of PBB's and PBBO's

Characteristics

- Operating Temperature: -55°C–125°C
- Min. Shrink Temperature: 90°C
  Shrinking start at 60°C
- Shrink Ratio: 2:1
- Dielectric Strength: 40 kV/mm
- Standard Colour(s): Black
- Specifications:
  UL224 125°C 600V VW-1, CSA C22.2 No. 198.1 125°C 600V
- Marking:
  125°C VW-1 SUMITOMO-K
  SUMITUBE F2(Z) CAT 940
  CSA 125°C VW-1 -F- Made in SFP
  125°C VW-1 SUMITOMO-G
  SUMITUBE F2(Z) CAT 940
  CSA 125°C VW-1 -F- Made in SESP

SINGLE WALL POLYOLEFIN

Application Fields

All general purpose applications in electronic and electromechanical industries. Light harnesses, bundling, colour coding, insulation of soldered or crimped connectors in electronic equipment.

Remarks

Non-standard colours and 1.2m cut length available upon request.

Table of Standard Sizes and Packaging

F2(Z) Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered (min.)	Quantity per Spool / Box (m)
3/64	1.20	0.60	0.33	300/900
1/16	1.60	0.80	0.36	300/900
3/32	2.40	1.20	0.44	150/900
1/8	3.20	1.60	0.44	150/900
3/16	4.80	2.40	0.44	60/600
1/4	6.4	3.20	0.56	60/300
3/8	9.5	4.80	0.56	60/300
1/2	12.7	6.4	0.56	60/300
3/4	19.1	9.5	0.69	60/180
1	25.4	12.7	0.77	60/180
1-1/2	38.1	19.1	0.87	60/180
2	50.8	25.4	0.97	60/120

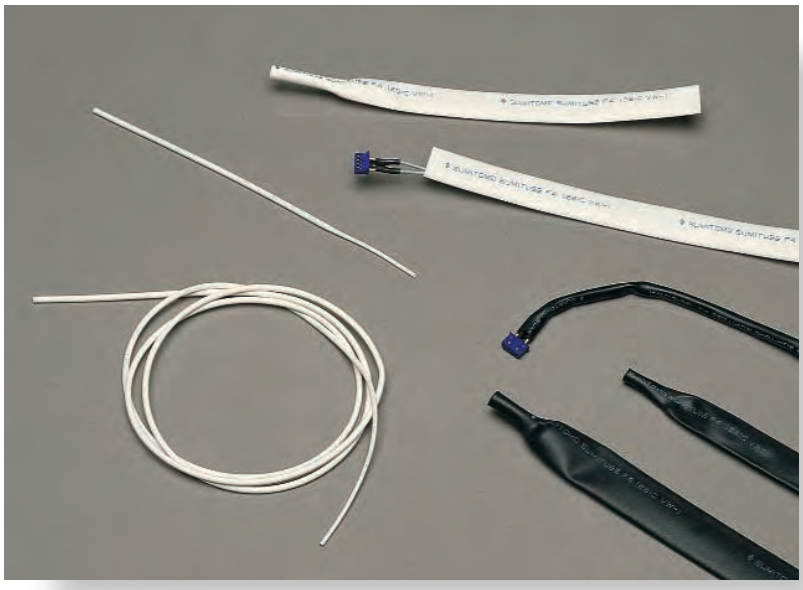
Sumitube® F4(Z)

Very flexible highly flame retardant polyolefin tubing. UL and CSA recognised and Marked. Extra thin wall for faster shrinkage and handling in tight area. Free of PBB's and PBBO's.

Characteristics

- Operating Temperature: -55°C–125°C
- Min. Shrink Temperature: 90°C
  Shrinking start at 60°C
- Shrink Ratio: 2:1
- Dielectric Strength: 26 kV/mm
- Standard Colour(s): Black
- Specifications:
  UL224 125°C 300V VW-1, CSA C22.2 No.198.1 125°C 150V OFT
- Marking:
  125°C VW-1 SUMITOMO-K
  SUMITUBE F4(Z) CAT 942
  CSA 125°C VW-1 -F-

SINGLE WALL POLYOLEFIN



Application Fields

For compact jacketing of sensitive components in tight areas. Cable harnessing, insulation, dirt and dust protection in electronics and other temperature sensitive cables or components.

Table of Standard Sizes and Packaging

F4(Z) Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Inside Diameter (mm) Recovered (max.)	Wall Thickness (mm) Recovered (min.)	Quantity per Spool / Box (m)
3/64	1.20	0.60	0.25	300/900
1/16	1.60	0.80	0.25	300/900
3/32	2.40	1.20	0.30	150/900
1/8	3.20	1.60	0.30	150/900
3/16	4.80	2.40	0.30	60/600
1/4	6.4	3.20	0.36	60/300
3/8	9.5	4.80	0.36	60/300
1/2	12.7	6.4	0.36	60/300
3/4	19.1	9.5	0.43	60/180
1	25.4	12.7	0.51	60/180

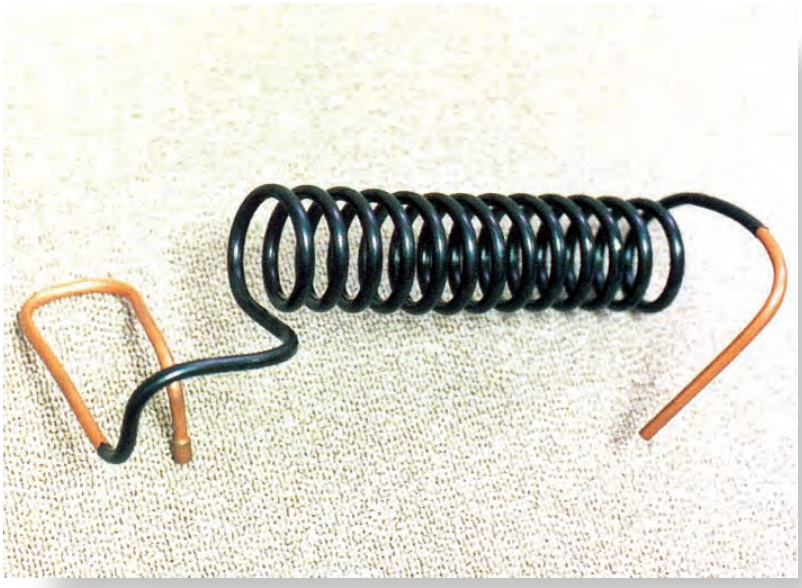
Sumitube® A

Commercial grade flexible polyolefin hologen free tubing for a wide range of applications, especially where good abrasion or chemical resistance is required.

Characteristics

- Operating Temperature: -55°C–105°C
- Min. Shrink Temperature: 115°C
  Shrinking start at 80°C
- Shrink Ratio: 2:1
- Dielectric Strength: 45 kV/mm
- Standard Colour(s): Black, Transparent

SINGLE WALL POLYOLEFIN



Application Fields

General insulation of wire terminations and fasten connectors. Mechanical and abrasion protection of pipes and other components.

Remarks

Non-standard colours are available upon request.

Table of Standard Sizes and Packaging

A Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered (nom.)	Quantity per Spool / Box (m)
3/64	1.20	0.60	0.40	300/900
1/16	1.60	0.80	0.43	300/900
3/32	2.40	1.20	0.51	150/900
1/8	3.20	1.60	0.51	150/900
3/16	4.80	2.40	0.51	60/600
1/4	6.4	3.20	0.64	60/300
3/8	9.5	4.80	0.64	60/300
1/2	12.7	6.4	0.64	60/300
3/4	19.1	9.5	0.76	60/180
1	25.4	12.7	0.89	60/180
1-1/2	38.1	19.1	1.02	60/180
2	50.8	25.4	1.14	60/120
3	76.2	38.1	1.07	60/60

Sumitube® A2, A2(3X)

Halogen free flexible polyolefin hologen free tubing. Good insulation and chemical properties. Clear colour allows marker tags/identification marks to be viewed through the tube after installation.

Characteristics

- Operating Temperature: -55°C–135°C
- Min. Shrink Temperature: 110°C
  Shrinking start at 80°C
- Shrink Ratio: 2:1
- Dielectric Strength: 46 kV/mm
- Standard Colour(s): Transparent
- Specifications:
  SAE-AMS-DTL-23053/5 class 2,
  DEF-STAN 59-97 Type 2B (A2 only)

SINGLE WALL POLYOLEFIN

Application Fields

For all general purpose applications, covering capacitors, bundling and jacketing of cables where visual inspection is required. Positioning of marking tags on hoses or other components.

Remarks

Cut length of 1.2m are available upon request.

Table of Standard Sizes and Packaging

A2 Type/Sizex (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered (nom.)	Quantity per Spool / Box (m)
3/64	1.20	0.60	0.41 +/-0.07	300/900
1/16	1.60	0.80	0.41 +/-0.07	300/900
3/32	2.40	1.20	0.51 +/-0.07	150/900
1/8	3.20	1.60	0.51 +/-0.07	150/900
3/16	4.80	2.40	0.51 +/-0.07	60/600
1/4	6.4	3.20	0.64 +/-0.07	60/300
3/8	9.5	4.80	0.64 +/-0.07	60/300
1/2	12.7	6.4	0.64 +/-0.07	60/300
3/4	19.1	9.5	0.76 +/-0.07	60/180
1	25.4	12.7	0.89 +/-0.12	60/180
1-1/2	38.1	19.1	1.02 +/-0.15	60/180
2	50.8	25.4	1.14 +/-0.17	60/120
3	76.2	38.1	1.27 +/-0.20	60/60
4	101.6	50.8	1.40 +/-0.22	30/30
A2(3X)				
1.5/0.5	1.50	0.50	0.50	300/900
3/1	3.00	1.00	0.60	150/900
6/2	6.00	2.00	0.70	60/300
9/3	9.0	3.00	0.80	60/300
12/4	12.0	4.00	0.85	60/300
18/6	18.0	6.00	1.00	60/180
24/8	24.0	8.00	1.20	60/180
40/13	40.0	13.0	1.25	60/180

Sumitube® W5B11, W5B11(4X)

Flame retardant dual wall polyolefin tubing. Flexible with inner wall of hot melt adhesive. High shrink ratio eases installation on transitions with large diameter gaps.

Characteristics

- Operating Temperature: -55°C–110°C
- Min. Shrink Temperature: 110°C
  Shrinking start at 60°C
- Shrink Ratio: 3:1, 4:1
- Dielectric Strength: 30 kV/mm
- Standard Colour(s): Black

DUAL WALL POLYOLEFIN

Application Fields

For moisture protection and environmental sealing of harnesses, connectors and ultrasonic splices where a flame retardant jacket is required.

Remarks

Non-standard colours, larger sizes and spools up to size 12/4 mm are available upon request.

Remarks

Non-standard colours, larger sizes are available upon request.

Table of Standard Sizes and Packaging

W5B11 Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Inside Diameter (mm) Recovered (max.)	Wall Thickness (mm) Recovered nom. (inner liner)	Quantity per Bag / Box (m)
3/1	3.20	0.60	0.96 (0.35)	60/600
4.5/1.5	4.80	1.50	1.10 (0.60)	60/300
6/2	6.4	2.00	1.20 (0.65)	60/300
9/3	9.5	3.00	1.30 (0.65)	30/150
12/4	12.7	4.00	1.40 (0.75)	30/150
19/6	19.0	6.0	1.80 (0.80)	18/90
24/8	24.0	8.0	2.50 (1.00)	18/90
40/13	40.0	13.0	2.50 (1.00)	6/24
W5B11(4X)				
4/1	4.00	1.00	1.00 (0.50)	60/300
8/2	8.0	2.00	1.20 (0.65)	30/150
12/3	12.0	3.00	1.40 (0.75)	30/150
16/4	16.0	4.00	1.80 (0.90)	30/150
24/6	24.0	6.0	2.20 (0.90)	18/90
32/8	32.0	8.0	2.50 (1.00)	12/60

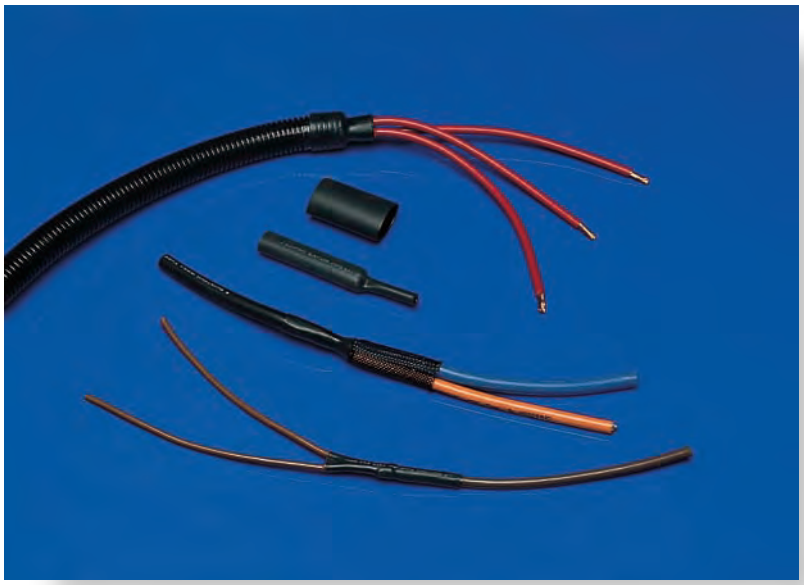
Sumitube® W3B2, W3B2(4X)

Flame retardant dual wall polyolefin tubing. Flexible with inner wall of hot melt adhesive. High shrink ratio eases installation on transitions with large diameter gaps.

Characteristics

- Operating Temperature: -55°C–125°C
- Min. Shrink Temperature: 110°C
  Shrinking start at 65°C
- Shrink Ratio: 3:1, 4:1
- Dielectric Strength: 30 kV/mm
- Standard Colour(s): Black
- Specifications:
  UL224 125°C 600V, CSA CC22.2 No.198.1-99 125°C 600V (W3B2 only)

DUAL WALL POLYOLEFIN



Application Fields

For moisture protection and environmental sealing of harnesses, connectors and ultrasonic splices where a flame retardant jacket is required.

Remarks

Non-standard colours, larger sizes and spools up to size 12/4 mm are available upon request.

Table of Standard Sizes and Packaging

W3B2 Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered nom. (inner liner)	Quantity per Bag / Box (m)
3/1	3.20	0.60	0.96 (0.35)	60/600
4.5/1.5	4.80	1.50	1.06 (0.60)	60/300
6/2	6.4	2.00	1.19 (0.65)	60/300
9/3	9.5	3.00	1.27 (0.65)	30/150
12/4	12.7	4.00	1.40 (0.75)	30/150
19/6	19.0	6.0	1.80 (0.70)	18/90
24/8	24.0	8.0	2.50 (1.00)	18/90
40/13	40.0	13.0	2.50 (1.00)	6/12
W3B2(4X)				
4/1	4.00	1.00	1.00 (0.50)	60/300
8/2	8.0	2.00	1.20 (0.50)	30/150
12/3	12.0	3.00	1.40 (0.60)	30/150
16/4	16.0	4.00	1.80 (0.80)	30/150
24/6	24.0	6.0	2.25 (0.80)	18/90
32/8	32.0	8.0	2.55 (1.00)	6/12
52/13	52.0	13.0	2.55 (1.10)	6/12

Remarks

Non-standard colours, larger sizes are available upon request.

Sumitube® W3NH

Halogen free flame retardant flexible polyolefin halogen free tubing. Flexible with inner wall of hot melt adhesive. High shrink ratio eases installation on transitions with large diameter gaps.

Characteristics

- Operating Temperature: -40°C–105°C
- Min. Shrink Temperature: 115°C
  Shrinking start at 60°C
- Shrink Ratio: 3:1
- Dielectric Strength: 20 kV/mm
- Standard Colour(s): Black

DUAL WALL POLYOLEFIN

Application Fields

In all smoke sensitive areas such as public buildings, public transport, power plants, hospitals, airports and submarines. London underground spec. E1042-A6-March 2002

Table of Standard Sizes and Packaging

W3NH Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Inside Diameter (mm) Recovered (max.)	Wall Thickness (mm) Recovered nom. (inner liner)	Quantity Bag/Box(m)
3/1	3.20	1.00	0.95 ± 0.15	60/600
4.5/1.5	4.80	1.50	1.10 ± 0.15	60/600
6/2	6.4	2.00	1.20 ± 0.20	60/300
9/3	9.5	3.00	1.30 ± 0.20	60/300
12/4	12.7	4.00	1.40 ± 0.20	30/150
19/6	19.1	6.00	1.80 ± 0.25	30/150
24/8	24.0	8.00	2.50 ± 0.40	18/90
40/13	40.0	13.00	2.50 ± 0.40	6/12
50/19	50.0	19.00	4.00 nom	–/22
120/40	120.0	40.00	3.00 nom	–/30

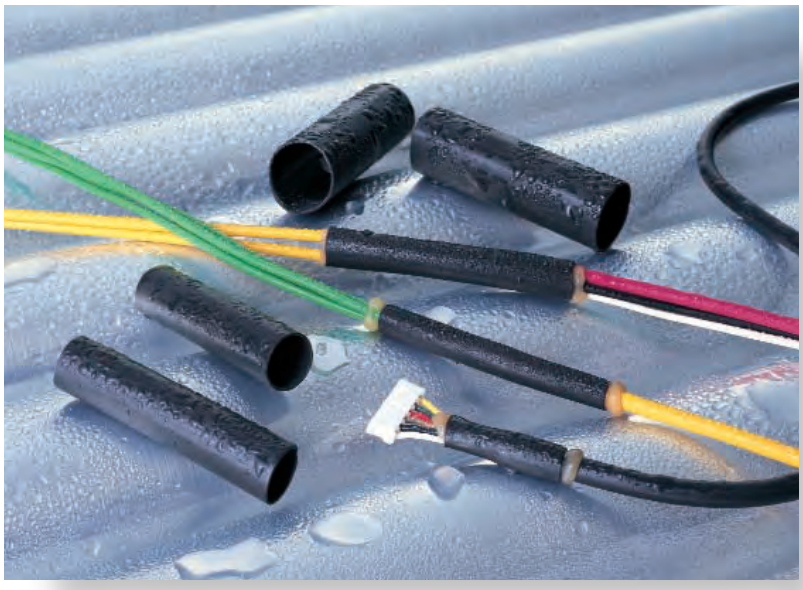
Sumitube® SA2

Semi rigid flame retardant polyolefin tubing with a thick inner liner of hot melt adhesive. Excellent tensile strength and strain relief. Thick adhesive liner provides excellent moisture protection. Ideal for electrical connections and splices in automobiles.

Characteristics

- Operating Temperature: -40°C–130°C
- Min. Shrink Temperature: 110°C
  Shrinking start at 60°C
- Shrink Ratio: 4:1
- Dielectric Strength: 19.7 kV/mm
- Standard Colour(s): Black

DUAL WALL POLYOLEFIN



Application Fields

Sealing and protection of connections and harness in the automotive industry.
All applications which require good temperature resistance, good electrical properties and very good moisture protection.

Table of Standard Sizes and Packaging

SA2 Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered nom. (inner liner)	Quantity per Box (m)
5.8/1.2	5.80	1.26	1.20 (0.56)	300
7.5/1.6	7.5	1.64	1.52 (0.76)	300
10.9/2.4	10.9	2.40	1.91 (1.02)	150
17.8/4.4	17.8	4.45	2.41 (1.37)	90

Sumitube® W5C, W5C(4X)

Flexible polyolefin halogen free tubing with inner liner of hot melt adhesive. High shrink ratio eases installation on transitions with large diameter gaps. Transparent colour enables visual inspection of substrate.

Characteristics

- Operating Temperature: -55°C–105°C
- Min. Shrink Temperature: 110°C
  Shrinking start at 60°C
- Shrink Ratio: 3:1, 4:1
- Dielectric Strength: 30 kV/mm
- Standard Colour(s): Transparent

DUAL WALL POLYOLEFIN

Application Fields

Waterproof sealing and encapsulation of connectors, harnesses, ultra-sonic splices and water sensitive electrical components. Especially where visual inspection is required.

Table of Standard Sizes and Packaging

W5C Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered nom. (inner liner)	Quantity per Bag / Box (m)
3/1	3.00	1.00	0.96 (0.35)	60/600
4.5/1.5	4.50	1.50	1.06 (0.60)	60/300
6/2	6.0	2.00	1.19 (0.65)	60/300
9/3	9.0	3.00	1.27 (0.65)	30/150
12/4	12.0	4.00	1.40 (0.75)	30/150
19/6	19.0	6.0	1.80 (0.70)	18/90
24/8	24.0	8.0	2.50 (1.00)	18/90
40/13	40.0	13.0	2.50 (1.00)	6/24
W5C(4X)				
4/1	4.00	1.00	1.00 (0.50)	60/300
8/2	8.0	2.00	1.20 (0.50)	30/150
12/3	12.0	3.00	1.40 (0.50)	30/150
16/4	16.0	4.00	1.80 (0.60)	30/150
24/6	24.0	6.0	2.25 (0.80)	18/90
32/8	32.0	8.0	2.55 (1.00)	6/24

Sumitube® W5DL

Semi rigid polyolefin halogen free tubing with inner jacket of meltable polyolefin. Meltable inner liner fills interstices and voids without adhering to most substrates. Provides good abrasion, fluid resistance and high tensile strength.

Characteristics

- Operating Temperature: -55°C–110°C
- Min. Shrink Temperature: 150°C
  Shrinking start at 70°C
- Shrink Ratio: 3:1
- Dielectric Strength: 36 kV/mm
- Standard Colour(s): Black
- Specifications:
  SAE-AMS-DTL-23053/4 class 1

DUAL WALL POLYOLEFIN

Application Fields

For all applications where environmental sealing and filling of voids and interstices is intended. Water protective encapsulation of sensitive components where adherance to substrates is not desired.

Remarks

Non-standard colours sizes are available upon request.

Table of Standard Sizes and Packaging

W5DL Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered nom. (inner liner)	Quantity per Bag / Box (m)
1/8	3.20	0.60	0.97 (0.50)	60/600
3/16	4.80	1.50	1.10 (0.65)	60/300
1/4	6.4	2.00	1.20 (0.70)	60/300
3/8	9.5	3.00	1.27 (0.75)	30/150
1/2	12.7	4.00	1.40 (0.80)	30/150
3/4	19.1	8.0	1.65 (1.00)	18/90
1	25.4	10.2	1.90 (1.00)	18/90

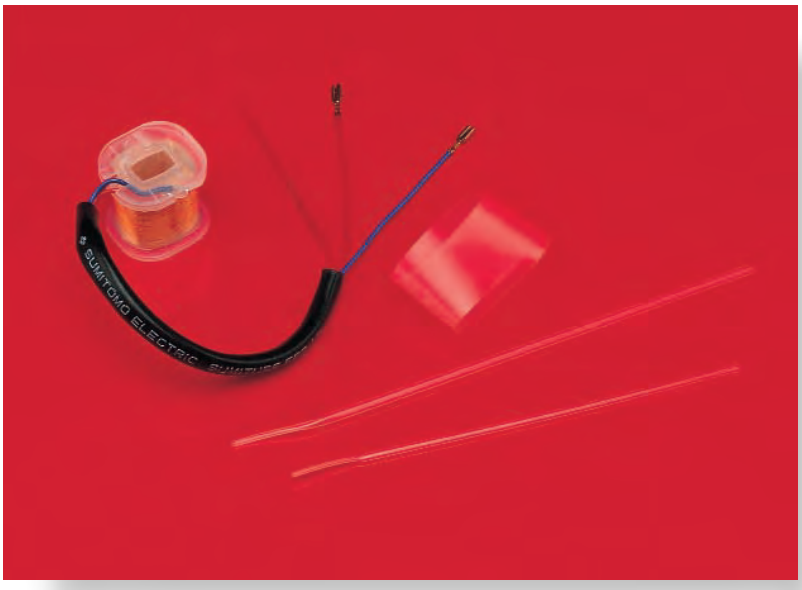
Sumitube® K

Semi-rigid highly flame retardant polyvinylidene fluoride tubing. High temperature rated thin wall tube with high dielectric strength. Excellent electrical properties, good resistance to chemicals and solvents, low friction surface.

Characteristics

- Operating Temperature: -55°C–175°C
- Min. Shrink Temperature: 170°C
  Shrinking start at 130°C
- Shrink Ratio: 2:1
- Dielectric Strength: 43kV/mm
- Standard Colour(s): Transparent
- Specifications:
  UL224 150°C 600V VW-1 , CSA C22.2No.198.1 150°C 600V VW-1 , SAE-AMS-DTL-23053/8, VG 95343 part 5 Type F-1, DEF STAN 59-97 Type3

FLUOROPLASTIC



Application Fields

For insulation or strain relief of components in high temperature environments. Applications requiring good cut through resistance, mechanical strength or resistance to chemicals. Applications where a low friction surface is needed. As oil stop for energy cables.

Remarks

Opaque and tint colours upon request.

Table of Standard Sizes and Packaging

K Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered	Quantity per Bag / Box (m)
3/64	1.20	0.60	0.25 +/-0.05	150/1500
1/16	1.60	0.80	0.25 +/-0.05	150/1500
3/32	2.40	1.20	0.25 +/-0.05	150/900
1/8	3.20	1.60	0.25 +/-0.05	150/900
3/16	4.80	2.40	0.25 +/-0.05	60/600
1/4	6.4	3.20	0.30 +/-0.07	60/300
3/8	9.5	4.80	0.30 +/-0.07	60/300
1/2	12.7	6.4	0.30 +/-0.07	30/300
3/4	19.1	9.5	0.43 +/-0.07	30/180
1	25.4	12.7	0.48 +/-0.07	18/180
1-1/2	38.1	19.1	0.51 +/-0.07	12/180
2	50.8	25.4	0.51 +/-0.07	12/120

Sumitube® K2

Flexible highly flame retardant polyvinylidene fluoride tubing. High temperature rated thin wall tube with high transparency. Excellent chemical and mechanical properties. Low friction surface. Higher flexibility and lower shrink temperature allows easier installation than Sumitube® K.

Characteristics

- Operating Temperature: -55°C–175°C
- Min. Shrink Temperature: 160°C
  Shrinking start at 120°C
- Shrink Ratio: 2:1
- Dielectric Strength: 35 kV/mm
- Standard Colour(s): Transparent
- Specifications:
  MIL-DTL-23053/18 class 1, UL224
  VW-1

FLUOROPLASTIC

Application Fields

Covering sensors, heating elements and other components which have to withstand high environmental temperatures. Applications requiring good cut through resistance, mechanical strength or resistance to chemicals.

Remarks

Opaque and tint colours upon request.

Table of Standard Sizes and Packaging

K2 Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered	Quantity per Spool / Box (m)
3/64	1.20	0.60	0.25 +/-0.05	300/900
1/16	1.60	0.80	0.25 +/-0.05	300/900
3/32	2.40	1.20	0.25 +/-0.05	150/900
1/8	3.20	1.60	0.25 +/-0.05	150/900
3/16	4.80	2.40	0.25 +/-0.05	60/600
1/4	6.4	3.20	0.30 +/-0.07	60/300
3/8	9.5	4.80	0.30 +/-0.07	60/300
1/2	12.7	6.4	0.30 +/-0.07	60/300
3/4	19.1	9.5	0.43 +/-0.07	60/180
1	25.4	12.7	0.48 +/-0.07	60/180
1-1/2	38.1	19.1	0.51 +/-0.07	60/180
2	50.8	25.4	0.51 +/-0.07	60/120

Sumitube® KH200, KH200(TW)

High temperature rated with low shrink temperature. Superb clarity, fluid resistance and low outgassing.

Characteristics

- Operating Temperature: - 55°C–200°C
- Min. Shrink Temperature: 130°C Shrinking start at 70°C
- Shrink Ratio: 2:1
- Dielectric Strength: 35 kV/mm
- Standard Colour(s): Transparent
- Specifications: SAE-AMS-DTL-23053/13, UL VW-1 (KH200), SAE-AMS-DTL-23053/18 class 3 (KH200(TW))

FLUOROPLASTIC

Application Fields

Bundling, harnessing and environmental protection where transparency, resistance to aggressive solvents and high temperatures as well as low outgassing is required.

Table of Standard Sizes and Packaging

KH200 Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Inside Diameter (mm) Recovered (max.)	Wall Thickness (mm) Recovered	Unit length (m)
1/8	3.20	1.60	0.80 +/-0.15	30m
3/16	4.80	2.40	0.90 +/-0.15	30m
1/4	6.4	3.20	0.90 +/-0.18	30m
3/8	9.5	4.80	0.90 +/-0.18	30m
1/2	12.7	6.4	0.90 +/-0.18	30m
3/4	19.1	9.5	1.10 +/-0.20	30m
1	25.4	12.7	1.20 +/-0.28	30m
KH200(TW)				
1/8	3.20	1.60	0.27 +/-0.04	150m
3/16	4.80	2.40	0.27 +/-0.04	60m
1/4	6.4	3.20	0.33 +/-0.05	60m
3/8	9.5	4.80	0.33 +/-0.05	30m
1/2	12.7	6.4	0.33 +/-0.05	30m
3/4	19.1	9.5	0.43 +/-0.07	1.2m
1	25.4	12.7	0.48 +/-0.07	1.2m

Sumitube® KH230, KH230(TW)

Flexible flame retardant elastomeric polyolefin tubing. Excellent abrasion resistance and outstanding resistance to chemicals and solvents. Good properties remain also at very low temperatures.

Characteristics

- Operating Temperature: - 55°C–230°C
- Min. Shrink Temperature: 130°C
  Shrinking start at 70°C
- Shrink Ratio: 2:1
- Dielectric Strength: 35 kV/mm
- Standard Colour(s): Black
- Specifications:
  SAE-AMS-DTL-23053/13 (KH230),
  SAE-AMS-DTL-23053/18 class 3
  (KH230(TW))

FLUOROPLASTIC

Application Fields

Bundling, harnessing and environmental protection where resistance to aggressive solvents, high temperatures and low outgassing is required.

Table of Standard Sizes and Packaging

KH200 Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Inside Diameter (mm) Recovered (max.)	Wall Thickness (mm) Recovered	Unit length (m)
1/8	3.20	1.60	0.80 +/-0.15	30m
3/16	4.80	2.40	0.90 +/-0.15	30m
1/4	6.4	3.20	0.90 +/-0.18	30m
3/8	9.5	4.80	0.90 +/-0.18	30m
1/2	12.7	6.4	0.90 +/-0.18	30m
3/4	19.1	9.5	1.10 +/-0.20	30m
1	25.4	12.7	1.20 +/-0.28	30m
KH200(TW)				
1/8	3.20	1.60	0.27 +/-0.04	150m
3/16	4.80	2.40	0.27 +/-0.04	60m
1/4	6.4	3.20	0.33 +/-0.05	60m
3/8	9.5	4.80	0.33 +/-0.05	30m
1/2	12.7	6.4	0.33 +/-0.05	30m
3/4	19.1	9.5	0.43 +/-0.07	1.2m
1	25.4	12.7	0.48 +/-0.07	1.2m

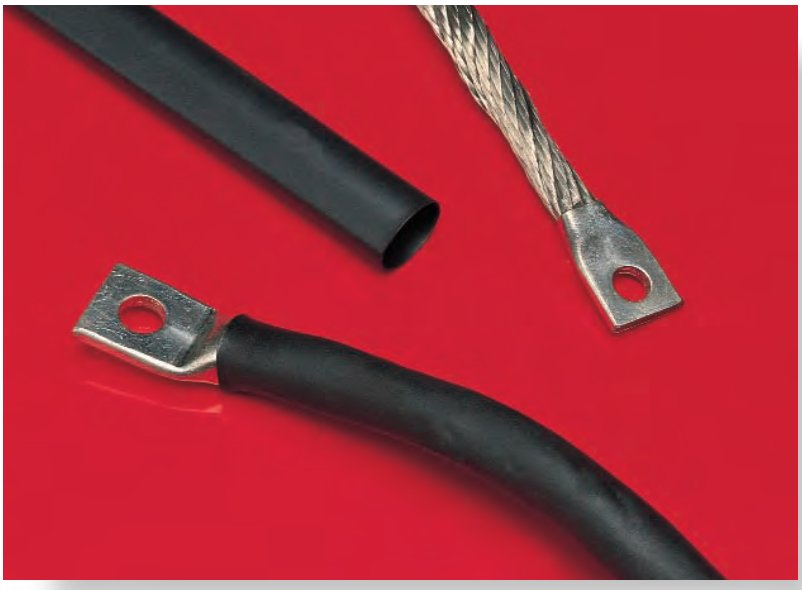
Sumitube® R10

Flexible highly flame retardant elastomer tubing. Combines excellent chemical and abrasion resistance. Good properties remain also at very low temperatures.

Characteristics

- Operating Temperature: -75°C–120°C
- Min. Shrink Temperature: 150°C
  Shrinking start at 100°C
- Shrink Ratio: 2:1
- Dielectric Strength: 25 kV/mm
- Standard Colour(s): Black
- Specifications:
  UL224 105°C 600V VW-1,
  SAE-AMS-DTL-23053/1 Class2

ELASTOMER



Application Fields

Jacketing of cables and harnesses in environments with large temperature variations. e.g. Ground support in heavy duty vehicles. Recommended for all applications where excellent resistance against chemicals and solvents is required.

Table of Standard Sizes and Packaging

R10 Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Inside Diameter (mm) Recovered (max.)	Wall Thickness (mm) Recovered	Quantity per Spool / Box (m)
1/8	3.20	1.60	0.70 +/-0.20	150/600
3/16	4.80	2.40	0.85 +/-0.25	60/300
1/4	6.4	3.20	0.89 +/-0.25	60/300
3/8	9.5	4.80	1.01 +/-0.25	30/150
1/2	12.7	6.4	1.22 +/-0.38	30/150
3/4	19.7	9.5	1.45 +/-0.38	30/90
1	25.4	12.7	1.78 +/-0.38	30/90
1-1/4	31.8	15.9	2.20 +/-0.51	30/90
1-1/2	38.1	19.1	2.41 +/-0.51	30/90
1-3/4	44.5	22.2	2.71 +/-0.51	30/60
2	50.8	25.4	2.79 +/-0.51	30/60

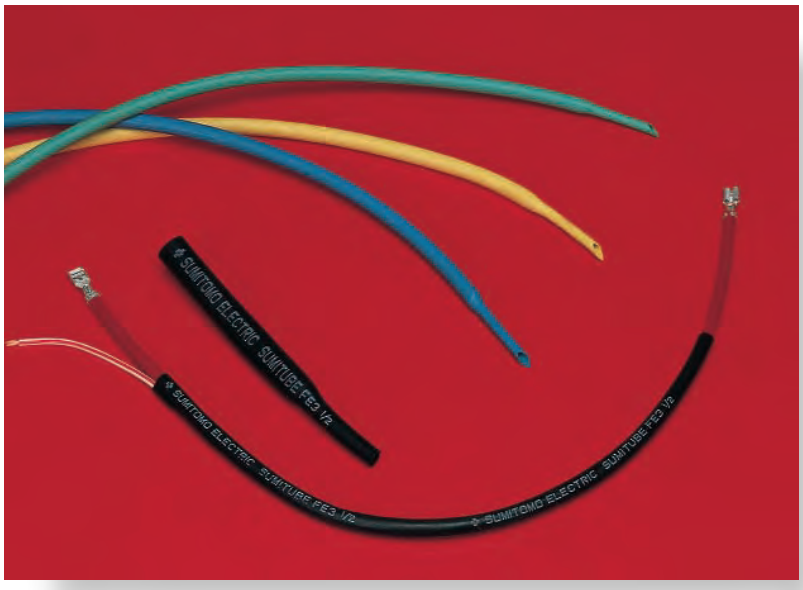
Sumitube® FE3

Extremely flexible flame retardant fluoroelastomer tubing. Resistant to most mineral and synthetic oils, hydraulic fluids and solvents. Very good abrasion resistance also in high temperature environments.

Characteristics

- Operating Temperature: -55°C–200°C
- Min. Shrink Temperature: 150°C
  Shrinking start at 50°C
- Shrink Ratio: 2:1
- Dielectric Strength: 17 kV/mm
- Standard Colour(s): Black
- Specifications:
  SAE-AMS-DTL-23053/13,
  MIL-R-46846 Type III class 1

FLUOROELASTOMER



Application Fields

Applications in high temperature areas with severe solvents, fuels and aggressive chemicals such as engine compartments.

Table of Standard Sizes and Packaging

FE3 Type/Size (Inch)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered	Quantity per Spool / Box (m)
1/8	3.20	1.60	0.80 +/-0.18	30/300
3/16	4.80	2.40	0.90 +/-0.18	30/300
1/4	6.4	3.20	0.90 +/-0.18	30/300
3/8	9.5	4.8	0.90 +/-0.18	30/150
1/2	12.7	6.4	0.90 +/-0.18	30/150
3/4	19.1	9.5	1.10 +/-0.28	30/90
1	25.4	12.7	1.20 +/-0.28	30/90

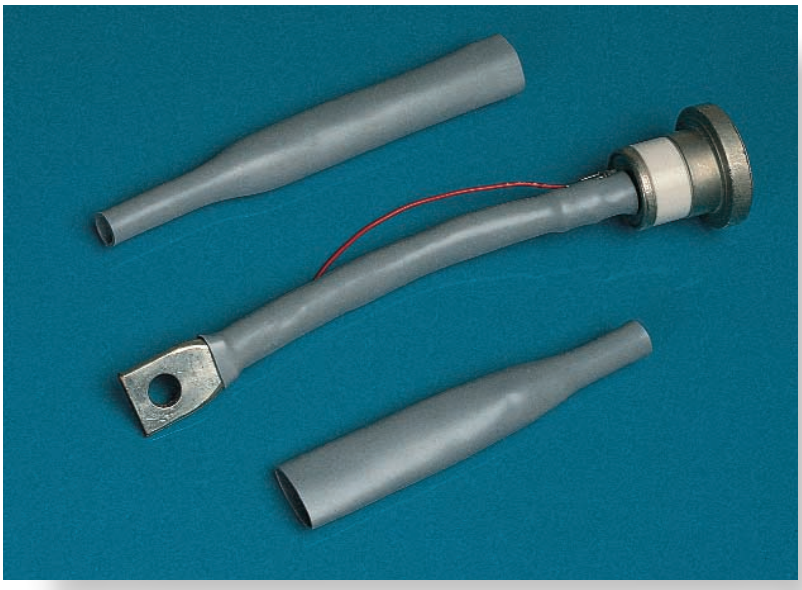
Sumitube® SR

Halogen free Flame retardant Silicone rubber tubing. High temperature rated to protect from water and weather. Remains flexible at low temperatures. Very good electrical and mechanical properties.

Characteristics

- Operating Temperature: -60°C–250°C
- Min. Shrink Temperature: 140°C
  Shrinking start at 60°C
- Shrink Ratio: 2:1
- Dielectric Strength: 20 kV/mm
- Standard Colour(s): Grey

SILICON RUBBER



Application Fields

For all kind of electrical insulation in high temperature environments such as heater coils, thermistors, AC and DC generator cables, lightning and engine harnesses.

Remarks

Other sizes are available upon request.

Table of Standard Sizes and Packaging

SR Type/Size (mm)	Inside Diameter (mm) Expanded (min.)	Recovered (max.)	Wall Thickness (mm) Recovered (nom.)	Quantity per Bag / Box (m)
2.9	2.90	1.60	1.0	100/100
4.9	4.90	2.60	1.0	100/100
5.8	5.80	3.40	1.0	100/100
7.8	7.8	4.20	1.0	100/100
11.0	11.0	5.80	1.5	50/100
15.5	15.5	8.5	1.5	50/50
21.0	21.0	11.5	2.0	25/25
23.0	23.0	16.0	2.0	20/20
31.5	31.5	18.0	2.0	20/20
43.0	43.0	24.0	3.0	20/20
55.0	55.0	30.0	3.0	10/10
66.0	66.0	37.0	3.0	10/10
70.0	70.0	44.0	3.0	5/5

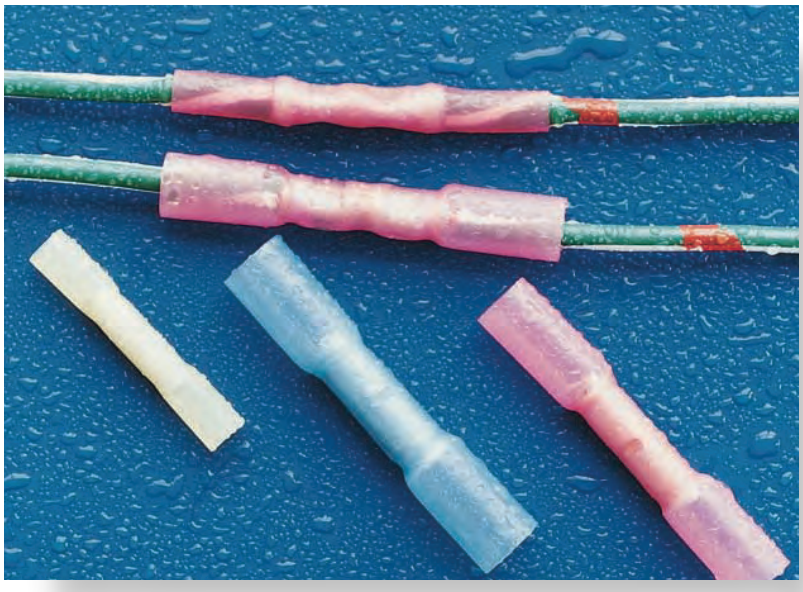
SUMISEAL®

Halogen free crimp shield tubing. Three colour coded sizes, excellent strain relief, solvent and moisture resistant, visually inspectable, good physical and electrical properties.

Characteristics

- Operating Temperature: -55°C–110°C
- Min. Shrink Temperature: 150°C
- Dielectric Strength: 15 kV/mm
- Standard Colour(s): Red, blue, yellow, coded by size

SPECIAL PRODUCT



Application Fields

Used as watertight crimp splices covered with dual wall heat shrinkable tubing and not meltable inner liner.

Remarks

Application Voltage: up to 600V

Table of Standard Sizes and Packaging

Type No.	Wire Size mm2/A.W.G	Length (mm)	Quantity (pcs) Small box/M.O.Q
# 1 (Red)	0.5-1.5/22-16	36 +/-1.5	1000/5000
# 2 (Blue)	1.5-2.5/16-14	36 +/-1.5	1000/3000
# 3 (Yellow)	4.0-6.0/12-10	41 +/-1.5	500/2000

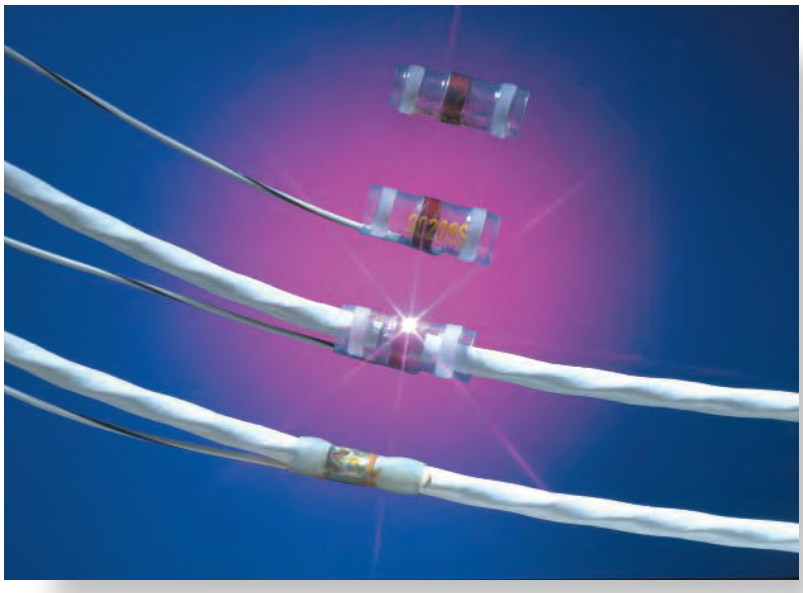
STS H-C, L-C

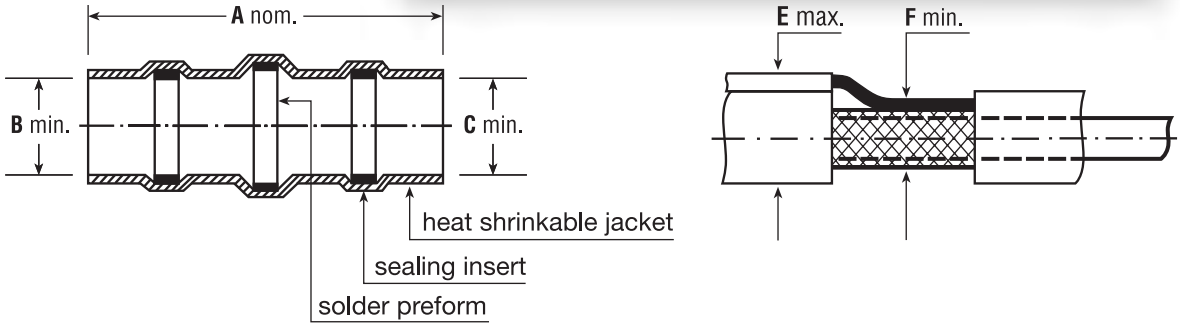
Designed for determinating wire and cable with tin coated or silver plated Shield tubing. Conforming to MIL-DTL-23053/8 and pre-fluxed (SRMAP or RMA Per QQ-S-571) solder pre-form and meltable sealing inserts. Used with convection (hot air) heating tools.

Characteristics

- Operating Temperature: -54°C-105°C (L-C), -54°C-150°C (H-C),
- Min. Shrink Temperature: 145°C (L-C), 185°C (H-C)
- Shrink Ratio: 2:1
- Dielectric Strength: 15 kV/mm
- Standard Colour(s): Tint blue transparent
- Specifications: NAS 1745

SPECIAL PRODUCT





Application Fields

Terminations on wire and cable with tin coated or silver plated shields.

Table of Standard Sizes and Packaging

STS H-C	Dimension as supplied (mm)			Installation Reference (mm)		Cross Reference
Part No.	A (nom.)	B (min.)	C (min.)	E (max.)	F (min.)	NAS P/N
H-C-1	16.0	2.0	2.5	2.5	1.0	1745-1
H-C-2	16.0	2.8	3.3	3.3	1.5	1745-2
H-C-3	16.0	4.6	5.1	5.1	2.5	1745-3
H-C-4	19.1	6.1	6.4	6.4	3.3	1745-17
H-C-5	19.1	7.1	7.6	7.6	4.1	1745-4
H-C-6	27.9	11.2	11.7	11.7	5.7	1745-18
H-C-7	27.9	13.3	13.8	13.8	8.9	1745-19
STS L-C						
L-C-1	16.0	2.0	2.5	2.5	1.0	1745-13
L-C-2	16.0	2.8	3.3	3.3	1.5	1745-14
L-C-3	16.0	4.6	5.1	5.1	2.5	1745-15
L-C-4	19.1	6.1	6.4	6.4	3.3	1745-23
L-C-5	19.1	7.1	7.6	7.6	4.1	1745-16
L-C-6	27.9	11.2	11.7	11.7	5.7	1745-24
L-C-7	27.9	13.3	13.8	13.8	8.9	1745-25

Irrax Sleeve® SCM2

Flexible dual Medium wall tubing, halogen free with 3:1shrink ratio. Quick and easy to install with strong adhesive for excellent insulation and complete waterproofing.

Characteristics

- Operating Temperature: -55°C–110°C
- Min. Shrink Temperature: 90°C
- Shrink Ratio: 3:1
- Dielectric Strength: 21 kV/mm
- Standard Colour(s): Black

DUAL WALL POLYOLEFIN

Application Fields

Encapsulating and anti-corrosion protection of metal pipes. Insulation for communication equipment and cables. Alternative to taping in medium voltage applications.

Table of Standard Sizes and Packaging

SCM2 Size	Inside Diameter (mm) Expanded (min.)	Recovered (max.) (outer layer only)	Recovered (max.) (not guaranteed)	Wall Thiackness (mm) Recovered(nom)	Quantity per Bag / Box (m)
04	10.2	3.80	2.30	1.50	12/120
07	19.0	5.60	4.10	2.00	12/120
11	28.0	9.5	6.5	2.00	12/60
13	33.0	10.2	7.8	2.00	12/60
15	38.1	12.7	10.3	2.30	12/48
17	44.0	14.0	11.6	2.30	12/48
20	52.1	18.2	15.8	2.30	6/30
27	70.0	25.5	23.1	2.30	6/24
35	90.0	30.0	27.6	2.50	3.6/18
50	125.0	40.0	37.6	2.50	2.4/24

Irrax® Sleeve SCR100

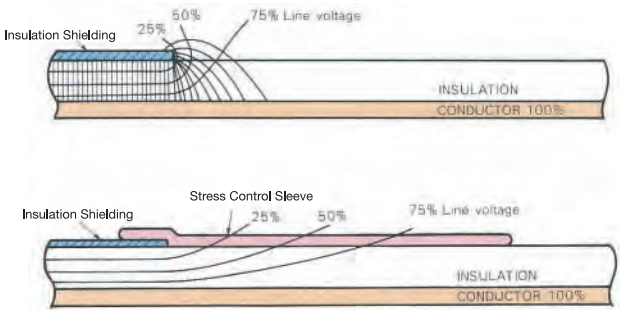
Heat shrinkable stress control Sleeve for cables up to 36KV

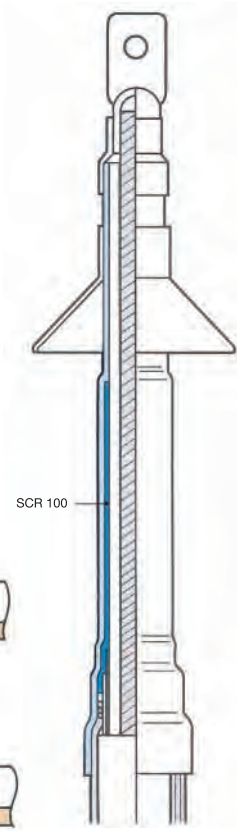
Characteristics

- Operating Temperature: up to 90°
- Min. Shrink Temperature: 150°C
- Volume resistivity: 1x10^{10}Ω-cm
- Standard Colour(s): Black

SPECIAL PRODUCTS

- Quick and easy to install
- Flexible at low temperature
- Electrical stress control at the end of cable shielding





Application Fields

Medium Voltage termnation & joints

Table of Standard Sizes and Packaging

Size	Inside Diameter (mm) as supplied (min.)	Inside Diameter (mm) after shrinkage (max.)	Wall Thickness (mm) as supplied (nom.)	Wall Thickness (mm) after shrinkage (max.)	Quantity per Spool / Box (m)
8/16	16.0	8.0	0.7	1.8	25/100
10/20	20.0	10.0	0.7	1.6	25/100
12/26	26.0	12.0	0.9	2.5	25/50
15/30	30.0	15.0	1.0	2.7	25/50
20/45	45.0	20.0	1.2	3.0	20/40
30/65	65.0	30.0	1.4	3.3	20/40
45/95	95.0	45.0	1.6	3.6	10/10

Irrax® Sleeve SCT100

Heat shrinkable Anti Tracking Tube for cables up to 36KV

Irrax® Sleeve SCC100

Heat chrinkable Conductive Tubing for MV cabls up to 36KV

HOW TO USE

Selection of tubing size

- Inside diameter „expanded“ must be larger than the largest outside diameter of the object to be covered in order to fit smoothly.
- In order to obtain proper results inside diameter „recovered“ should be smaller than the smallest outside diameter of the object to be covered.

Shrinking process

- Cut the tubing to the required length. Make sure to cut straight and rectangular.
- Slide the sleeve over the object to be covered. Be careful not to damage the tubing on sharp edges.
- Heat with heat-gun or other appropriate shrink tool. Select a temperature equal or higher than the minimum shrink temperature indicated, taking into account the heat resistance of the object to be covered. Begin on one end of the tubing thus preventing air traps to occur.

NOTICE

The information contained in this catalogue is believed to be correct and in accordance with accepted engineering practices. Because of the varied nature of the uses for these products each user should make their own evaluations regarding the suitability of these products for their specific application. Sumitomo Electric Schrumpf-Produkte GmbH makes no warranties regarding the accuracy and completeness of the information and data contained herein, and disclaims any liability from the use or misuse of its products. Sumitomo Electric Schrumpf-Produkte GmbH shall not be liable for any injury, loss damage either directly, indirectly or as a consequence arising from the use or misuse of its products mentioned in this catalogue, other than replacement of materials considered defective.

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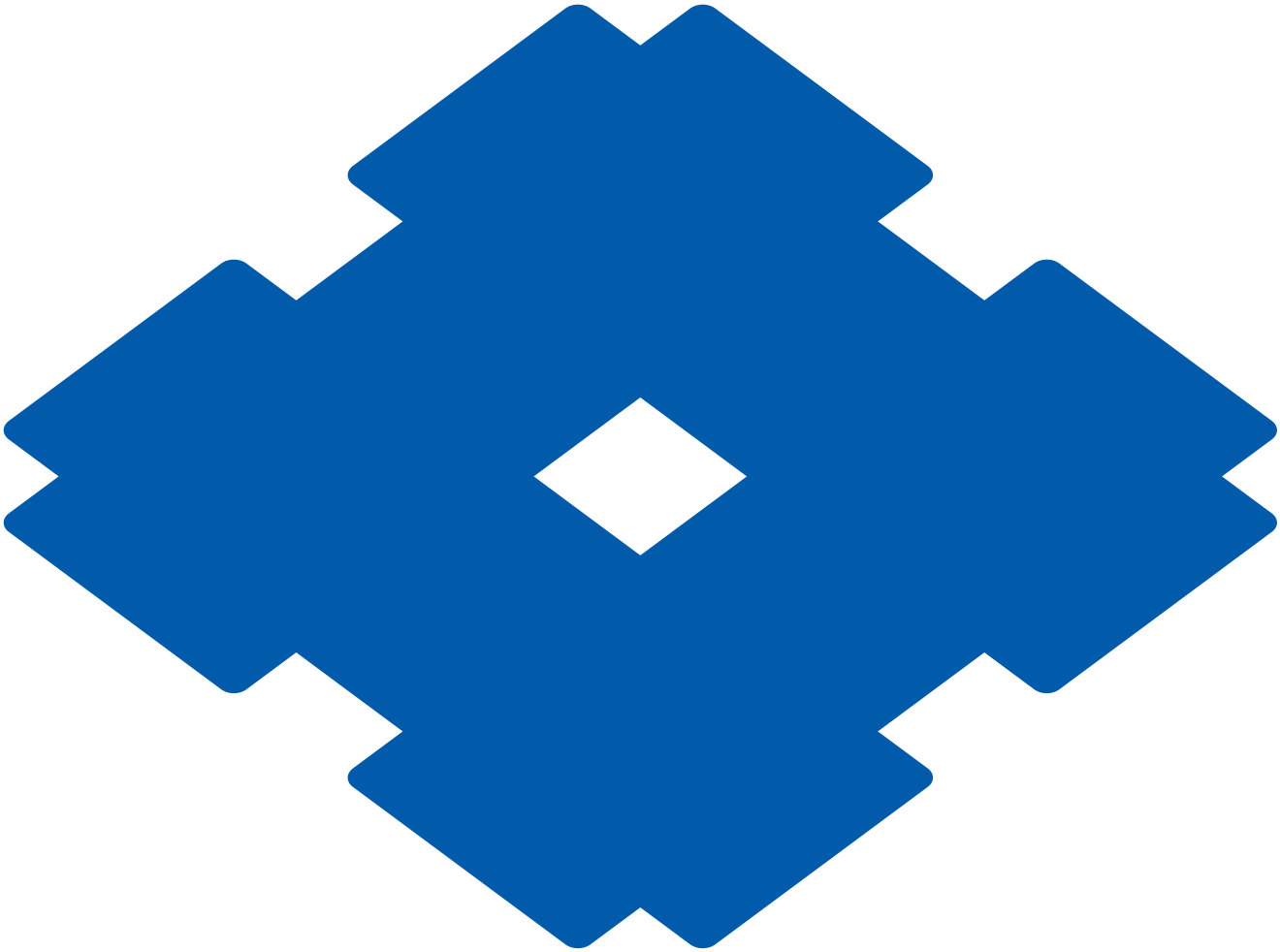

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