



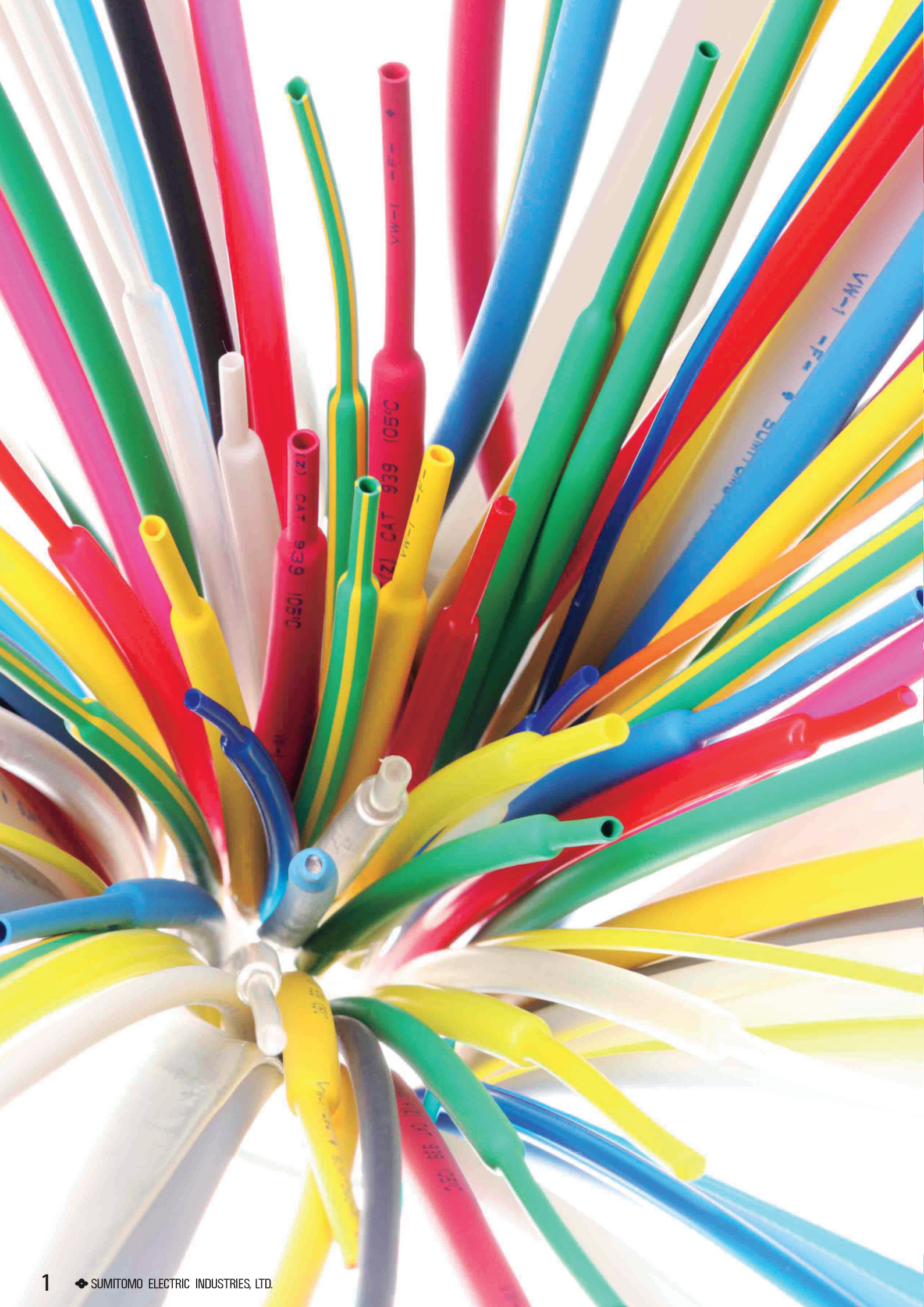
SUMITUBE™ / IRRAX™ TUBE / IRRAX™ SLEEVE



GENERAL CATALOG



SUMITOMO ELECTRIC
Ingenious Dynamics



Sumitomo Electric's irradiated products have been contributing to the development of the electronic equipment, automobile, aviation, and various other industries.

SUMITUBE™

SUMITUBE is a heat-shrinkable tube (that shrinks in the radial direction when heated) that takes advantage of the shape-memory effect of plastics enhanced by electron beam irradiation. Made mainly from raw materials such as polyolefin, fluorinated polymer, or thermoplastic elastomer, SUMITUBE is widely used in various industrial fields for bundling, thermal protection, and insulation protection of electrical wires and harnesses, as well as for other purposes.

IRRAX™TUBE IRRAX™TAPE

IRRAXTUBE is a heat-resistant tube that takes advantage of heat/chemical resistance of a plastic enhanced by electron beam irradiation. Made mainly from raw materials such as polyolefin, fluorinated polymer, or thermoplastic elastomer, IRRAXTUBE is widely used in various industrial fields for thermal protection, mechanical protection, and chemical protection of electrical wires and harnesses and for various other purposes.

IRRAX™SLEEVE

IRRAXSLEEVE is a relatively large bore heat-shrinkable tube made from cross-linked plastic. IRRAXSLEEVE is used for protecting pipes and cables in infrastructure applications. A heat-shrinkable tube with a hot-melt adhesive inner liner that provides a waterproof seal after shrinking.

SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

SUMITUBE O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

IRRAXSLEEVE SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER/ HEATING GUN

General Information

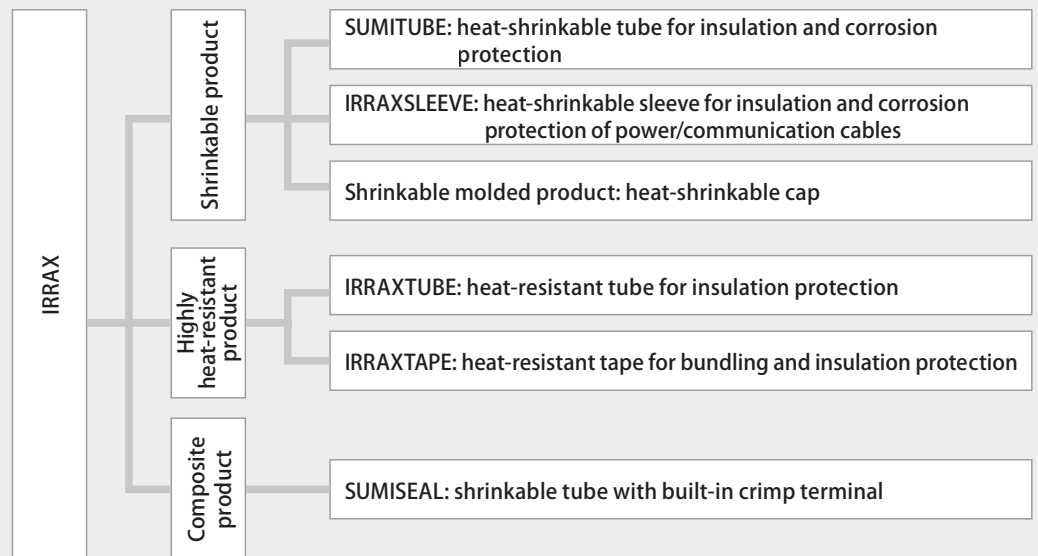
Introduction

When irradiated with an electron beam (a flow of electrons that are accelerated in a vacuum using a high voltage), certain plastic materials develop cross-linkage (a reaction that creates new chemical bonds between plastic molecules). As a result, the heat resistance, shape-memory effect, oil/chemical resistance, and various other properties of the plastic are improved.

Since Japan's first installation of an industrial electron beam generator on Sumitomo Electric's premises in 1964, the company has put its resources into developing and commercializing various products using its original electron beam irradiation technology for plastics.

IRRAX™

IRRAX is Sumitomo Electric's trade name for heat-resistant plastics and shape-memory plastics produced by Sumitomo Electric Fine Polymer, Inc. The molecules of these plastics are cross-linked (given a 3D network structure) by electron beam irradiation, thereby enhancing the reliability in use of these plastics, which have superior heat resistance and liquid (oil and chemical) resistance.



Designation of UL- and CSA-certified products

If inspectors from UL and CSA require you to show a UL or CSA certificate for a specific tube meeting the requirements of these standards, show them the mark on the surface of each tube or the product label on the package. Sumitomo Electric has introduced a Re-Examination Service system to be followed up by UL and CSA. Therefore, inspectors will never require you to use special tags such as those required for electric cables.

In the past, these safety standards made it compulsory for manufacturers to indicate their company name, temperature rating, and other items on each tube. Though these standards do not require these items to be indicated any more, Sumitomo Electric still indicates these items on each tube as in the past.

UL has disclosed its UL-certified products lists on its website, permitting us to copy them and use the copy as a certificate of authorization. Sumitomo Electric provides copies of these lists for our products that are UL-compliant, and copies of the Certification Record for our products that are CSA-compliant.

“VW-1” is a flame retardance rating specified by the UL224 standard and CSA standard. Only products that have passed a vertical wire flame test are rated at VW-1. In the vertical wire flame test, signified by the acronym VW, the test specimen (tube) with a wire inside is held vertically and burnt. For a VW-1 rating, the flame must go out within one minute. The CSA standard originally specified “OFT” flame retardance rating for tubes. However, this standard adopted the same tube test method as that specified by the UL224 standard and subsequently the rating designation was changed to VW-1.

Some of our customers ask us about the UL94 V-0 flame retardance rating. UL94 is a safety standard that specifies the flame resistance of plastic materials used for making machine parts. A sheetlike specimen is used for the evaluation test. Accordingly, UL94 does not cover the tubes and their auxiliary products shown in this catalog.

VW-1 flame retardance rating

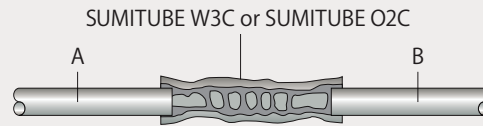
For the maximum allowable continuous operating temperatures of products that comply with safety standards (UL, CSA, SAE-AMS, etc.), this catalog shows the highest temperatures specified in these standards. For the aging resistance and other characteristics of the products manufactured by Sumitomo Electric Fine Polymer, Inc., the company has designed the product specifications after referring to the related UL requirements. For products with an inner adhesive layer (SUMITUBE and IRRAXSLEEVE with an adhesive lining), this catalog shows the maximum allowable continuous operating temperature that has been determined from the material characteristics of the outer layer. Note that these products may be dislocated due to melting of the adhesive if they are exposed to high temperatures.

Maximum allowable continuous working temperature

Product color tones have originally been designed according to Sumitomo Electric’s standards. Note that color tone differs depending on the product model. However, some product models are colored according to the requirements of applicable safety standards.

Color tone

The table below shows the characteristics of two (PVC) lead wires, A and B, with their joint shielded with SUMITUBE W3C or SUMITUBE O2C. SUMITUBE W3F2 and SUMITUBE O2B2 have the same moisture resistance as the above two tubes.



Characteristics of tubes of double layer construction (moisture resistance)

Item	Test method	Evaluation criteria		
		External appearance	Insulation resistance (in water)	Withstand voltage (in oil)
Heat resistance	Exposure to 120°C for 24 h	No abnormality	min. 100MΩ	No dielectric breakdown after application of AC1.5kV for 60 s
Cold resistance	Exposure to -30°C for 24 h	No abnormality	min. 100MΩ	No dielectric breakdown after application of AC1.5kV for 60 s
Water resistance	Immersion in water at 20°C for 2 weeks	No abnormality	min. 100MΩ	No dielectric breakdown after application of AC1.5kV for 60 s
Heat cycle	95°C (in water) ↔ -30°C 20°C (in air) ↔ -30°C Exposure to each temperature for 30 min Repeat this temperature cycle 10 times	No abnormality	min. 100MΩ	No dielectric breakdown after application of AC1.5kV for 60 s

The shrink ratio is defined as follows:

$$\text{Shrink ratio (\%)} = \frac{(\text{Inside diameter before shrinkage}) - (\text{Inside diameter after complete shrinkage})}{(\text{Inside diameter before shrinkage})} \times 100$$

Most of the products shown in this catalog are designed so that, after they have shrunk completely, their inside diameter will decrease to one half or less of their original inside diameter. This means that the shrink ratio is 50% or more. The larger the shrink ratio, the more noticeably will the products show a reduction in their inside diameter. Products that will reduce their inside diameter to one third, a quarter, or less are also available.

Shrink ratio

General Information

Longitudinal change ratio

Longitudinal change ratio is defined as follows:

$$\text{Longitudinal change ratio (\%)} = \frac{(\text{Tube length after shrinkage}) - (\text{Tube length before shrinkage})}{(\text{Tube length after shrinkage})} \times 100$$

Assume that an originally 100mm long tube reduces in length to 96mm after complete shrinkage, then the longitudinal change ratio of this tube is calculated to be -4%, as follows:

$$\text{Longitudinal change ratio (\%)} = (96 - 100)/100 \times 100 = -4 (\%)$$

Assume that a product with a longitudinal change ratio of "0 ±5%" is heated to shrink completely. Then this product will reduce its length by a maximum of 5% or will increase its length by a maximum of 5%.

The tube may not shrink as completely as it shrinks when heated as a single piece (according to the longitudinal change ratio), depending on the surface characteristics of the wire being sheathed, the clearance between the wire and tube, tube heating temperature and time, and other factors. Determine the length of each heat-shrinkable tube properly according to your use conditions.

Tube shrinking method and cautions to be observed during tube heating

Shrinking method

Insert the object to be sheathed in a tube whose inside diameter is larger than the outside diameter of the object, and heat the tube using one of the following methods. The tube will immediately shrink tightly over the object.

● Heating with an industrial heating tool

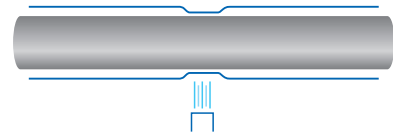
Heat the object along its circumference from one end to the other or from the center to both ends.

● Heating in a high-temperature atmosphere using a thermostatic oven or heating furnace

● Example of heat shrink method -1



● Example of heat shrink method -2



Cautions

- The shrinkage completion temperatures shown in this catalog represent the temperatures of the tubes themselves. The ambient temperature around the heating spot is preferably 20 to 50°C higher than the tube temperature. However note that the tube heating temperature and time should be controlled according to the specific heat and thermal conductivity of the object being sheathed and the ambient temperature. Determine the optimum tube heating conditions while checking how each tube shrinks.
- The tube may develop cracks when heated locally if the surface of the object being protected has a protrusion or sharp edge or if the tube has been cut non-uniformly and the cut surfaces contain defects such as a slit or diagonally cut section. Although the tube can be used to protect an object whose cross section is angular or irregular rather than circular, a gap may be produced between the tube and any concave surface after the tube is shrunk.

Shrinking a two-layer tube and precautions for use

- When shrinking a two-layer tube with adhesive lining, it is recommended to heat the tube until sufficient adhesive is visible at both tube ends so as to ensure that the tube is reliably waterproof.
- When heat-shrunk, the tube may slip down on the smaller outside diameter side of the object or may become dislocated by a bending load or other external force, resulting in deterioration in the sealing properties of the tube. Before using the tube, always check whether the sealing properties of the tube meet your use conditions.

Tube storage conditions and natural shrinkage of tubes

Heat-shrinkable tubes will not shrink prematurely as long as they are stored at a temperature lower than the shrinkage start temperature. However, we recommend that you store them in a cool dark place. Avoid exposing them to direct sunlight.

SUMITUBE V tends to start shrinking at near 40°C due to the characteristics of the raw material, polyvinyl chloride. Store this tube with special care.

RoHS and ELV Directive

• What is RoHS?

RoHS, which stands for “**Restriction Of the use of certain Hazardous Substances in electrical and electronic equipment,**” is an EU directive issued to restrict the specific hazardous materials found in electrical and electronic products. After being put into effect, this directive bans intentional use of the regulated substances in manufacturing electrical and electronic products to be sold in the European market or inclusion of these substances in these products at concentrations higher than the specified threshold levels, though this directive has set some exemptions. If electrical and electronic products contain any of these hazardous substances at a concentration higher than the regulated threshold level, the governing EU authority may direct the related manufacturer to withdraw such products. The regulated substances and the date of enforcement are as follows:

Regulated substances: (1) lead, (2) mercury, (3) cadmium, (4) hexavalent chromium, and certain halogenated flame retardants (5) PBDE and (6) PBB

Date of enforcement: July 1, 2006 (EU directive: 2002/95/EC)

Date of promulgation of amended directive: July 21, 2011 (EU directive: 2011/65/EU)

Sumitomo Electric has actively implemented measures necessary to comply with the RoHS directive. In this catalog, a check mark with “RoHS directive” has been added to each header on RoHS-compliant products to express more clearly that these products comply with the directive. Most of the products that are not shown in this catalog comply with this directive. However, contact Sumitomo Electric on a case-by-case basis for compliance of the product models in which you are interested.

• What is the ELV directive?

ELV, which stands for “**End of Life Vehicle,**” is an EU directive that was passed in May 2000 and came into effect in October 2000. The objective of this directive is to facilitate the recycling of end of life vehicles, thereby reducing waste products and mitigating their effects on the environment. The ELV directive restricts the use of almost the same substances as those regulated by the RoHS directive, excepting the halogenated flame retardants.

Regulated substances: (1) lead, (2) mercury, (3) cadmium, and (4) hexavalent chromium

Date of enforcement: October 2000 (EU directive: 2000/53/EC)

The product models, sizes, and color tones shown in this catalog have been standardized and are normally in stock. Products with non-standard models, sizes, and color tones are made to order. Products of non-standard sizes (inside diameter, wall thickness, unit length) and color tones are also available upon request and factory acceptance. For individual inquiries, please contact Sumitomo Electric.

Other information

Warning

The products shown in this catalog have not been developed or commercialized for use in medical or other special fields which are associated (directly) with human life and the body. If you intend to use these products in a special field related to human life or the body, be sure to carry out preliminary safety testing of the particular products by yourself and use them at your own responsibility.

Caution

- (1) The product data in this catalog represent typical values measured from a single product. Features of the products also represent their general physical properties. These data do not guarantee the safety of the products in individual applications. Therefore, you are required to unconditionally check by yourself that the particular products conform to the safety requirements of your particular applications. Please understand that Sumitomo Electric and its affiliates do not assume any responsibility for any accidental or indirect loss.
- (2) Since the sealing properties of SUMITUBE and IRRAXSLEEVE with

adhesive lining differ depending on their use conditions, first check their sealing properties under your particular use conditions.

- (3) Depending on the storage condition, some compounding agents may precipitate on the surface of the tubes.
- (4) Comply with the use conditions specified in each safety standard.
- (5) Special care is required when shrinking a tube over an object containing a sharp bend, corner, protrusion, or edge. The tube may split.
- (6) Please note that the contents of this catalog are subject to change without prior notice.

SUMITUBE™							
Classification		Product name	Materials	Specifications/Approvals*1			
Waterproofing	Flame-retarded	SUMITUBE	A	Polyolefin	SFP		
Waterproofing	Flame-retarded		LA	Polyolefin	SFP		
Waterproofing	Flame-retarded		A4	Polyolefin	SFP		
Waterproofing	Flame-retarded		C	Polyolefin	SFP		
Waterproofing	Flame-retarded		C (UL)	Polyolefin		UL 105°C	
Waterproofing	Flame-retarded		D	Polyolefin	SFP		
Waterproofing	Flame-retarded		A2	Polyolefin		SAE-AMS 135°C	
Waterproofing	Flame-retarded	SUMITUBE	B	Polyolefin	SFP		
Waterproofing	Flame-retarded		LB	Polyolefin	SFP		
Waterproofing	Flame-retarded	SUMITUBE	F (Z)	Polyolefin	UL 105°C VW-1	PSE -F-	
Waterproofing	Flame-retarded		F3 (Z)	Polyolefin	UL 105°C VW-1	PSE -F-	
Waterproofing	Flame-retarded		NHR2	Polyolefin	cULus 125°C VW-1		
Waterproofing	Flame-retarded		NHR4	Polyolefin	UL 125°C VW-1		
Waterproofing	Flame-retarded		R	Polyolefin		SAE-AMS 121°C	
Waterproofing	Flame-retarded		V (300V)	Polyvinylchloride	UL 105°C VW-1	PSE -F-	
Waterproofing	Flame-retarded	SUMITUBE	F2 (Z)	Polyolefin	UL 125°C VW-1	CSA 125°C VW-1	PSE -F-
Waterproofing	Flame-retarded		F4 (Z)	Polyolefin	UL 125°C VW-1	CSA 125°C VW-1	PSE -F-
Waterproofing	Flame-retarded		B2	Polyolefin	UL 125°C VW-1	CSA 125°C VW-1	SAE-AMS 135°C
Waterproofing	Flame-retarded		B2 (3X)	Polyolefin	UL 125°C VW-1	CSA 125°C VW-1	
Waterproofing	Flame-retarded		B8	Polyolefin	UL 125°C VW-1	CSA 125°C VW-1	PSE125°C -F-
Waterproofing	Flame-retarded		V (600V)	Polyvinylchloride	UL 105°C VW-1	CSA 105°C VW-1	PSE -F-
Waterproofing	Flame-retarded		K	PVDF	UL 150°C VW-1	CSA 150°C VW-1	SAE-AMS 175°C
Waterproofing	Flame-retarded	SUMITUBE	K2	PVDF	UL VW-1	SAE-AMS 175°C	PSE -F-
Waterproofing	Flame-retarded	SUMITUBE	AN25	Elastomer		SAE-AMS 120°C	
Waterproofing	Flame-retarded	SUMITUBE	B6	Polyolefin		SAE-AMS 135°C	
Waterproofing	Flame-retarded	SUMITUBE	O2C	Polyolefin	SFP		
Waterproofing	Flame-retarded		W3C	Polyolefin	SFP		
Waterproofing	Flame-retarded	SUMITUBE	O2B2	Polyolefin	UL 125°C	CSA 125°C	SAE-AMS 110°C
Waterproofing	Flame-retarded		W3F2	Polyolefin	UL 125°C	CSA 125°C	
Waterproofing	Flame-retarded		W3B2	Polyolefin	UL 125°C	CSA 125°C	SAE-AMS 110°C
Waterproofing	Flame-retarded		W3B2 (4X)		UL 125°C		
Waterproofing	Flame-retarded		SA2	Polyolefin	SFP		
Waterproofing	Flame-retarded	SA3	Polyolefin	SFP			
Waterproofing	Flame-retarded	SUMITUBE	W	Polyolefin	SFP		

IRRAX™TUBE / IRRAX™TAPE							
Classification		Product name	Materials	Specifications/Approvals*1			
Waterproofing	Flame-retarded	IRRAXTUBE	A	Polyolefin	SFP		
Waterproofing	Flame-retarded		B	Polyolefin	SFP		
Waterproofing	Flame-retarded		F2	Polyolefin		PSE125°C -F-	
Waterproofing	Flame-retarded		F2 (UL)	Polyolefin	UL 125°C VW-1	PSE125°C -F-	
Waterproofing	Flame-retarded		V2	Polyvinylchloride	UL 105°C VW-1	CSA 105°C VW-1	PSE -F-
Waterproofing	Flame-retarded		RP3	Polyolefin	UL 105°C VW-1	PSE -F-	
Waterproofing	Flame-retarded		B8	Polyolefin	UL 125°C VW-1	PSE -F-	
Waterproofing	Flame-retarded		ER2	Polyolefin	SFP		
Waterproofing	Flame-retarded		NHR	Polyolefin	SFP	Combustion Standards for Railway Vehicle Materials	
Waterproofing	Flame-retarded		NHR4	Polyolefin	UL 125°C VW-1		
Waterproofing	Flame-retarded	IRRAXTAPE	FE2	Fluoroelastomer	SFP		
Waterproofing	Flame-retarded		VZL	Polyvinylchloride	SFP		

IRRAX™SLEEVE						
Classification		Product name	Materials	Specifications/Approvals*1		
Waterproofing	Flame-retarded	IRRAXSLEEVE	SCM2	Polyolefin	SFP	
Waterproofing	Flame-retarded		SBI 300/350	Polyolefin	SFP	
Waterproofing	Flame-retarded		SCD	Polyolefin	SFP	
Waterproofing	Flame-retarded		SNHM	Polyolefin	SFP	Combustion Standards for Railway Vehicle Materials

Product Lineup

Continuous operating temperature (max.)	Shrink properties		Oil/Chemical resistance (room temperature)*2						Features	Page	SUMITUBE™
	Shrink ratio	Shrinking complete temperature	Gasoline	Gas oil	Lubricant	Alcohol	Acid	Alkali			
105°C	1.5 : 1	115°C	○	○	○	◎	◎	◎	General purpose	10	SUMITUBE
105°C	1.5 : 1	115°C	○	○	○	◎	◎	◎	Large diameter	11	
105°C	2 : 1	110°C	○	○	○	◎	○	◎	Weather resistant	12	
105°C	1.5 : 1	90°C	△	△	△	◎	○	○	Shrinkage at low temperature	13	
105°C	1.5 : 1	90°C	△	△	△	◎	○	○	UL	14	
135°C	2 : 1	140°C	◎	◎	◎	◎	◎	◎	Semi-rigid	15	
135°C	2 : 1	110°C	○	○	○	◎	○	◎	Transparent	16	
120°C	1.5 : 1	115°C	○	○	○	◎	◎	◎	Flame-retarded	17	SUMITUBE
120°C	1.5 : 1	115°C	○	○	○	◎	◎	◎	Large diameter, flame-retarded (thick wall)	18	
105°C	2 : 1	90°C	△	△	△	◎	○	○	UL, general purpose	19	SUMITUBE
105°C	2 : 1	90°C	△	△	△	◎	○	○	UL, general purpose (thin wall)	20	
125°C	2 : 1	100°C	△	△	△	◎	○	○	cULus, halogen-free	21	
125°C	2 : 1	100°C	△	△	△	◎	○	○	UL, halogen-free (thin wall)	22	
120°C	2 : 1	130°C	○	○	○	◎	○	○	Rubber-like	23	
105°C	2 : 1	160°C	○	○	○	△	△	△	Flame-retarded, transparent	24	
125°C	2 : 1	90°C	△	△	△	◎	○	○	UL / CSA, general purpose	25	SUMITUBE
125°C	2 : 1	90°C	△	△	△	◎	○	○	UL / CSA, general purpose (thin wall)	26	
135°C	2 : 1	90°C	△	△	△	◎	○	○	Flame-retarded, no marking	27	
135°C	3 : 1	90°C	△	△	△	◎	○	○	High shrink ratio	28	
125°C	2 : 1	130°C	○	○	○	◎	◎	◎	Flame-retarded, semi-rigid	29	
105°C	2 : 1	160°C	○	○	○	△	△	△	Flame-retarded, transparent	30	
175°C	2 : 1	170°C	◎	◎	◎	◎	◎	◎	Highly heat resistant	31	SUMITUBE
175°C	2 : 1	150°C	◎	◎	◎	◎	◎	◎	Highly heat resistant	32	
150°C	2 : 1	170°C	◎	◎	◎	◎	◎	◎	Highly heat resistant, highly oil resistant	33	SUMITUBE
125°C	2 : 1	130°C	○	○	○	◎	◎	◎	Flame-retarded, semi-rigid	34	SUMITUBE
105°C	2 : 1	115°C	○	○	○	○	○	△	Thin adhesive	35	SUMITUBE
105°C	3 : 1	115°C	○	○	○	○	○	△	Thin adhesive	36	
125°C	2 : 1	110°C	△	△	△	○	○	△	Thin adhesive	37	SUMITUBE
125°C	3 : 1	110°C	△	△	△	○	○	△	Thick adhesive	38	
125°C	3 : 1	110°C	△	△	△	○	○	△	Thick adhesive	39-40	
125°C	4 : 1	110°C	△	△	△	○	○	△	Thick adhesive, high shrink ratio	39-40	
130°C	4 : 1	115°C	○	○	○	○	○	△	High shrink ratio, sealing	41	
130°C	4 : 1	135°C	○	○	○	○	○	△	High shrink ratio, sealing	42	
105°C	2.4 : 1	115°C	△	△	△	○	○	○	Effective filling	43	SUMITUBE

Continuous operating temperature (max.)	Shrink properties		Oil/Chemical resistance (room temperature)*2						Features	Page	IRRAX™TUBE IRRAX™TAPE
	Shrink ratio	Shrinking complete temperature	Gasoline	Gas oil	Lubricant	Alcohol	Acid	Alkali			
105°C	—	—	○	○	○	◎	◎	◎	General purpose	45	IRRAX™TUBE
120°C	—	—	○	○	○	◎	◎	◎	Flame-retarded	46	
125°C	—	—	△	△	△	◎	○	○	Flame-retarded	47	
125°C	—	—	△	△	△	◎	○	○	UL	48	
105°C	—	—	○	○	○	△	△	△	UL / CSA	49	
105°C	—	—	△	△	△	◎	○	○	Flexible, flame-retarded	50	
125°C	—	—	○	○	○	◎	◎	◎	Semi-rigid	51	IRRAX™TAPE
150°C	—	—	○	○	○	◎	◎	◎	Highly heat resistant, flame-retarded	52	
125°C	—	—	△	△	△	◎	○	○	Flame-retarded, halogen-free	53	
125°C	—	—	△	△	△	◎	○	○	UL, halogen-free	54	
200°C	—	—	◎	◎	◎	◎	◎	◎	Highly heat resistant, highly oil resistant, flame-retarded	55	
105°C	—	—	○	○	○	△	△	△	Flame-retarded	56	

Continuous operating temperature (max.)	Shrink properties		Oil/Chemical resistance (room temperature)*2						Features	Page	IRRAX™SLEEVE
	Shrink ratio	Shrinking complete temperature	Gasoline	Gas oil	Lubricant	Alcohol	Acid	Alkali			
										58	IRRAX™SLEEVE
										59	
										60	
										61	

*1: Explanations of Specifications/Approvals are as follows.

- SFP : SFP Standard
- UL : UL224
- CSA : CSA C22.2 No.198.1
- cULus : Standard for U.S.A and Canada based on UL
- SAE-AMS : SAE-AMS-DTL-23053 (Formerly MIL-I-23053)
- PSE : Electrical Appliances and Material Safety Act
- Combustion Standards for Railway Vehicle Materials : Combustion Standards for Railway Vehicle Materials by Japan Railway Rolling Stock & Machinery Association

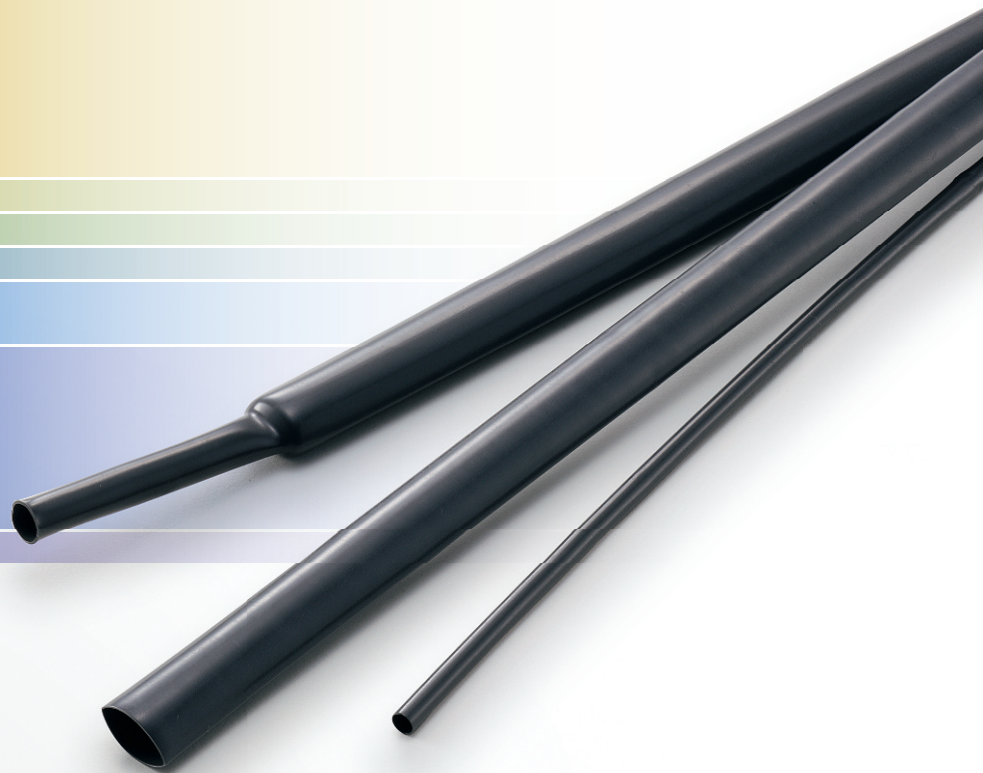
*2: Explanations of symbols are as follows.

- ◎ : Very good
- : Good
- △ : Not applicable in some cases

Page	Composite articles
63	SUMISEAL
64	SA3 CAP
Page	Processing equipment
65	SUMISHRINKER / HEATING GUN

SUMITUBE™

SUMITUBE	A	
	LA	
	A4	
	C	
	C (UL)	
	D	
	A2	
SUMITUBE	B	
	LB	
SUMITUBE	F (Z)	
	F3 (Z)	
	NHR2	
	NHR4	
	R	
	V (300V)	
SUMITUBE	F2 (Z)	
	F4 (Z)	
	B2	
	B2 (3X)	
	B8	
	V (600V)	
	K	
SUMITUBE	K2	
SUMITUBE	AN25	
SUMITUBE	B6	
SUMITUBE	O2C	
	W3C	
SUMITUBE	O2B2	
	W3F2	
	W3B2	
	W3B2 (4X)	
	SA2	
SUMITUBE	SA3	
	W	



SUMITUBE™

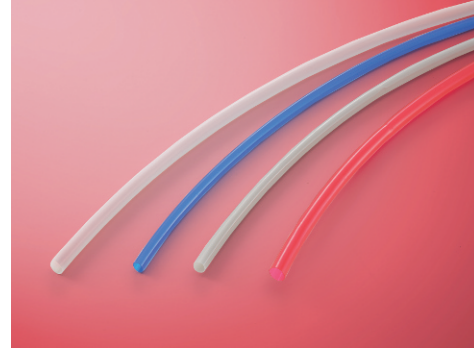
SUMITUBE is a heat-shrinkable tube that takes advantage of the shape-memory effect of plastics enhanced by electron beam irradiation. Made mainly from raw materials such as polyolefin, fluorinated polymer, or thermoplastic elastomer, SUMITUBE is widely used in household appliances, automobiles, aircraft, and other equipment for various purposes, including bundling, thermal protection, and insulation protection of electrical wires and harnesses.

SUMITUBE™ A

[General purpose heat-shrinkable tubing]

Catalog No. 802  RoHS directive



Basic Properties

- Material : Irradiated cross-linked flexible polyolefin
- Shrink temperature : min. 115°C
- Shrink ratio : Radial change: approx. 40%
Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- Highly resistant against oil and chemicals
- Transparent colors

Specifications/Approvals

SFP standard (R4-0180)

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires
- Insulation and protection of resistors and capacitors
- Corrosion protection for pipes

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White, Clear

Properties

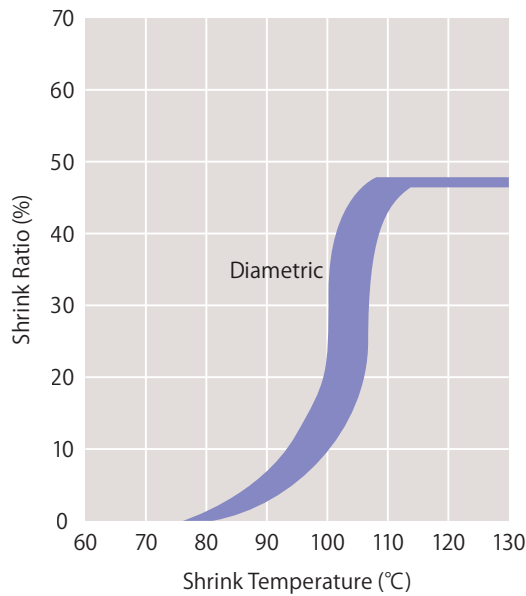
Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	19.2MPa
	Elongation	min. 200%	440%
	Specific gravity	—	0.92
	Hardness (Shore D)	—	42
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. $1.0 \times 10^{16} \Omega \cdot \text{cm}$	$1.6 \times 10^{16} \Omega \cdot \text{cm}$
Chemical	Water absorption	23°C x 24 hours, max. 0.10%	0.09%
	Flammability	Flammable	—

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)	
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	Cut	Spool
1.5 × 0.2	2.10 ± 0.30	0.20	0.80	0.40 ± 0.10	1	200
2 × 0.2	2.60 ± 0.30	0.20	1.30	0.40 ± 0.10	1	200
2.5 × 0.2	3.10 ± 0.30	0.20	1.50	0.40 ± 0.10	1	200
3 × 0.2	3.60 ± 0.30	0.20	1.80	0.40 ± 0.10	1	200
3.5 × 0.2	4.10 ± 0.30	0.20	2.00	0.40 ± 0.10	1	100
4 × 0.2	4.60 ± 0.30	0.20	2.30	0.40 ± 0.10	1	100
5 × 0.2	5.60 ± 0.30	0.20	2.90	0.40 ± 0.10	1	100
6 × 0.25	6.5 ± 0.3	0.25	3.50	0.50 ± 0.10	1	100
7 × 0.25	7.5 ± 0.3	0.25	4.20	0.50 ± 0.10	1	50
8 × 0.25	8.5 ± 0.3	0.25	4.70	0.50 ± 0.10	1	50
9 × 0.25	9.5 ± 0.3	0.25	5.40	0.50 ± 0.10	1	50
10 × 0.25	10.5 ± 0.4	0.25	6.0	0.50 ± 0.10	1	50
11 × 0.25	11.5 ± 0.4	0.25	7.0	0.50 ± 0.10	1	50
12 × 0.3	12.4 ± 0.4	0.30	7.6	0.60 ± 0.10	1	50
13 × 0.3	13.4 ± 0.4	0.30	8.0	0.60 ± 0.10	1	50
14 × 0.3	14.4 ± 0.4	0.30	9.0	0.60 ± 0.10	1	50
15 × 0.3	15.4 ± 0.4	0.30	10.0	0.60 ± 0.10	1	50
16 × 0.3	16.4 ± 0.4	0.30	10.5	0.60 ± 0.10	1	50
18 × 0.3	18.4 ± 0.4	0.30	11.5	0.60 ± 0.10	1	50
20 × 0.3	20.4 ± 0.4	0.30	13.0	0.60 ± 0.10	1	50
22 × 0.3	22.4 ± 0.4	0.30	14.0	0.60 ± 0.10	1	50
25 × 0.3	25.5 ± 0.5	0.30	15.0	0.60 ± 0.10	1	50

Shrink Properties



SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

SUMITUBE™

B
LB
F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE™

K2

SUMITUBE™

AN25

SUMITUBE™

B6

SUMITUBE™

O2C

SUMITUBE™

W3C

SUMITUBE™

O2B2

SUMITUBE™

W3F2

SUMITUBE™

W3B2

SUMITUBE™

W3B2 (4X)

SUMITUBE™

SA2

SUMITUBE™

SA3

SUMITUBE™

W

IRRAX™TUBE

IRRAX™TAPE

IRRAX™TUBE

A

IRRAX™TUBE

B

IRRAX™TUBE

F2

IRRAX™TUBE

F2 (UL)

IRRAX™TUBE

V2

IRRAX™TUBE

RP3

IRRAX™TUBE

B8

IRRAX™TUBE

ER2

IRRAX™TUBE

NHR

IRRAX™TUBE

NHR4

IRRAX™TUBE

FE2

IRRAX™TUBE

VZL

IRRAX™SLEEVE

IRRAX™SLEEVE

SCM2

IRRAX™SLEEVE

SBI

IRRAX™SLEEVE

300/350

IRRAX™SLEEVE

SCD

IRRAX™SLEEVE

SNHM

IRRAX™SLEEVE

Composite

articles

IRRAX™SLEEVE

SUMISEAL

IRRAX™SLEEVE

SA3 CAP

IRRAX™SLEEVE

Processing

equipment

IRRAX™SLEEVE

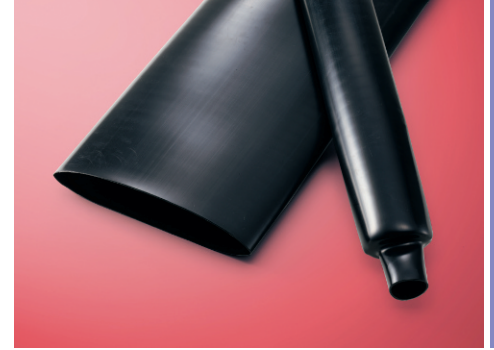
SUMISHRINKER / HEATING GUN

SUMITUBE™ LA

[Large diameter heat-shrinkable tubing]

Catalog No. 813 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
C
C (UL)
D
A2
B
LB
F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K
K2
AN25
B6
O2C
W3C
O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3
W

Basic Properties

- Material : Irradiated cross-linked flexible polyolefin
- Shrink temperature : min. 115°C
- Shrink ratio : Radial change: approx. 35%
: Longitudinal change: min. -20%
- Continuous operating temperature : -55 to 105°C

Features

- Large diameter and thick wall

Specifications/Approvals

SFP standard (R4-2380)

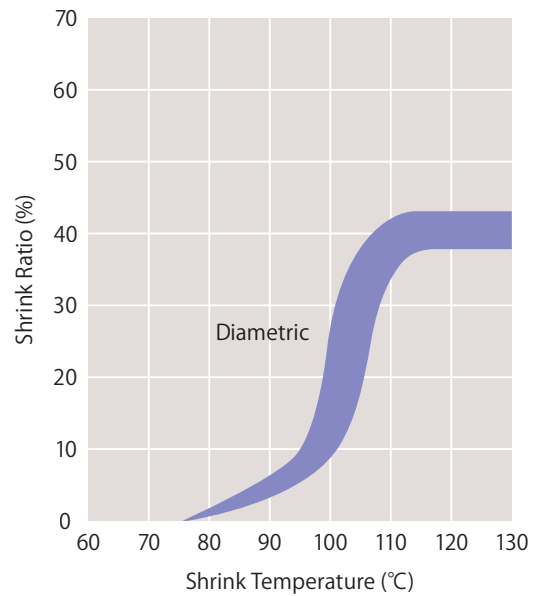
Applications

- Electrical insulation for busbars
- Insulation and protection for metal sleeves

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, White, Clear

Shrink Properties



IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
RP3
B8
ER2
NHR
NHR4
FE2
VZL

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	19.2MPa
	Elongation	min. 200%	440%
	Specific gravity	—	0.92
	Hardness (Shore D)	—	44
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. $1.0 \times 10^{16} \Omega \cdot \text{cm}$	$1.6 \times 10^{16} \Omega \cdot \text{cm}$
Chemical	Water absorption	23°C x 24 hours, max. 0.10%	0.09%
	Flammability	Flammable	—

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
30×1	36.0±4.0	0.70	21.0	1.50	10
40×1	47 ±4	0.70	27.0	1.50	10
50×1	57 ±4	0.70	33.0	1.50	10
60×1	67 ±4	0.70	40.0	1.50	10
70×1	77 ±4	0.70	46	1.50	10
80×1	86 ±4	0.70	53	1.50	10
90×1	96 ±4	0.70	60	1.50	10
100×1	106 ±4	0.70	66	1.50	10
120×1	127 ±4	0.70	80	1.50	10
150×1	161 ±4	0.70	98	1.50	10

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

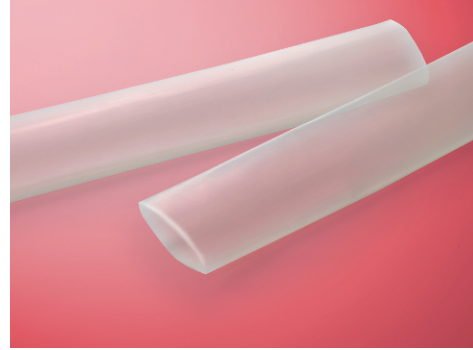
SUMISHRINKER / HEATING GUN

SUMITUBE™ A4

[Weather resistant heat-shrinkable tubing]

Catalog No. 858 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material : Irradiated cross-linked flexible polyolefin
- Shrink temperature : min. 110°C
- Shrink ratio : Radial change: min. 50%
: Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- Highly weather resistant
- Opaque and bright colors

Specifications/Approvals

SFP standard (R4-3684)

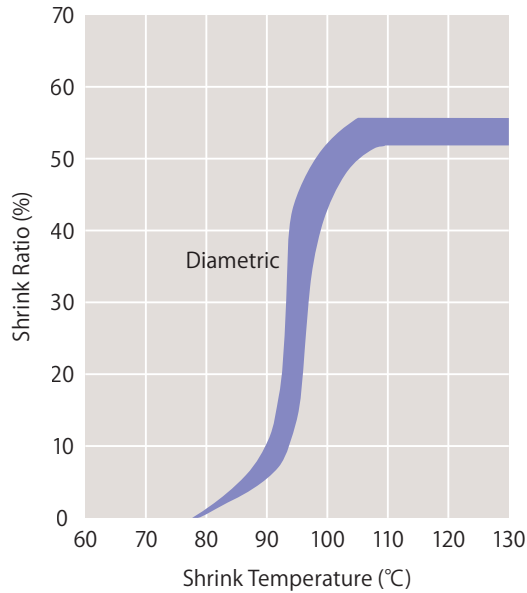
Applications

- Insulation and protection for outdoor applications
- Insulation and protection for antennas
- Insulation and reinforcement for cable terminals
- Color identification and bundling for electric wires
- Corrosion protection for pipes

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White, Clear

Shrink Properties



Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	20.9MPa
	Elongation	min. 200%	455%
	Specific gravity	—	0.92
	Hardness (Shore D)	—	42
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$1.6 \times 10^{17} \Omega \cdot \text{cm}$
Chemical	Water absorption	23°C x 24 hours, max. 0.20%	0.10%
	Flammability	Flammable	—
	Weather resistance	—	Colors can be identified for 2 years
	Outdoor exposure test*2	—	Elongation 100% of original value after 1,000 hours
	Weatherometer	—	Elongation 77% of original value after 2,000 hours

*1: For reference use only *2: Performance may vary depending on region or conditions

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
3/64	1.60 ± 0.30	0.20	0.60	0.33	305
1/16	2.00 ± 0.30	0.20	0.80	0.36	305
3/32	2.70 ± 0.30	0.25	1.20	0.44	152.5
1/8	3.50 ± 0.30	0.25	1.60	0.44	152.5
3/16	5.20 ± 0.40	0.25	2.40	0.44	61
1/4	6.8 ± 0.4	0.30	3.20	0.56	61
3/8	10.0 ± 0.4	0.30	4.80	0.56	61
1/2	13.2 ± 0.5	0.30	6.4	0.56	61
3/4	20.0 ± 0.6	0.35	9.5	0.69	61
1	26.6 ± 0.8	0.40	12.7	0.77	61
1-1/2	39.3 ± 1.0	0.45	19.1	0.87	61
2	52.7 ± 1.5	0.50	25.4	0.97	61

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

SUMITUBE B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE
IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite
articles

SUMISEAL
SA3 CAP

Processing
equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ C

[General purpose heat-shrinkable tubing (shrinks at low temperature)]

Catalog No. 812  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

O2B2
W3F2

SUMITUBE W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2

IRRAXTUBE RP3

B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Basic Properties

- Material : Irradiated cross-linked flexible polyolefin
- Shrink temperature : min. 90°C
- Shrink ratio : Radial change: approx. 40%
: Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- Shrinkage at low temperature (90°C)
- Flexible ■ Transparent colors

Specifications/Approvals

SFP standard (R4-0580)

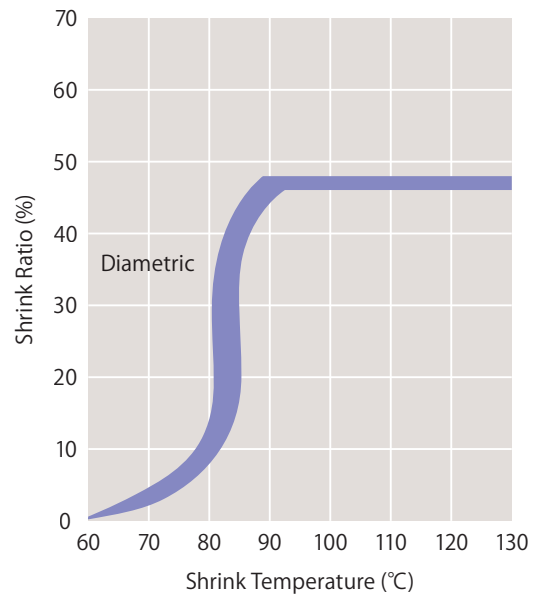
Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires
- Fixing and protection of cable markers
- Insulation and protection of resistors and capacitors

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White, Clear

Shrink Properties



Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	20.9MPa
	Elongation	min. 200%	522%
	Specific gravity	—	0.94
	Hardness (Shore D)	—	41
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	1.2 x 10 ¹⁶ Ω·cm
Chemical	Water absorption	23°C x 24 hours, max. 0.30%	0.08%
	Flammability	Flammable	—

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)	
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	Cut	Spool
1 × 0.2	1.60 ± 0.30	0.20	0.60	0.40 ± 0.10	1	100
1.5 × 0.2	2.10 ± 0.30	0.20	0.80	0.40 ± 0.10	1	200
2 × 0.2	2.60 ± 0.30	0.20	1.30	0.40 ± 0.10	1	200
2.5 × 0.2	3.10 ± 0.30	0.20	1.50	0.40 ± 0.10	1	200
3 × 0.2	3.60 ± 0.30	0.20	1.80	0.40 ± 0.10	1	200
3.5 × 0.2	4.10 ± 0.30	0.20	2.00	0.40 ± 0.10	1	100
4 × 0.2	4.60 ± 0.30	0.20	2.30	0.40 ± 0.10	1	100
5 × 0.2	5.60 ± 0.30	0.20	2.90	0.40 ± 0.10	1	100
6 × 0.25	6.5 ± 0.3	0.25	3.50	0.50 ± 0.10	1	100
7 × 0.25	7.5 ± 0.3	0.25	4.20	0.50 ± 0.10	1	50
8 × 0.25	8.5 ± 0.3	0.25	4.70	0.50 ± 0.10	1	50
9 × 0.25	9.5 ± 0.3	0.25	5.40	0.50 ± 0.10	1	50
10 × 0.25	10.5 ± 0.4	0.25	6.0	0.50 ± 0.10	1	50
11 × 0.25	11.5 ± 0.4	0.25	7.0	0.50 ± 0.10	1	50
12 × 0.3	12.4 ± 0.4	0.30	7.6	0.60 ± 0.10	1	50
13 × 0.3	13.4 ± 0.4	0.30	8.0	0.60 ± 0.10	1	50
14 × 0.3	14.4 ± 0.4	0.30	9.0	0.60 ± 0.10	1	50
15 × 0.3	15.4 ± 0.4	0.30	10.0	0.60 ± 0.10	1	50
16 × 0.3	16.4 ± 0.4	0.30	10.5	0.60 ± 0.10	1	50
18 × 0.3	18.4 ± 0.4	0.30	11.5	0.60 ± 0.10	1	50
20 × 0.3	20.4 ± 0.4	0.30	13.0	0.60 ± 0.10	1	50
22 × 0.3	22.4 ± 0.4	0.30	14.0	0.60 ± 0.10	1	50
25 × 0.3	25.5 ± 0.5	0.30	15.0	0.60 ± 0.10	1	50

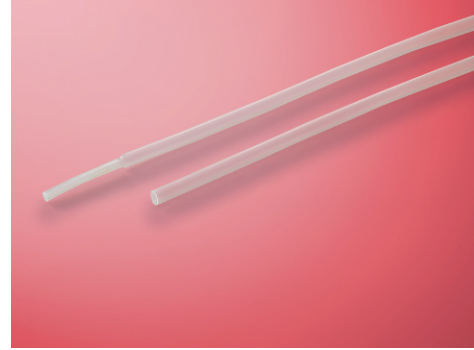
SUMITUBE™ C (UL)

[105°C rating, heat-shrinkable tubing
(shrinks at low temperature)]

UL recognized

Catalog No. 871 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



SUMITUBE™

SUMITUBE	A
	LA
	A4
	C
	C (UL)
	D
A2	

Basic Properties

- Material : Irradiated cross-linked flexible polyolefin
- Shrink temperature : min. 90°C
- Shrink ratio : Radial change: approx. 40%
: Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- Shrinkage at low temperature (90°C)
- Thick wall for protecting terminals

Specifications/Approvals

UL224

File No. E75077

Catalog No. 871

Rating temperature: 105°C Rating voltage: 600V

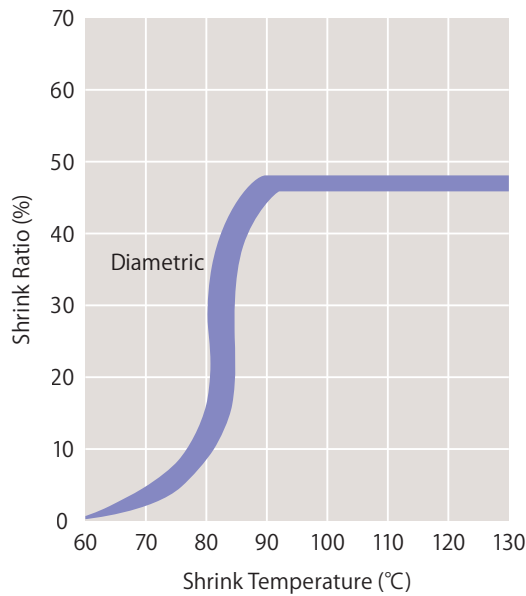
Applications

- Insulation, protection and reinforcement for termination and joints of electric wire (especially for protecting faston terminals)

Colors

- Clear

Shrink Properties



Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	21.0MPa
	Tensile strength (after aging)	136°C x 7 days, min. 7.3MPa	22.0MPa
	Elongation (before aging)	min. 200%	558%
	Elongation (after aging)	136°C x 7 days, min. 100%	667%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	136°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	25.0kV
	Dielectric breakdown (after aging)	136°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	2.2 x 10 ¹⁶ Ω·cm
	Corrosion against bare copper	136°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	136°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	475%
	Flammability	Flammable	—

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
3.2 x 0.7	3.20	0.70	1.90	0.95	1
4.8 x 0.7	4.80	0.70	2.70	0.95	1
6 x 0.7	6.4	0.70	3.50	0.95	1
7 x 0.7	7.0	0.70	4.50	1.20	1

SUMITUBE B
LB

F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V(300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V(600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

SUMITUBE O2B2
W3F2
W3B2
W3B2(4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ D

[Semi-rigid heat-shrinkable tubing]

Catalog No. 828  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

SUMITUBE O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)

SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Basic Properties

- Material : Irradiated cross-linked semi-rigid polyolefin
- Shrink temperature : min. 140°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 135°C

Features

- Semi-rigid
- High strength against mechanical abuse
- Highly resistant against abrasion
- Highly resistant against oil and chemicals

Specifications/Approvals

SFP standard (R4-0680)

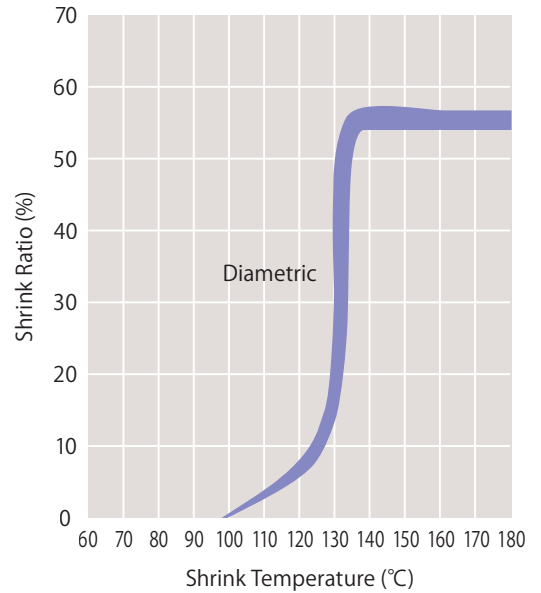
Applications

- Insulation, protection and reinforcement for termination and joints of electric wire which require high strength against mechanical abuse
- Reinforcement by covering
- Mechanical protection for metal wires
- Corrosion protection for pipes

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White, Clear

Shrink Properties



Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 13.8MPa	20.0MPa
	Elongation (before aging)	min. 200%	540%
	Elongation (after aging)	175°C x 7 days, min. 100%	525%
	Low temperature flexibility	-55°C x 4 hours, no crack	Pass
	Heat shock	250°C x 4 hours, no crack	Pass
	Specific gravity	max. 1.00	0.95
Electrical	Dielectric strength	min. 19.7kV/mm	55.0kV/mm
	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	1.6 x 10 ¹⁶ Ω·cm
Chemical	Water absorption	23°C x 24 hours, max. 0.20%	0.10%
	Corrosion against bare copper	150°C x 16 hours, no corrosion	Pass
	Transparency stability	175°C x 24 hours, no change	Pass
	Fluid resistance	After immersion at 24°C x 24 hours,	
	Tensile strength	min. 11.1MPa	22.2MPa
	Dielectric strength	min. 15.8kV/mm	53.5kV/mm
	Flammability	Flammable	—

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	
3/64	1.60±0.30	0.25	0.60	0.51±0.07	1.22
1/16	2.00±0.30	0.25	0.80	0.51±0.07	1.22
3/32	2.70±0.30	0.25	1.20	0.51±0.07	1.22
1/8	3.50±0.30	0.25	1.60	0.51±0.07	1.22
3/16	5.20±0.40	0.30	2.40	0.64±0.07	1.22
1/4	6.8 ±0.4	0.30	3.20	0.64±0.07	1.22
3/8	10.0 ±0.4	0.35	4.80	0.76±0.12	1.22
1/2	13.2 ±0.5	0.35	6.4	0.76±0.12	1.22

SUMITUBE™ A2

[Clear flexible heat-shrinkable tubing]
SAE-AMS-DTL-23053

Catalog No. 825 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



SUMITUBE™

SUMITUBE	A
	LA
	A4
	C
	C (UL)
	D
A2	

Basic Properties

- Material : Irradiated cross-linked flexible polyolefin
- Shrink temperature : min. 110°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: 0 ±5%
- Continuous operating temperature : -55 to 135°C

Features

- SAE-AMS-DTL-23053 approved
- Transparent colors
- Flexible

Specifications/Approvals

SAE-AMS-DTL-23053/5 Class 2

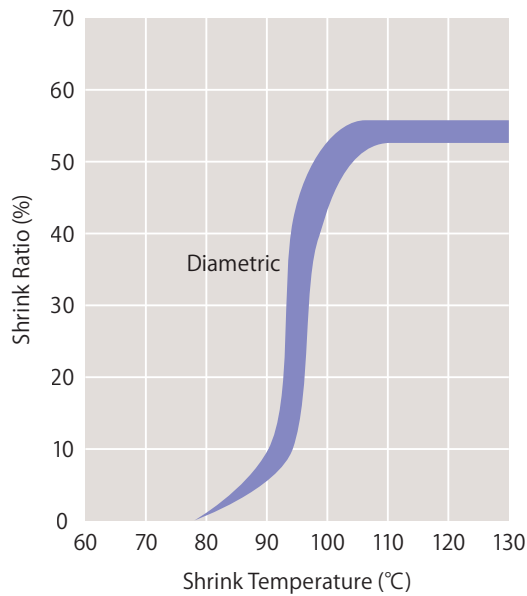
Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Fixing and protection of cable markers

Colors

- Clear

Shrink Properties



Properties [based on SAE-AMS-DTL-23053/5 Class 2]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	20.4MPa
	Elongation (before aging)	min. 200%	520%
	Elongation (after aging)	175°C x 7 days, min. 100%	425%
	Low temperature flexibility	-55°C x 4 hours, no crack	Pass
	Heat shock	250°C x 4 hours, no crack	Pass
	Specific gravity	max. 1.00	0.92
Electrical	Dielectric strength	min. 19.7kV/mm	38.8kV/mm
	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	5.2 x 10 ¹⁶ Ω·cm
Chemical	Water absorption	23°C x 24 hours, max. 0.50%	0.10%
	Corrosion against bare copper	175°C x 16 hours, no corrosion	Pass
	Transparency stability	175°C x 24 hours, no change	Pass
	Fluid resistance	After immersion at 24°C x 24 hours,	
	Tensile strength	min. 6.9MPa	13.7MPa
	Dielectric strength	min. 15.8kV/mm	41.9kV/mm
	Flammability	Flammable	—

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)	
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	Cut	Spool
3/64	1.60 ± 0.30	0.20	0.60	0.41 ± 0.07	1.22	305
1/16	2.00 ± 0.30	0.20	0.80	0.43 ± 0.07	1.22	305
3/32	2.70 ± 0.30	0.25	1.20	0.51 ± 0.07	1.22	152.5
1/8	3.50 ± 0.30	0.25	1.60	0.51 ± 0.07	1.22	152.5
3/16	5.20 ± 0.30	0.30	2.40	0.51 ± 0.07	1.22	61
1/4	6.8 ± 0.4	0.30	3.20	0.64 ± 0.07	1.22	61
3/8	10.0 ± 0.4	0.30	4.80	0.64 ± 0.07	1.22	61
1/2	13.2 ± 0.5	0.30	6.4	0.64 ± 0.07	1.22	61
3/4	20.0 ± 0.6	0.40	9.5	0.76 ± 0.07	1.22	61
1	26.6 ± 0.8	0.45	12.7	0.89 ± 0.12	1.22	61
1-1/2	39.3 ± 1.0	0.45	19.1	1.02 ± 0.15	1.22	61
2	52.7 ± 1.5	0.50	25.4	1.14 ± 0.17	1.22	61
3	77.7 ± 1.5	0.55	38.1	1.27 ± 0.20	1.22	61
4	106.0 ± 3.0	0.60	50.8	1.40 ± 0.22	1.22	30.5

SUMITUBE B
LB

F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

SUMITUBE O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE
IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

IRRAXSLEEVE SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ B

[General purpose flame-retarded heat-shrinkable tubing]

Catalog No. 815  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

O2B2
W3F2
W3B2

SUMITUBE W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI 300/350
IRRAXSLEEVE SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Basic Properties

- **Material** : Irradiated cross-linked flexible flame-retarded polyolefin
- **Shrink temperature** : min. 115°C
- **Shrink ratio** : Radial change: approx. 40%
: Longitudinal change: min. -15%
- **Continuous operating temperature** : -45 to 120°C

Features

- **Flame-retarded (PBDE/PBB-free)**

Specifications/Approvals

SFP standard (R4-0380)

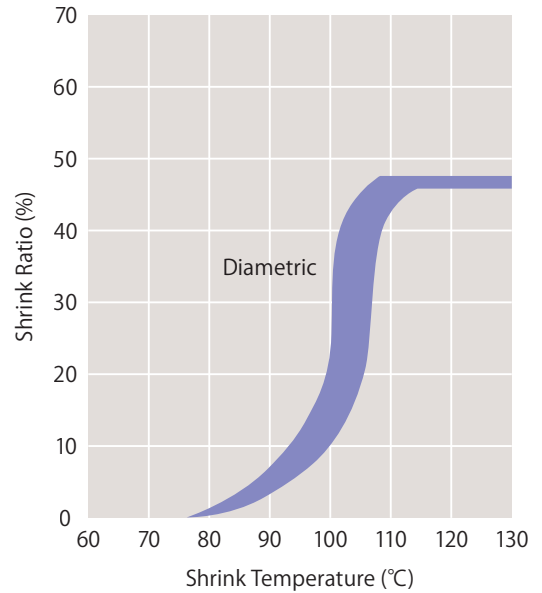
Applications

- Insulation and protection for automobile parts and harnesses
- Insulation, protection and reinforcement for termination and joints of electric wire
- Corrosion protection for pipes

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, White (all colors are in pastel tone)

Shrink Properties



Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	18.6MPa
	Elongation	min. 200%	454%
	Specific gravity	—	1.03
	Hardness (Shore D)	—	42
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	1.1 x 10 ¹⁷ Ω·cm
Chemical	Water absorption	23°C x 24 hours, max. 0.30%	0.15%
	Flammability	Flame-retarded (by FMVSS method*2)	Pass

*1: For reference use only *2: FMVSS = Federal Motor Vehicle Safety Standard (regulation in the U.S.A)

Sizes

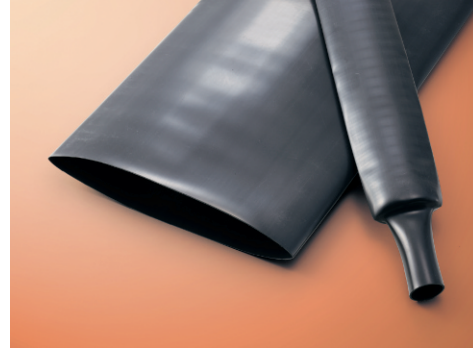
Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)	
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	Cut	Spool
2 × 0.3	2.40 ± 0.30	0.30	1.20	0.40	1	200
2.5 × 0.3	2.90 ± 0.30	0.30	1.50	0.50	1	200
3 × 0.3	3.40 ± 0.30	0.30	1.80	0.50	1	200
3.5 × 0.3	3.90 ± 0.30	0.30	2.00	0.50	1	100
4 × 0.3	4.40 ± 0.30	0.30	2.30	0.50	1	100
5 × 0.3	5.40 ± 0.30	0.30	2.90	0.50	1	100
6 × 0.3	6.4 ± 0.3	0.30	3.50	0.50	1	50
7 × 0.3	7.4 ± 0.3	0.30	4.20	0.50	1	50
8 × 0.3	8.4 ± 0.3	0.30	4.70	0.50	1	50
10 × 0.3	10.6 ± 0.4	0.30	6.0	0.50	1	50
11 × 0.4	11.6 ± 0.4	0.40	7.0	0.65	1	50
12 × 0.4	12.6 ± 0.4	0.40	8.0	0.65	1	50
13 × 0.4	13.6 ± 0.4	0.40	8.5	0.65	1	50
14 × 0.4	14.6 ± 0.5	0.40	9.0	0.65	1	50
15 × 0.4	15.6 ± 0.5	0.40	10.0	0.65	1	50
16 × 0.4	16.6 ± 0.5	0.40	11.0	0.65	1	50
18 × 0.4	18.6 ± 0.5	0.40	12.0	0.65	1	50
20 × 0.4	20.5 ± 0.5	0.40	13.0	0.70	1	50
22 × 0.4	22.5 ± 0.5	0.40	14.0	0.70	1	50
25 × 0.4	25.5 ± 0.5	0.40	15.0	0.70	1	50

SUMITUBE™ LB

[Large diameter flame-retarded heat-shrinkable tubing]

Catalog No. 813  RoHS directive



Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 115°C
- Shrink ratio : Radial change: approx. 35%
Longitudinal change: min. -20%
- Continuous operating temperature : -45 to 120°C

Features

- Large diameter and thick wall
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

SFP standard (R4-2782)

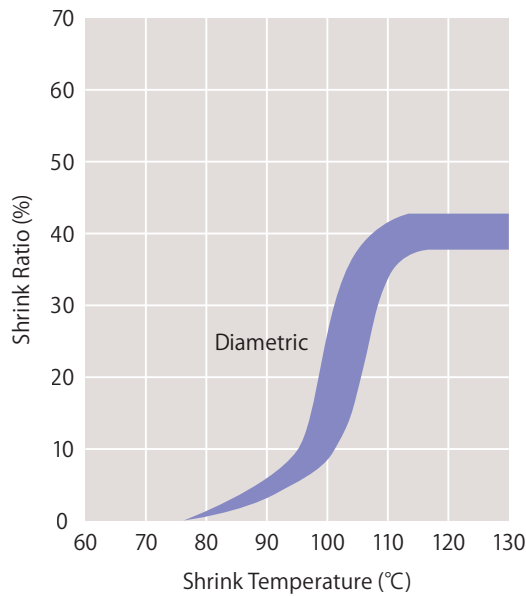
Applications

- Electrical insulation for busbars
- Insulation and protection for metal sleeves

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, White (all colors are in pastel tone)

Shrink Properties



Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	18.6MPa
	Elongation	min. 200%	454%
	Specific gravity	—	1.03
	Hardness (Shore D)	—	42
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$1.1 \times 10^{17} \Omega \cdot \text{cm}$
Chemical	Water absorption	23°C x 24 hours, max. 0.30%	0.15%
	Flammability	Flame-retarded (by FMVSS method*2)	Pass

*1: For reference use only *2: FMVSS = Federal Motor Vehicle Safety Standard (regulation in the U.S.A)

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
30 × 1	36.0 ± 4.0	0.70	21.0	1.50	10
40 × 1	47 ± 4	0.70	27.0	1.50	10
50 × 1	57 ± 4	0.70	33.0	1.50	10
60 × 1	67 ± 4	0.70	40.0	1.50	10
70 × 1	77 ± 4	0.70	46	1.50	10
80 × 1	86 ± 4	0.70	53	1.50	10
90 × 1	96 ± 4	0.70	60	1.50	10
100 × 1	106 ± 4	0.70	66	1.50	10
120 × 1	127 ± 4	0.70	80	1.50	10
150 × 1	161 ± 4	0.70	98	1.50	10

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

SUMITUBE™ B LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

SUMITUBE O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2

IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2

IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ F (Z)

[105°C rating, flame-retarded heat-shrinkable tubing]
UL recognized

Catalog No. 939  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 90°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- UL224 recognized
- Flexible
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

UL224

File No. E48762 Catalog No. SUMITUBE™ F (Z) or 939
Rating temperature: 105°C Rating voltage: 600V
Flammability: VW-1

Electrical Appliance and Material Safety Law (Japan)
Flammability rating (-F-) test registration No.: F-ST53-009 - F-ST53-012

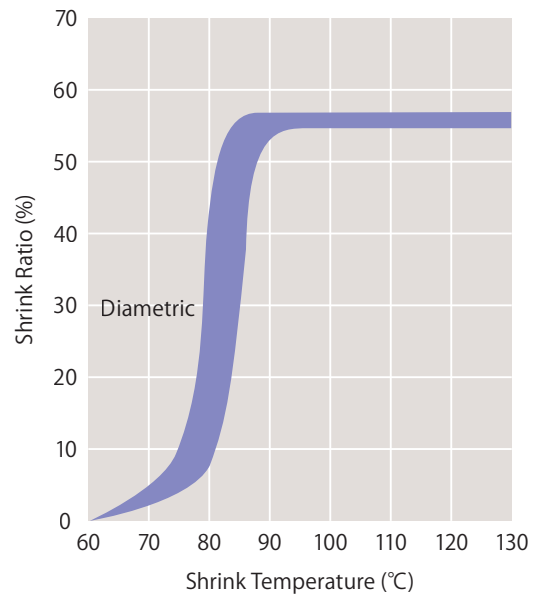
Marking on Surface

VW-1 -F-  SUMITOMO-K SUMITUBE F (Z) CAT 939 105°C

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires
- Insulation and protection of resistors and capacitors

Shrink Properties



Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	12.6MPa
	Tensile strength (after aging)	136°C x 7 days, min. 7.3MPa	14.8MPa
	Elongation (before aging)	min. 200%	333%
	Elongation (after aging)	136°C x 7 days, min. 100%	358%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	136°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	21.0kV
	Dielectric breakdown (after aging)	136°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁶ Ω·cm	2.7 x 10 ¹⁶ Ω·cm
	Corrosion against bare copper	136°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	136°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	358%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)		Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)	
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	Cut	Spool		Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	Cut	Spool
1 × 0.2	1.30 ± 0.30	0.20	0.50	0.33	1	200	11 × 0.25	11.4 ± 0.4	0.25	5.50	0.56	1	50
1.5 × 0.2	2.00 ± 0.30	0.20	0.75	0.36	1	200	12 × 0.25	12.4 ± 0.4	0.25	6.0	0.56	1	50
2 × 0.2	2.50 ± 0.30	0.20	1.00	0.44	1	200	13 × 0.3	13.4 ± 0.4	0.30	6.5	0.69	1	50
2.5 × 0.25	3.00 ± 0.30	0.25	1.25	0.44	1	200	14 × 0.3	14.5 ± 0.4	0.30	7.0	0.69	1	50
3 × 0.25	3.50 ± 0.30	0.25	1.50	0.44	1	200	15 × 0.3	15.5 ± 0.4	0.30	7.5	0.69	1	50
3.5 × 0.25	4.00 ± 0.30	0.25	1.75	0.44	1	200	16 × 0.3	16.8 ± 0.5	0.30	8.0	0.69	1	50
4 × 0.25	4.50 ± 0.30	0.25	2.00	0.44	1	200	18 × 0.35	18.7 ± 0.5	0.35	9.0	0.77	1	50
5 × 0.25	5.40 ± 0.30	0.25	2.50	0.56	1	100	20 × 0.35	21.2 ± 0.6	0.35	10.0	0.77	1	50
6 × 0.25	6.4 ± 0.4	0.25	3.00	0.56	1	100	22 × 0.4	23.2 ± 0.6	0.40	11.0	0.77	1	50
7 × 0.25	7.4 ± 0.4	0.25	3.50	0.56	1	50	25 × 0.4	26.1 ± 0.8	0.40	12.5	0.87	1	50
8 × 0.25	8.4 ± 0.4	0.25	4.00	0.56	1	50	30 × 0.5	32.0 ± 1.0	0.50	15.0	0.87	1	50
9 × 0.25	9.4 ± 0.4	0.25	4.50	0.56	1	50	40 × 0.5	43.0 ± 1.5	0.50	20.0	0.97	1	50
10 × 0.25	10.4 ± 0.4	0.25	5.00	0.56	1	50	50 × 0.5	53.0 ± 2.0	0.50	25.0	0.97	1	50

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
IRRAXSLEEVE SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ F3 (Z)

[Thin wall, very flexible flame-retarded heat-shrinkable tubing] UL recognized

Catalog No. 941  RoHS directive



Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 90°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- UL224 recognized
- Thin wall, quick shrinkage
- Flexible
- Flame-retarded (PBDE/PBB-free)


Specifications/Approvals

UL224

File No. E75077 Catalog No. SUMITUBE™ F3 (Z) or 941
Rating temperature: 105°C Rating voltage: 300V
Flammability: VW-1

Electrical Appliance and Material Safety Law (Japan)
Flammability rating (-F-) test registration No.: F-ST53-009 - F-ST53-012

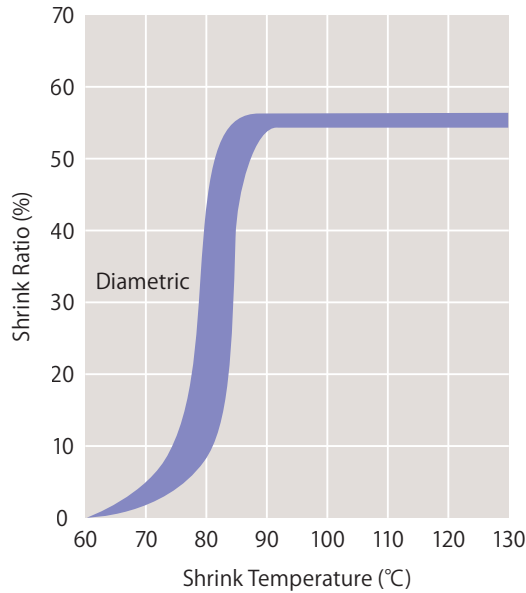
Marking on Surface

VW-1 -F-  SUMITOMO-K SUMITUBE F3 (Z) CAT 941 105°C

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires
- Insulation and protection of resistors and capacitors

Shrink Properties



Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	16.0MPa
	Tensile strength (after aging)	136°C x 7 days, min. 7.3MPa	18.7MPa
	Elongation (before aging)	min. 200%	350%
	Elongation (after aging)	136°C x 7 days, min. 100%	390%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	136°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	14.8kV
	Dielectric breakdown (after aging)	136°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. $1.0 \times 10^{16} \Omega \cdot \text{cm}$	$3.9 \times 10^{16} \Omega \cdot \text{cm}$
	Corrosion against bare copper	136°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	136°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	335%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
1 × 0.1	1.30 ± 0.30	0.10	0.50	0.20	200
1.5 × 0.1	1.90 ± 0.30	0.10	0.75	0.20	200
2 × 0.1	2.30 ± 0.30	0.10	1.00	0.20	200
2.5 × 0.15	2.80 ± 0.30	0.15	1.25	0.25	200
3 × 0.15	3.30 ± 0.30	0.15	1.50	0.25	200
3.5 × 0.15	3.80 ± 0.30	0.15	1.75	0.25	200
4 × 0.15	4.40 ± 0.30	0.15	2.00	0.25	200
5 × 0.15	5.50 ± 0.30	0.15	2.50	0.25	100
6 × 0.15	6.5 ± 0.4	0.15	3.00	0.28	100
7 × 0.15	7.5 ± 0.4	0.15	3.50	0.28	50
8 × 0.15	8.5 ± 0.4	0.15	4.00	0.28	50
9 × 0.15	9.5 ± 0.4	0.15	4.50	0.28	50
10 × 0.15	10.5 ± 0.5	0.15	5.00	0.28	50

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

SUMITUBE™

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE™

K2

SUMITUBE™

AN25

SUMITUBE™

B6

SUMITUBE™

O2C

SUMITUBE™

W3C

SUMITUBE™

O2B2

SUMITUBE™

W3F2

SUMITUBE™

W3B2

SUMITUBE™

W3B2 (4X)

SUMITUBE™

SA2

SUMITUBE™

SA3

SUMITUBE™

W

IRRAX™TUBE

IRRAX™TAPE

A

B

F2

F2 (UL)

V2

IRRAX™TUBE

RP3

B8

ER2

NHR

NHR4

FE2

IRRAX™TAPE

VZL

IRRAX™SLEEVE

SCM2

SBI

300/350

SCD

SNHM

Composite articles

SUMISEAL

SA3 CAP

Processing equipment

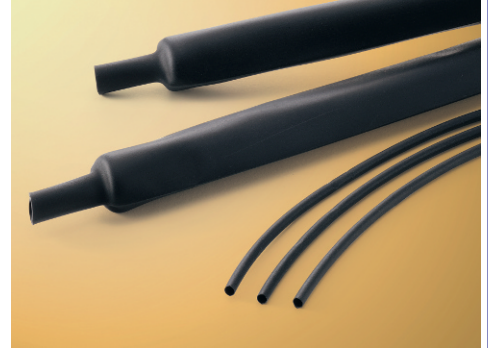
SUMISHRINKER / HEATING GUN

SUMITUBE™ NHR2

[125°C rating, halogen-free, flame-retarded, heat-resistant tubing] UL/cULus recognized

Catalog No. 717

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 100°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: -5 ±5%
- Continuous operating temperature : -55 to 125°C

Features

- UL224 recognized
- Flexible
- Flame-retarded (halogen-based flame-retardant-free)

Specifications/Approvals

File No. E48762 Rating temperature: 125°C
Rating voltage: 600V Flammability: VW-1

Marking on Surface

125°C VW-1 SUMITUBE NHR2 -F- XXX
(XXX indicates size)

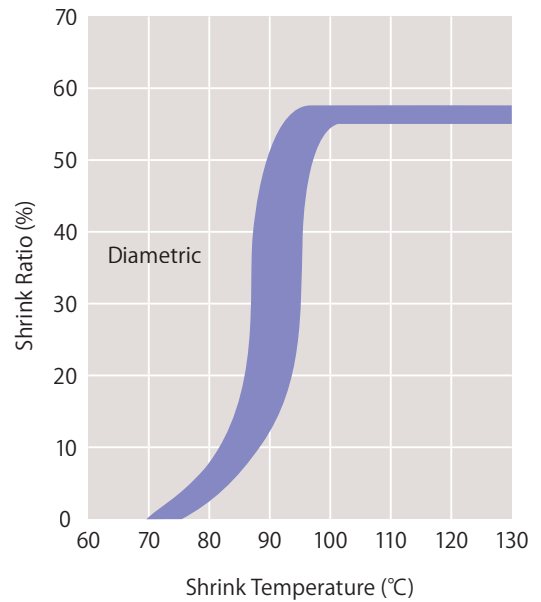
Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires

Colors

- Black, Red, Orange, Green, Blue, Gray, Pink

Shrink Properties



Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	11.9MPa
	Tensile strength (after aging)	158°C x 7 days, min. 7.3MPa	11.5MPa
	Elongation (before aging)	min. 200%	510%
	Elongation (after aging)	158°C x 7 days, min. 100%	460%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	16.0kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	4.0 x 10 ¹⁵ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Flammability	Flame-retarded, pass VW-1	380% Pass

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)	Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)			Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
1 × 0.2	1.40 ± 0.20	0.20	0.50	0.33	200	11 × 0.25	11.4 ± 0.4	0.25	5.50	0.56	50
1.5 × 0.2	2.00 ± 0.20	0.20	0.75	0.36	200	12 × 0.25	12.4 ± 0.4	0.25	6.0	0.56	50
2 × 0.2	2.50 ± 0.20	0.20	1.00	0.44	200	13 × 0.3	13.4 ± 0.4	0.30	6.5	0.69	50
2.5 × 0.25	3.00 ± 0.20	0.25	1.25	0.44	200	14 × 0.3	14.5 ± 0.4	0.30	7.0	0.69	50
3 × 0.25	3.50 ± 0.30	0.25	1.50	0.44	200	15 × 0.3	15.5 ± 0.5	0.30	7.5	0.69	50
3.5 × 0.25	4.00 ± 0.30	0.25	1.75	0.44	200	16 × 0.3	16.8 ± 0.5	0.30	8.0	0.69	50
4 × 0.25	4.50 ± 0.30	0.25	2.00	0.44	200	18 × 0.35	18.7 ± 0.5	0.35	9.0	0.77	50
5 × 0.25	5.40 ± 0.30	0.25	2.50	0.56	100	20 × 0.35	21.2 ± 0.6	0.35	10.0	0.77	50
6 × 0.25	6.4 ± 0.4	0.25	3.00	0.56	100	22 × 0.4	23.2 ± 0.6	0.40	11.0	0.77	50
7 × 0.25	7.4 ± 0.4	0.25	3.50	0.56	50	25 × 0.4	26.1 ± 0.8	0.40	12.5	0.87	50
8 × 0.25	8.4 ± 0.4	0.25	4.00	0.56	50	28 × 0.5	29.0 ± 1.0	0.50	14.0	0.87	50
9 × 0.25	9.4 ± 0.4	0.25	4.50	0.56	50	30 × 0.5	32.0 ± 1.0	0.50	15.0	0.87	50
10 × 0.25	10.4 ± 0.4	0.25	5.00	0.56	50						

IRRX™TUBE
IRRX™TAPE
A
B
F2
F2 (UL)
V2
IRRX™TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRX™TAPE VZL

IRRX™SLEEVE
SCM2
SBI 300/350
SCD
SNHM

Composite articles
SUMISEAL
SA3 CAP

Processing equipment
SUMISHRINKER / HEATING GUN

SUMITUBE™ NHR4

[125°C rating, halogen-free, thin wall, very flexible, flame-retarded, heat-resistant tubing] UL recognized

Catalog No. 718

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 100°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: -5 ±5%
- Continuous operating temperature : -55 to 125°C

Features

- UL224 recognized
- Flexible
- Flame-retarded (halogen-based flame retardant-free)
- Thin wall, quick shrinkage

Specifications/Approvals

File No. E75077 Rating temperature: 125°C
Rating voltage: 300V Flammability: VW-1

Marking on Surface

125°C VW-1 SUMITUBE NHR4 -F- XXX
(XXX indicates size)

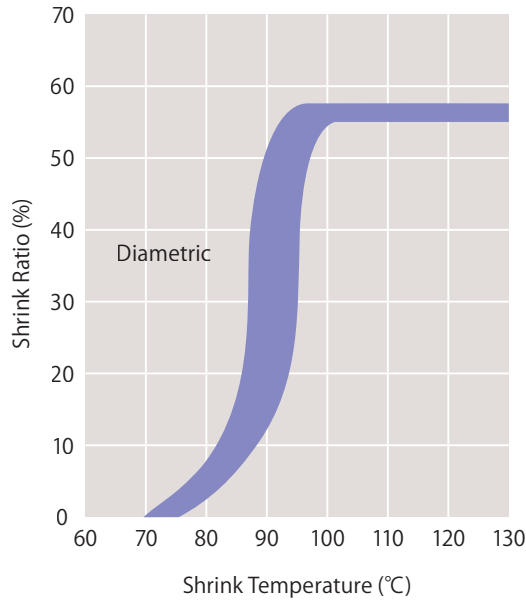
Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires

Colors

- Black, Red, Orange, Green, Blue, Gray, Pink

Shrink Properties



Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	11.9MPa
	Tensile strength (after aging)	158°C x 7 days, min. 7.3MPa	11.5MPa
	Elongation (before aging)	min. 200%	510%
	Elongation (after aging)	158°C x 7 days, min. 100%	460%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	16.0kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	4.0 x 10 ¹⁵ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Flammability	Flame-retarded, pass VW-1	380% Pass

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
1 × 0.1	1.40 ± 0.20	0.10	0.50	0.20	200
1.5 × 0.1	1.90 ± 0.20	0.10	0.75	0.20	200
2 × 0.1	2.30 ± 0.20	0.10	1.00	0.20	200
2.5 × 0.15	2.90 ± 0.20	0.15	1.25	0.25	200
3 × 0.15	3.30 ± 0.30	0.15	1.50	0.25	200
3.5 × 0.15	3.80 ± 0.30	0.15	1.75	0.25	200
4 × 0.15	4.40 ± 0.30	0.15	2.00	0.25	200
5 × 0.15	5.50 ± 0.30	0.15	2.50	0.25	100
6 × 0.15	6.5 ± 0.4	0.15	3.00	0.28	100
7 × 0.15	7.5 ± 0.4	0.15	3.50	0.28	50
8 × 0.15	8.5 ± 0.4	0.15	4.00	0.28	50
9 × 0.15	9.5 ± 0.4	0.15	4.50	0.28	50
10 × 0.15	10.5 ± 0.5	0.15	5.00	0.28	50

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

SUMITUBE™

B
LB
F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE™

K2

SUMITUBE™

AN25

SUMITUBE™

B6

SUMITUBE™

O2C
W3C

SUMITUBE™

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE™

W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2

IRRAX™TUBE

RP3
B8
ER2
NHR
NHR4
FE2

IRRAX™TAPE

IRRAX™SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ R

[Rubber-like, flame-retarded heat-shrinkable tubing]
SAE-AMS

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
SUMITUBE W3B2
W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 130°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: min. -10%
- Continuous operating temperature : -70 to 120°C

Features

- SAE-AMS Flexible
- Flame-retarded Highly resistant against oil

Specifications/Approvals

SAE-AMS-DTL-23053/1 Class 2

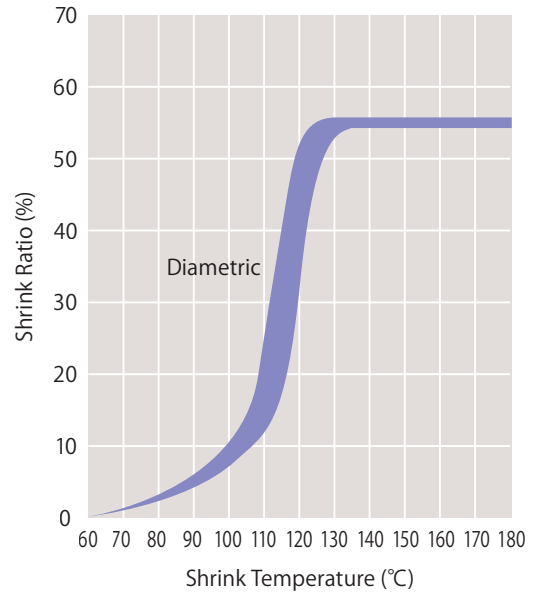
Applications

- Used for roller lining as a rubber substitute
- Insulation, protection and reinforcement for wire and devices where flexibility is required
- Insulating rubber-sheathed cable joints
- Preventing buckling in lead wires

Colors

- Black

Shrink Properties



IRRX™TUBE IRRX™TAPE

A
B
F2
F2 (UL)
V2
IRRXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRXTAPE VZL

Properties [based on SAE-AMS-DTL-23053/1 Class 2]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	16.0MPa
	Elongation (before aging)	min. 225%	495%
	Elongation (after aging)	121°C x 7 days, min. 175%	430%
	Low temperature flexibility	-70°C x 4 hours, no crack	Pass
Electrical	Heat shock	200°C x 4 hours, no crack	Pass
	Dielectric strength (before aging)	min. 11.8kV/mm	25.0kV/mm
	Dielectric strength (after aging)	121°C x 7 days, min. 19.7kV/mm	23.5kV/mm
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω-cm	3.1 x 10 ¹⁶ Ω-cm
	Corrosion against bare copper	150°C x 16 hours, no corrosion	Pass
	Fluid resistance	After immersion at 24°C x 24 hours,	
	Tensile strength	min. 6.9MPa	12.2MPa
	Elongation	min. 175%	433%
Flammability	Dielectric strength	min. 9.8kV/mm	23.0kV/mm
	ASTM D2671 Procedure A		Pass

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	Spool
1/8	3.20	0.35	1.60	0.70±0.20	152.5
3/16	4.80	0.45	2.40	0.89±0.25	61
1/4	6.4	0.45	3.20	0.89±0.25	61
3/8	9.5	0.55	4.80	1.01±0.25	30.5
1/2	12.7	0.60	6.4	1.22±0.38	30.5
3/4	19.1	0.70	9.5	1.45±0.38	30.5
1	25.4	0.90	12.7	1.78±0.51	30.5
1-1/4	31.8	1.00	15.9	2.20±0.51	30.5
1-1/2	38.1	1.20	19.1	2.41±0.51	30.5
1-3/4	44.5	1.30	22.2	2.71±0.51	30.5
2	50.8	1.30	25.4	2.79±0.51	30.5

Note: SAE-AMS doesn't have size standards for 1/8 inch, 3/16 inch

SUMITUBE™ V (300V)

[Clear, flame-retarded heat-shrinkable tubing]

Catalog (Inch size) No. 818 / (Metric size) No. 823 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material : Flexible flame-retarded polyvinyl chloride
- Shrink ratio : Radial change: min. 50% Longitudinal change: min. -30%
- Continuous operating temperature : -30 to 105°C

Features

- UL224 recognized
- Flame-retarded
- Transparent colors

Specifications/Approvals

File No. E48762 Catalog No. 818 (for inch size), 823 (for metric size)
 Rating temperature: 105°C Rating voltage: 300V Flammability: VW-1
 Electrical Appliance and Material Safety Law (Japan)
 Flammability rating (-F-) test registration No.: F-ST53-001 to F-ST53-008

Marking on Surface

- SUMITOMO SUMITUBE V 105°C VW-1 CAT XXX -F- (XXX indicates Catalog No.)

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Fixing and protection of cable markers
- Insulation and protection of resistors and capacitors

Colors

- Clear

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	27.7MPa
	Tensile strength (after aging)	136°C x 7 days, min. 7.3MPa	29.0MPa
	Elongation (before aging)	min. 100%	340%
	Elongation (after aging)	136°C x 7 days, min. 100%	320%
	Deformation	131°C x 1 hour, max. 35%	27%
	Heat shock	180°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	136°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	17.5kV
	Dielectric breakdown (after aging)	136°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. $1.0 \times 10^{10} \Omega \cdot \text{cm}$	$5.3 \times 10^{12} \Omega \cdot \text{cm}$
	Corrosion against bare copper	136°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	136°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	300%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)*2	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
3/64	1.20	0.10	0.60	0.26	100
1/16	1.60	0.10	0.80	0.33	100
3/32	2.40	0.12	1.20	0.33	100
1/8	3.20	0.12	1.60	0.33	100
3/16	4.80	0.12	2.40	0.33	100
1/4	6.4	0.15	3.20	0.44	50
3/8	9.5	0.15	4.80	0.44	50
1/2	12.7	0.19	6.4	0.56	50
3/4	19.1	0.23	9.5	0.69	50
1	25.4	0.25	12.7	0.77	50

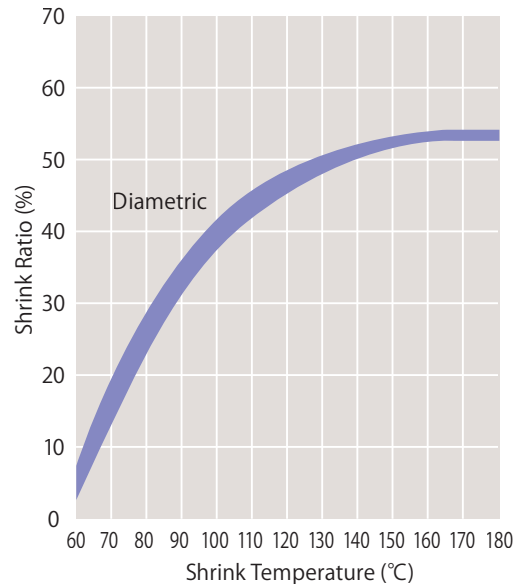
*2: Actual inside diameter is 20% larger than above

Tube storage conditions and natural shrinkage of tubes

Heat-shrinkable tubes will not shrink prematurely as long as they are stored at a temperature lower than the shrinkage start temperature. However, we recommend that you store them in a cool dark place. Avoid exposing them to direct sunlight.

SUMITUBE V tends to start shrinking at near 40°C due to the characteristics of the raw material, polyvinyl chloride. Store this tube with special care.

Shrink Properties



SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

SUMITUBE™

B
LB
F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE™

K2

SUMITUBE™

AN25

SUMITUBE™

B6

SUMITUBE™

O2C

SUMITUBE™

W3C

SUMITUBE™

O2B2

SUMITUBE™

W3F2

SUMITUBE™

W3B2

SUMITUBE™

W3B2 (4X)

SUMITUBE™

SA2

SUMITUBE™

SA3

SUMITUBE™

W

IRRAX™TUBE

A

IRRAX™TUBE

B

IRRAX™TUBE

F2

IRRAX™TUBE

F2 (UL)

IRRAX™TUBE

V2

IRRAX™TUBE

RP3

IRRAX™TUBE

B8

IRRAX™TUBE

ER2

IRRAX™TUBE

NHR

IRRAX™TUBE

NHR4

IRRAX™TUBE

FE2

IRRAX™TAPE

VZL

IRRAX™SLEEVE

SCM2

IRRAX™SLEEVE

SBI

IRRAX™SLEEVE

300/350

IRRAX™SLEEVE

SCD

IRRAX™SLEEVE

SNHM

Composite articles

SUMISEAL

SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ F2 (Z)

[125°C rating, flame-retarded heat-shrinkable tubing]
UL/CSA recognized

Catalog No. 940 RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
SUMITUBE O2C
W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 90°C
- Shrink ratio : Radial change: min. 50%
: Longitudinal change: 0 ±5%
- Continuous operating temperature : -55 to 125°C

Features

- UL/CSA recognized ■ Flexible
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

UL224 File No. E48762 Catalog No. SUMITUBE™ F2 (Z) or 940
Rating temperature: 125°C Rating voltage: 600V Flammability: VW-1
CSA C22.2 No. 198.1 File No. LR33298 Rating temperature: 125°C
Rating voltage: 600V Flammability: VW-1
Electrical Appliance and Material Safety Law (Japan)
Upper operating temperature test 125°C temporary registration No.: @004CC0546
Flammability rating (-F-) test registration No.: F-ST53-009 to F-ST53-012

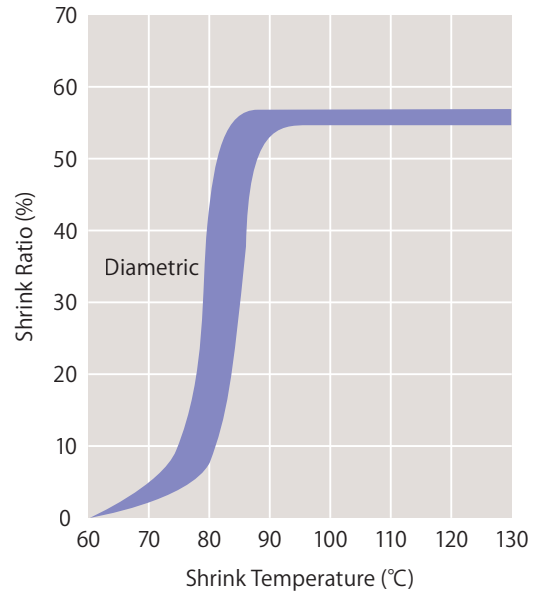
Marking on Surface

125°C VW-1 SUMITOMO-K SUMITUBE F2 (Z) CAT 940 CSA 125°C VW-1 -F-

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires
- Insulation and protection of resistors and capacitors

Shrink Properties



Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	13.2MPa
	Tensile strength (after aging)	158°C x 7 days, min. 7.3MPa	13.4MPa
	Elongation (before aging)	min. 200%	325%
	Elongation (after aging)	158°C x 7 days, min. 100%	350%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	19.1kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁶ Ω·cm	1.6 x 10 ¹⁶ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	158°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	325%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)		Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)	
	Inside diameter	Wall thickness (nom.)	Inside diameter	Wall thickness (min.)	Cut	Spool		Inside diameter	Wall thickness (nom.)	Inside diameter	Wall thickness (min.)	Cut	Spool
1 × 0.2	1.30 ± 0.30	0.20	0.50	0.33	1	200	11 × 0.25	11.4 ± 0.4	0.25	5.50	0.56	1	50
1.5 × 0.2	2.00 ± 0.30	0.20	0.75	0.36	1	200	12 × 0.25	12.4 ± 0.4	0.25	6.0	0.56	1	50
2 × 0.2	2.50 ± 0.30	0.20	1.00	0.44	1	200	13 × 0.3	13.4 ± 0.4	0.30	6.5	0.69	1	50
2.5 × 0.25	3.00 ± 0.30	0.25	1.25	0.44	1	200	14 × 0.3	14.5 ± 0.4	0.30	7.0	0.69	1	50
3 × 0.25	3.50 ± 0.30	0.25	1.50	0.44	1	200	15 × 0.3	15.5 ± 0.4	0.30	7.5	0.69	1	50
3.5 × 0.25	4.00 ± 0.30	0.25	1.75	0.44	1	200	16 × 0.3	16.8 ± 0.5	0.30	8.0	0.69	1	50
4 × 0.25	4.50 ± 0.30	0.25	2.00	0.44	1	200	18 × 0.35	18.7 ± 0.5	0.35	9.0	0.77	1	50
5 × 0.25	5.40 ± 0.30	0.25	2.50	0.56	1	100	20 × 0.35	21.2 ± 0.6	0.35	10.0	0.77	1	50
6 × 0.25	6.4 ± 0.4	0.25	3.00	0.56	1	100	22 × 0.4	23.2 ± 0.6	0.40	11.0	0.77	1	50
7 × 0.25	7.4 ± 0.4	0.25	3.50	0.56	1	50	25 × 0.4	26.1 ± 0.8	0.40	12.5	0.87	1	50
8 × 0.25	8.4 ± 0.4	0.25	4.00	0.56	1	50	30 × 0.5	32.0 ± 1.0	0.50	15.0	0.87	1	50
9 × 0.25	9.4 ± 0.4	0.25	4.50	0.56	1	50	40 × 0.5	43.0 ± 1.5	0.50	20.0	0.97	1	50
10 × 0.25	10.4 ± 0.4	0.25	5.00	0.56	1	50	50 × 0.5	53.0 ± 2.0	0.50	25.0	0.97	1	50

SUMITUBE™ F4 (Z)

[125°C rating, flame-retarded heat-shrinkable tubing]
UL/CSA recognized

Catalog No. 942 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 90°C
- Shrink ratio : Radial change: min. 50% Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 125°C

Features

- UL/CSA recognized
- Thin wall, quick shrinkage
- Flexible
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

UL224 File No. E75077 Catalog No. SUMITUBE™ F4 (Z) or 942
Rating temperature: 125°C Rating voltage: 300V Flammability: VW-1
CSA C22.2 No. 198.1 File No. LR33298
Rating temperature: 125°C Rating voltage: 150V Flammability: VW-1
Electrical Appliance and Material Safety Law (Japan)
Flammability rating (-F-) test registration No.: F-ST53-009 to F-ST53-012

Marking on Surface

125°C VW-1 SUMITOMO-K SUMITUBE F4 (Z) CAT 942 CSA 125°C VW-1 -F-

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires
- Insulation and protection of resistors and capacitors

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	15.2MPa
	Tensile strength (after aging)	158°C x 7 days, min. 7.3MPa	16.0MPa
	Elongation (before aging)	min. 200%	350%
	Elongation (after aging)	158°C x 7 days, min. 100%	350%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	12.6kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	2.5 x 10 ¹⁶ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	158°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	342%
	Flammability	Flame-retarded, pass VW-1	Pass

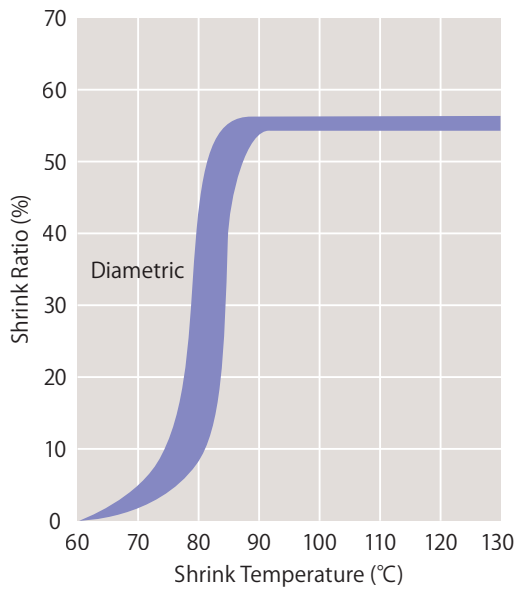
*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
1 × 0.1	1.30 ± 0.30	0.10	0.50	0.20	200
1.5 × 0.1	1.90 ± 0.30	0.10	0.75	0.20	200
2 × 0.1	2.30 ± 0.30	0.10	1.00	0.20	200
2.5 × 0.15	2.80 ± 0.30	0.15	1.25	0.25	200
3 × 0.15	3.30 ± 0.30	0.15	1.50	0.25	200
3.5 × 0.15	3.80 ± 0.30	0.15	1.75	0.25	200
4 × 0.15	4.40 ± 0.30	0.15	2.00	0.25	200
5 × 0.15	5.50 ± 0.30	0.15	2.50	0.25	100
6 × 0.15	6.5 ± 0.4	0.15	3.00	0.28	100
7 × 0.15	7.5 ± 0.4	0.15	3.50	0.28	50
8 × 0.15	8.5 ± 0.4	0.15	4.00	0.28	50
9 × 0.15	9.5 ± 0.4	0.15	4.50	0.28	50
10 × 0.15	10.5 ± 0.4	0.15	5.00	0.28	50

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter* (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
1/2	12.7	0.15	6.4	0.28	61
3/4	19.1	0.18	9.5	0.35	61
1	25.4	0.20	12.7	0.40	61

Shrink Properties



Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C

SUMITUBE W3C

O2B2

W3F2

SUMITUBE W3B2

W3B2 (4X)

SA2

SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

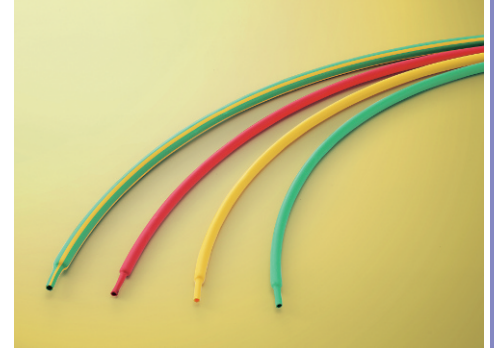
SUMISHRINKER / HEATING GUN

SUMITUBE™ B2

[Flexible flame-retarded heat-shrinkable tubing]
SAE-AMS/UL/CSA recognized

Catalog No. 826  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

IRRAX™TUBE
IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP


Processing equipment

SUMISHRINKER / HEATING GUN

Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 90°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: 0 ±5%
- Continuous operating temperature : -55 to 135°C

Features

- SAE-AMS/UL/CSA recognized
- Flame-retarded (PBDE/PBB-free)
- Flexible  Bright colors

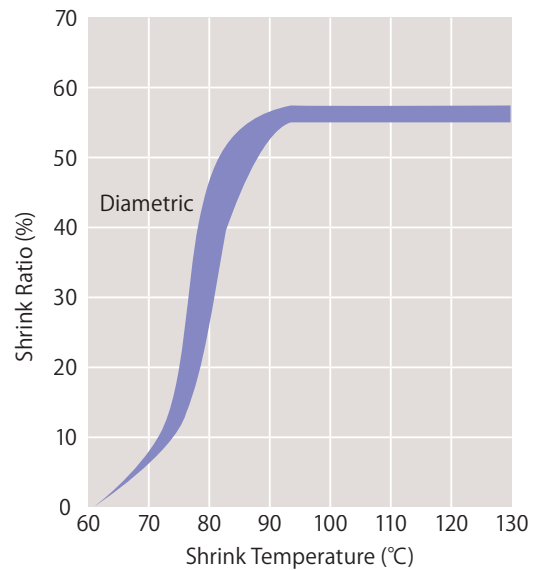
Specifications/Approvals

SAE-AMS-DTL-23053/5 Class 1
UL224 File No. E48762 Catalog No. SUMITUBE™ B2 or 826
Rating temperature: 125°C Rating voltage: 600V Flammability: VW-1
CSA C22.2 No. 198.1 File No. LR33298
Rating temperature: 125°C Rating voltage: 600V Flammability: VW-1

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Color identification and bundling for electric wires
- Insulation and protection of resistors and capacitors

Shrink Properties



Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White
- Note: Yellow/Green striped color is available only for limited sizes

Properties [based on SAE-AMS-DTL-23053/5 Class 1]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	13.4MPa
	Elongation (before aging)	min. 200%	410%
	Elongation (after aging)	175°C x 7 days, min. 100%	410%
	Low temperature flexibility	-55°C x 4 hours, no crack	Pass
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Specific gravity	max. 1.35	1.32
	Dielectric strength	min. 19.7kV/mm	37.1kV/mm
	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	3.1 x 10 ¹⁵ Ω·cm
Chemical	Water absorption	23°C x 24 hours, max. 0.50%	0.28%
	Corrosion against bare copper	175°C x 16 hours, no corrosion	Pass
	Color stability	175°C x 24 hours, no change	Pass
	Fluid resistance	After immersion at 24°C x 24 hours,	
	Tensile strength	min. 6.9MPa	13.1MPa
	Dielectric strength	min. 15.8kV/mm	30.5kV/mm
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)	
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	Cut	Spool
3/64	1.60 ± 0.30	0.20	0.60	0.41 ± 0.07	1.22	305
1/16	2.00 ± 0.30	0.20	0.80	0.43 ± 0.07	1.22	305
3/32	2.70 ± 0.30	0.25	1.20	0.51 ± 0.07	1.22	152.5
1/8	3.50 ± 0.30	0.25	1.60	0.51 ± 0.07	1.22	152.5
3/16	5.20 ± 0.30	0.30	2.40	0.51 ± 0.07	1.22	61
1/4	6.8 ± 0.4	0.30	3.20	0.64 ± 0.07	1.22	61
3/8	10.0 ± 0.4	0.30	4.80	0.64 ± 0.07	1.22	61
1/2	13.2 ± 0.5	0.30	6.4	0.64 ± 0.07	1.22	61
3/4	20.0 ± 0.6	0.40	9.5	0.76 ± 0.07	1.22	61
1	26.6 ± 0.8	0.45	12.7	0.89 ± 0.12	1.22	61
1-1/2	39.3 ± 1.0	0.45	19.1	1.02 ± 0.15	1.22	61
2	52.7 ± 1.5	0.50	25.4	1.14 ± 0.17	1.22	61
3	77.7 ± 1.5	0.55	38.1	1.27 ± 0.20	1.22	61
4	106.0 ± 3.0	0.60	50.8	1.40 ± 0.22	1.22	30.5

SUMITUBE™ B2 (3X)

[High shrink ratio flame-retarded heat-shrinkable tubing] UL/CSA recognized

Catalog No. 826  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded polyolefin
- Shrink temperature : min. 90°C
- Shrink ratio : Radial change: min. 66%
Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 135°C

Features

- High shrink ratio
- UL/CSA recognized
- Flame-retarded (PBDE/PBB-free)
- Bright colors

Specifications/Approvals

UL224

File No. E48762 Catalog No. SUMITUBE™ B2 or 826
Rating temperature: 125°C Rating voltage: 600V
Flammability: VW-1

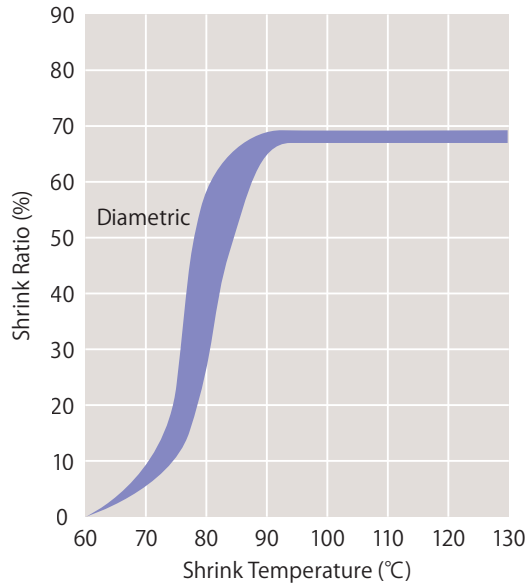
CSA C22.2 No. 198.1

File No. LR33298 Rating temperature: 125°C
Rating voltage: 600V Flammability: VW-1

Applications

- Insulation, protection and reinforcement of irregular-shaped substrates
- Color identification and bundling for electric wires

Shrink Properties



Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	12.1MPa
	Tensile strength (after aging)	158°C x 7 days, min. 7.3MPa	12.5MPa
	Elongation (before aging)	min. 200%	440%
	Elongation (after aging)	158°C x 7 days, min. 100%	450%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	24.8kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	5.8 x 10 ¹⁴ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	158°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	405%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (min.)	
1.5/0.5	1.50	0.20	0.50	0.50	305
3/1	3.00	0.25	1.00	0.60	152.5
6/2	6.0	0.25	2.00	0.70	61
9/3	9.0	0.30	3.00	0.80	61
12/4	12.0	0.30	4.00	0.85	61
18/6	18.0	0.35	6.0	1.00	61
24/8	24.0	0.40	8.0	1.20	61
40/13	40.0	0.40	13.0	1.25	61

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

SUMITUBE™

B
LB
F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE™

K2

SUMITUBE™

AN25

SUMITUBE™

B6

SUMITUBE™

O2C
W3C

SUMITUBE™

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE™

W

IRRAX™TUBE

IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ B8

[125°C rating, semi-rigid flame-retarded heat-shrinkable tubing] UL/CSA recognized

Catalog No. 846  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Irradiated cross-linked semi-rigid flame-retarded polyolefin
- Shrink temperature : min. 130°C
- Shrink ratio : Radial change: min. 50% Longitudinal change: 0 ±5%
- Continuous operating temperature : -55 to 125°C

Features

- UL/CSA recognized
- Semi-rigid
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

UL224

File No. E48762 Catalog No. SUMITUBE™ B8 or 846
 Rating temperature: 125°C Rating voltage: 600V Flammability: VW-1

CSA C22.2 No. 198.1

File No. LR33298 Rating temperature: 125°C
 Rating voltage: 600V Flammability: VW-1

Electrical Appliance and Material Safety Law (Japan)

Flammability rating (-F) test registration No.: F-ST53-009 to F-ST53-012

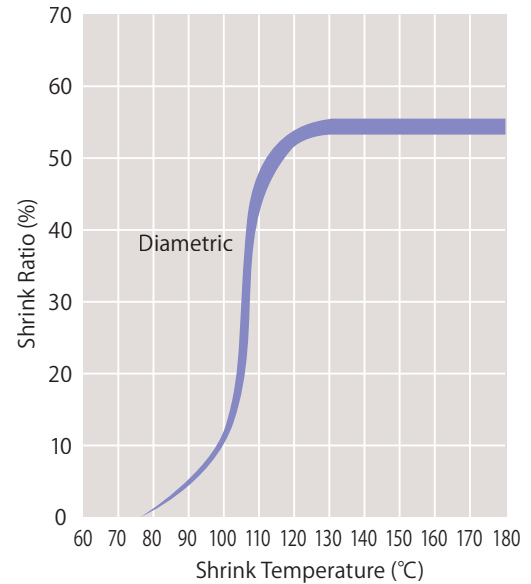
Marking on Surface

◆SUMITOMO-K CSA SR HS X PO TUBING 125°C SUMITUBE

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire which require high strength mechanical abuse
- Corrosion protection for pipes

Shrink Properties



Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 13.8MPa	19.0MPa
	Tensile strength (after aging)	158°C x 7 days, min. 9.7MPa	17.1MPa
	Elongation (before aging)	min. 200%	340%
	Elongation (after aging)	158°C x 7 days, min. 100%	340%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	15.0kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	2.3 x 10 ¹⁶ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	158°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	304%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	
3/64	1.60 ± 0.30	0.25	0.60	0.51 ± 0.07	1.22
1/16	2.00 ± 0.30	0.25	0.80	0.51 ± 0.07	1.22
3/32	2.70 ± 0.30	0.25	1.20	0.51 ± 0.07	1.22
1/8	3.50 ± 0.30	0.25	1.60	0.51 ± 0.07	1.22
3/16	5.20 ± 0.30	0.30	2.40	0.64 ± 0.07	1.22
1/4	6.8 ± 0.4	0.30	3.20	0.64 ± 0.07	1.22
3/8	10.0 ± 0.4	0.35	4.80	0.76 ± 0.07	1.22
1/2	13.2 ± 0.5	0.35	6.4	0.76 ± 0.07	1.22
3/4	20.0 ± 0.6	0.35	9.5	0.76 ± 0.07	1.22
1	26.6 ± 0.8	0.40	12.7	0.89 ± 0.12	1.22

IRRAX™TUBE
IRRAX™TAPE
A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL
IRRAX™SLEEVE
SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM
Composite articles
SUMISEAL
SA3 CAP
Processing equipment
SUMISHRINKER / HEATING GUN

SUMITUBE™ V (600V)

[105°C rating, transparent flame-retarded heat-shrinkable tubing] UL/CSA recognized

Catalog No. 819  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



Basic Properties

- Material : Flexible flame-retarded polyvinyl chloride
- Shrink ratio : Radial change: min. 50%
: Longitudinal change: min. -30%
- Continuous operating temperature : -30 to 105°C

Features

- UL/CSA recognized
- Flame-retarded
- Transparent

Specifications/Approvals

UL224

File No. E48762 Catalog No. 819 Rating temperature: 105°C
Rating voltage: 600V Flammability: VW-1

CSA C22.2 No. 198.1

File No. LR33298 Rating temperature: 105°C
Rating voltage: 600V Flammability: VW-1

Electrical Appliance and Material Safety Law (Japan)

Flammability rating (-F-) test registration No.: F-ST53-001 to F-ST53-008

Marking on Surface

 105°C VW-1  SUMITOMO-K SUMITUBE V CAT 819 CSA 105°C VW-1 -F-

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Fixing and protection for cable markers
- Insulation and protection of resistors and capacitors

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	27.7MPa
	Tensile strength (after aging)	136°C x 7 days, min. 7.3MPa	29.0MPa
	Elongation (before aging)	min. 100%	340%
	Elongation (after aging)	136°C x 7 days, min. 100%	320%
	Deformation	131°C x 1 hour, max. 35%	27%
	Heat shock	180°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	136°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	17.5kV
	Dielectric breakdown (after aging)	136°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. $1.0 \times 10^{10} \Omega \cdot \text{cm}$	$5.3 \times 10^{12} \Omega \cdot \text{cm}$
	Corrosion against bare copper	136°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	136°C x 7 days, elongation min. 70% after leaving under 95% humidity, 23°C x 24 hours	300%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter*2 (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (nom.)	
3/64	1.20	0.20	0.60	0.44	100
1/16	1.60	0.20	0.80	0.44	100
3/32	2.40	0.25	1.20	0.56	100
1/8	3.20	0.25	1.60	0.56	100
3/16	4.80	0.25	2.40	0.56	100
1/4	6.4	0.25	3.20	0.56	50
3/8	9.5	0.25	4.80	0.56	50
1/2	12.7	0.25	6.4	0.56	50
3/4	19.1	0.30	9.5	0.69	50
1	25.4	0.35	12.7	0.77	50

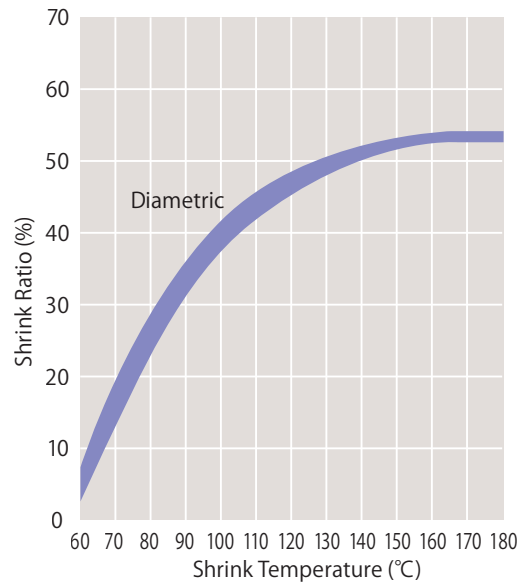
*2: Actual inside diameter is 20% larger than above

Tube storage conditions and natural shrinkage of tubes

Due to the characteristics of its raw material, polyvinyl chloride, SUMITUBE V tends to start shrinking when heated above 40°C. Store this product in a cool dark place away from direct sunlight.

Note: SUMITUBE V may crack if heated locally with high heat. Determine the optimal tube heating conditions while checking how the tube shrinks.

Shrink Properties



Colors

- Clear

SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

O2B2
W3F2
SUMITUBE W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ K

[Highly heat/oil/chemical resistant, clear, flame-retarded heat-shrinkable tubing] SAE-AMS/UL/CSA recognized

Catalog No. 852 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
SUMITUBE W3B2
W3B2 (4X)
SA2
SA3
SUMITUBE W

IRRX™TUBE
IRRX™TAPE
A
B
F2
F2 (UL)
V2
IRRX™TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRX™TAPE VZL

IRRX™SLEEVE
SCM2
SBI 300/350
IRRX™SLEEVE
SCD
SNHM

Composite articles
SUMISEAL
SA3 CAP

Processing equipment
SUMISHRINKER / HEATING GUN

Basic Properties

- Material : Irradiated cross-linked semi-rigid flame-retarded PVDF
- Shrink temperature : min. 170°C
- Shrink ratio : Radial change: min. 50% Longitudinal change (K): 0 ±10%
- Continuous operating temperature : -55 to 175°C

Features

- SAE-AMS/UL/CSA recognized
- Flame-retarded
- Transparent colors
- Thin wall
- Semi-rigid
- Highly resistant against oil and chemicals

Specifications/Approvals

SAE-AMS-DTL-23053/8
 UL224
 File No. E75077 Catalog No. SUMITUBE™ K or 852
 Rating temperature: 150°C Rating voltage: 600V Flammability: VW-1

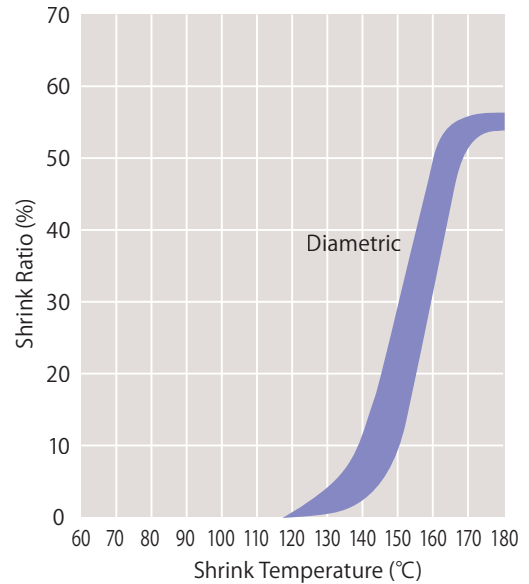
CSA C22.2 No. 198.1
 File No. LR33298 Rating temperature: 150°C Rating voltage: 600V
 Flammability: VW-1
 Electrical Appliance and Material Safety Law (Japan)

Flammability rating (-F-) test registration No.: F-ST53-017 to F-ST53-020

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Protection for wire and devices which are used under high temperature or exposed to chemicals and oils
- Mechanical protection for metal wire
- Fixing and protection of cable markers
- Insulation and protection of thermistors, resistors and capacitors

Shrink Properties



Colors

- Black, Red, Green, Blue, White, Clear

Properties [SAE-AMS-DTL-23053/8]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 34.5MPa	41.0MPa
	Elongation (before aging)	min. 150%	405%
	Elongation (after aging)	250°C x 7 days, min. 50%	357%
	Low temperature flexibility	-55°C x 4 hours, no crack	Pass
	Heat shock	300°C x 4 hours, no crack	Pass
Electrical	Dielectric strength	min. 31.5kV/mm (for 1/2 inch and smaller) min. 23.6kV/mm (for over 1/2 inch)	43.6kV/mm 31.4kV/mm
	Volume resistivity	min. 1.0 x 10 ¹³ Ω·cm	3.8 x 10 ¹⁵ Ω·cm
Chemical	Transparent stability	175°C x 24 hours, no change	Pass
	Fluid resistance	After immersion at 24°C x 24 hours,	
	Tensile strength	min. 34.5MPa	38.1MPa
	Dielectric strength	min. 19.7kV/mm	28.6kV/mm
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	
3/64	1.20	0.10	0.60	0.25 ± 0.05	1.22
1/16	1.60	0.10	0.80	0.25 ± 0.05	1.22
3/32	2.40	0.12	1.20	0.27 ± 0.04	1.22
1/8	3.20	0.12	1.60	0.27 ± 0.04	1.22
3/16	4.80	0.12	2.40	0.27 ± 0.04	1.22
1/4	6.4	0.14	3.20	0.33 ± 0.05	1.22
3/8	9.5	0.14	4.80	0.33 ± 0.05	1.22
1/2	12.7	0.14	6.4	0.33 ± 0.05	1.22
3/4	19.1	0.18	9.5	0.43 ± 0.07	1.22
1	25.4	0.20	12.7	0.48 ± 0.07	1.22

SUMITUBE™ K2

[Highly heat/oil/chemical resistant, clear, flame-retarded heat-shrinkable tubing] SAE-AMS/UL recognized

Catalog No. 875  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



Basic Properties

- Material : Irradiated cross-linked semi-rigid flame-retarded PVDF
- Shrink temperature : min. 150°C
- Shrink ratio : Radial change: min. 50%
: Longitudinal change (K2): -10 to 5%
- Continuous operating temperature : -55 to 175°C

Features

- SAE-AMS/UL recognized
- Flame-retarded
- Transparent colors
- Thin wall
- Semi-rigid (more flexible than SUMITUBE K)
- Highly resistant against oil and chemicals
- Available on spools

Specifications/Approvals

SAE-AMS-DTL-23053/18 Class 1

UL224

File No. E70631 Catalog No. SUMITUBE™ K2 or 875

Flammability: VW-1

Electrical Appliance and Material Safety Law (Japan)

Flammability rating (-F-) test registration No.: F-ST53-017 to F-ST53-020

Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Protection for wire and devices which are used under high temperature or exposed to chemicals and oils
- Mechanical protection for metal wire
- Fixing and protection of cable markers
- Insulation and protection of thermistors, resistors and capacitors

Properties [SAE-AMS-DTL-23053/18 Class 1]

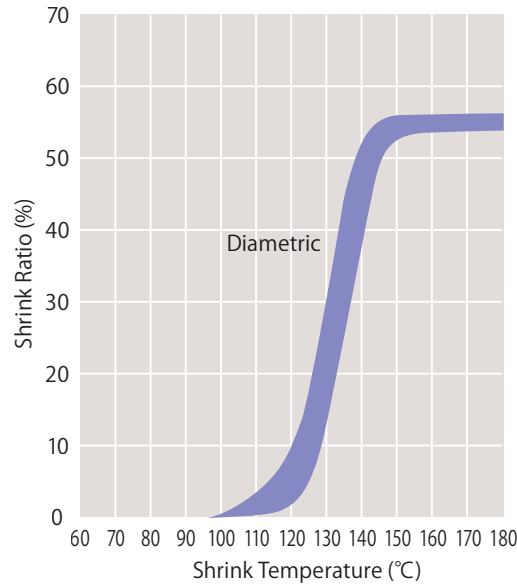
Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 24.1MPa	37.8MPa
	Elongation (before aging)	min. 200%	404%
	Elongation (after aging)	250°C x 7 days, min. 100%	383%
	Low temperature flexibility	-55°C x 4 hours, no crack	Pass
	Heat shock	275°C x 4 hours, no crack	Pass
	Specific gravity	max. 1.90	1.75
Electrical	Dielectric strength	min. 15.7kV/mm	35.4kV/mm
	Volume resistivity	min. $1.0 \times 10^{11} \Omega \cdot \text{cm}$	$2.8 \times 10^{15} \Omega \cdot \text{cm}$
Chemical	Transparent stability	200°C x 24 hours, no change	Pass
	Fluid resistance	After immersion at 24°C x 24 hours,	
	Tensile strength	min. 13.9MPa	37.4MPa
	Dielectric strength	min. 15.7kV/mm	25.2kV/mm
	Elongation	min. 100%	419%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	
3/64	1.20	0.10	0.60	0.25 ± 0.05	305
1/16	1.60	0.10	0.80	0.25 ± 0.05	305
3/32	2.40	0.12	1.20	0.27 ± 0.04	152.5
1/8	3.20	0.12	1.60	0.27 ± 0.04	152.5
3/16	4.80	0.12	2.40	0.27 ± 0.04	61
1/4	6.4	0.14	3.20	0.33 ± 0.05	61
3/8	9.5	0.14	4.80	0.33 ± 0.05	61
1/2	12.7	0.14	6.4	0.33 ± 0.05	61
3/4	19.1	0.18	9.5	0.43 ± 0.07	61
1	25.4	0.20	12.7	0.48 ± 0.07	61

Shrink Properties



Colors

- Black, Red, Green, Blue, White, Clear

SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

SUMITUBE O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ AN25

[Highly heat/oil/chemical resistant, flame-retarded heat-shrinkable tubing] VG/SAE-AMS recognized

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Irradiated cross-linked flexible flame-retarded elastomer
- Shrink temperature : min. 170°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: 0 ±10%
- Continuous operating temperature : -75 to 150°C

Features

- VG/SAE-AMS recognized
- Flame-retarded
- Flexible
- Highly resistant against oil and chemicals

Specifications/Approvals

- VG95343-5 Type D
- SAE-AMS-DTL-23053/16

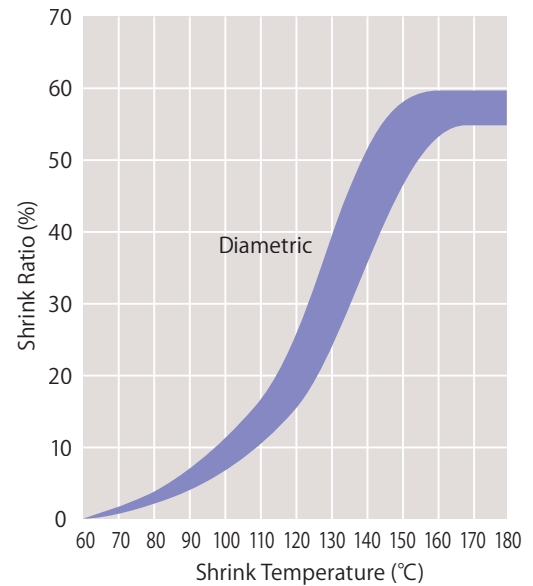
Applications

- Mechanical and chemical protection of wire harnesses used in aerospace and automotive equipment

Colors

- Black

Shrink Properties



IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 11.7MPa	19MPa
	Tensile strength (after aging)	150°C x 168 hours, min. 10.3MPa	13.9MPa
	Elongation (before aging)	min. 250%	400%
	Elongation (after aging)	150°C x 168 hours, min. 200%	250%
	Heat shock	200°C x 4 hours, no crack	Pass
	Cold bend	-65°C x 4 hours, no crack	Pass
Electrical	Tensile stress at 100% elongation	min. 10.4MPa	26MPa
	Dielectric breakdown	min. AC11.9kV/mm	25.6kV/mm
Chemical	Flammability	ASTM D2671 Procedure B	Pass

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness	
1/8 *2	3.20	0.35	1.60	0.75 ±0.15	150
3/16 *2	4.80	0.45	2.40	0.85 ±0.20	60
1/4	6.40	0.45	3.20	0.90 ±0.20	60
3/8	9.5	0.55	4.80	1.00 ±0.20	60
1/2	12.7	0.60	6.4	1.20 ±0.30	60
3/4	19.0	0.70	9.5	1.45 ±0.35	30
1	25.4	0.90	12.7	1.80 ±0.45	30
1-1/2	38.0	1.20	19.0	2.40 ±0.50	30
2	51.0	1.30	25.4	2.80 ±0.50	30

*2: Sizes do not comply with SAE-AMS-DTL-23053

SUMITUBE™ B6

[Semi-rigid flame-retarded heat-shrinkable tubing]
SAE-AMS recognized

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material : Irradiated cross-linked semi-rigid flame-retarded polyolefin
- Shrink temperature : min. 130°C
- Shrink ratio : Radial change: min. 50%
Longitudinal change: 0 ±5%
- Continuous operating temperature : -55 to 135°C

Features

- Semi-rigid
- Abrasion resistant
- SAE-AMS recognized

Specifications/Approvals

SAE-AMS-DTL-23053/6 Class 1

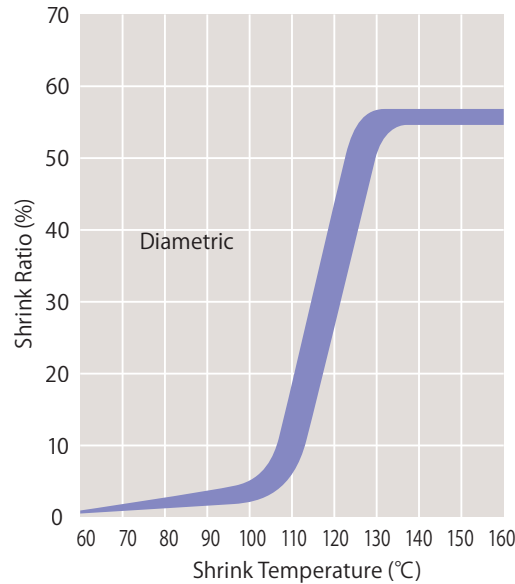
Applications

- Mechanical and chemical protection of wire harnesses used in aerospace equipment
- Holding lengths of sensor wires straight, as well as providing insulation and mechanical protection

Colors

- Black

Shrink Properties



Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 13.8MPa	37.8MPa
	Elongation (before aging)	min. 200%	450%
	Elongation (after aging)	175°C x 7 days, min. 150%	425%
	Secant modulus	min. 172MPa	250MPa
	Low temperature flexibility	-55°C x 4 hours, no crack	Pass
Electrical	Heat shock	275°C x 4 hours, no crack	Pass
	Dielectric strength	min. 19.7kV/mm	32.2kV/mm
Chemical	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$1.4 \times 10^{15} \Omega \cdot \text{cm}$
	Water absorption	23°C x 24 hours, max. 0.50%	0.10%
	Specific gravity	max. 1.35	1.25
	Corrosion against bare copper	150°C x 16 hours, no corrosion	Pass
	Fluid resistance	After immersion at 23°C x 24 hours,	
	Tensile strength	min. 11.0MPa	16.7MPa
	Dielectric strength	min. 15.8kV/mm	40.1kV/mm
Flammability	Self-extinguish within 60 sec.	Pass	

*1: For reference use only

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)	
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness
1/8	3.20	0.35	1.60	0.51 ± 0.07
3/16	4.80	0.35	2.36	0.64 ± 0.07
1/4	6.4	0.35	3.20	0.64 ± 0.07
3/8	9.5	0.35	4.80	0.76 ± 0.07
1/2	12.7	0.35	6.4	0.76 ± 0.07

SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V(300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V(600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

O2B2
W3F2
SUMITUBE W3B2
W3B2(4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ O2C

[Dual wall heat-shrinkable tubing with meltable adhesive for fixing and waterproofing of straight-shaped objects]

Catalog No. 942, 840 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
SUMITUBE O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Outer: Irradiated cross-linked flexible polyolefin
: Inner: Meltable adhesive
- Shrink temperature : min. 115°C
- Shrink ratio : Radial change: min. 50%
: Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- Watertight sealing with good adhesion to metals, polyolefin and PVC
- Flexible
- Thinner adhesive (than SUMITUBE™ W3C)

Specifications/Approvals

SFP standard (R4-8592)

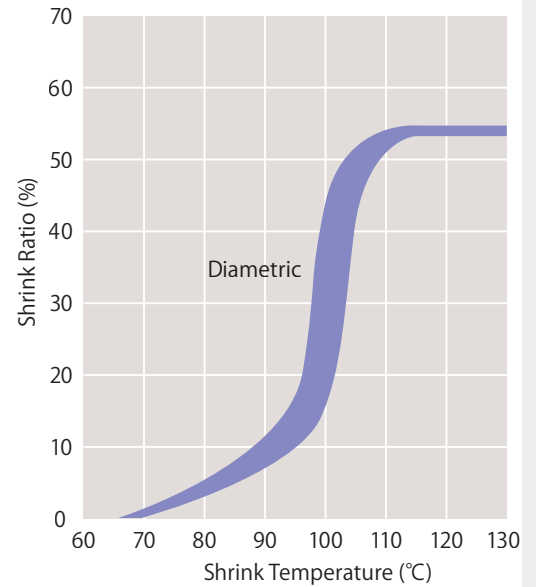
Applications

- Corrosion protection of pipes
- Waterproof sealing for electronic devices
- Insulation and protection for wire joints
- Effective for fixing and waterproofing of pipe-shaped objects

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White, Clear

Shrink Properties



IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)*2	min. 10.4MPa	16.0MPa
	Tensile strength (after aging)*2	136°C x 7 days, min. 7.3MPa	14.2MPa
	Elongation (before aging)	min. 200%	562%
	Elongation (after aging)	136°C x 7 days, min. 100%	500%
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	1.6 x 10 ¹⁶ Ω·cm
Chemical	Corrosion against bare copper	121°C x 16 hours, no corrosion	Pass
	Flammability	Flammable	—

*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size (mm)	Metric size						Unit length (min.) (m)
	Supplied ID (mm)		Recovered ID (mm)				
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)		
2 × 0.3	2.00	0.30	1.00	0.60	0.20	1	
3 × 0.3	3.00	0.30	1.50	0.60	0.20	1	
4 × 0.3	4.00	0.30	2.00	0.60	0.20	1	
5 × 0.3	5.00	0.30	2.50	0.60	0.20	1	
6 × 0.35	6.0	0.35	3.00	0.70	0.20	1	
7 × 0.35	7.0	0.35	3.50	0.70	0.20	1	
8 × 0.35	8.0	0.35	4.00	0.70	0.20	1	
9 × 0.35	9.0	0.35	4.50	0.70	0.20	1	
10 × 0.35	10.0	0.35	5.00	0.70	0.20	1	

Nominal size (inch)	Inch size						Unit length (min.) (m)
	Supplied ID (mm)		Recovered ID (mm)				
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)		
1/8	3.20	0.40	1.60	0.70	0.20	1.22	
3/16	4.80	0.40	2.40	0.70	0.20	1.22	
1/4	6.4	0.40	3.20	0.75	0.20	1.22	
3/8	9.5	0.40	4.80	0.75	0.20	1.22	
1/2	12.7	0.40	6.4	0.75	0.20	1.22	
3/4	19.1	0.45	9.5	0.90	0.20	1.22	
1	25.4	0.55	12.7	1.10	0.20	1.22	

*3: Including inner adhesive

SUMITUBE™ W3C

[Dual wall heat-shrinkable tubing with meltable adhesive for waterproofing of irregular-shaped objects]

Catalog No. 842 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material : Outer: Irradiated cross-linked flexible polyolefin
: Inner: Meltable adhesive
- Shrink temperature : min. 115°C
- Shrink ratio : Radial change: min. 60%
: Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- Watertight sealing with good adhesion to metals, polyolefin and PVC
- Flexible
- Thicker adhesive (than SUMITUBE™ O2C)

Specifications/Approvals

SFP standard (R4-2081)

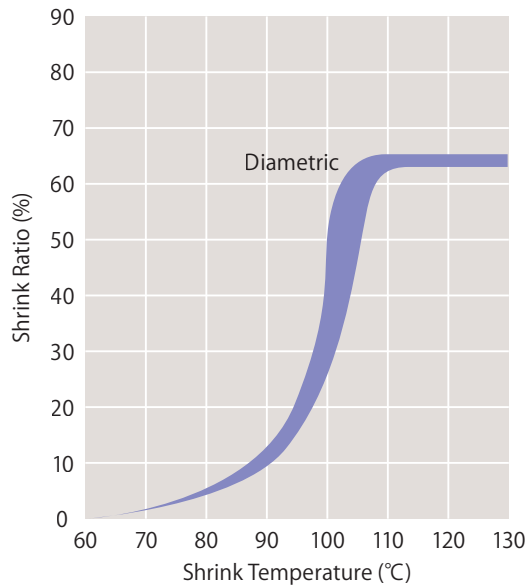
Applications

- Waterproof sealing for electronic devices with irregular shapes
- Encapsulation for wire branches
- Insulation and protection of wire joints

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White, Clear

Shrink Properties



Properties [SAE-AMS-DTL-23053/5 Class 1]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)*2	min. 10.4MPa	13.9MPa
	Tensile strength (after aging)*2	136°C x 7 days, min. 7.3MPa	12.9MPa
	Elongation (before aging)	min. 200%	562%
	Elongation (after aging)	136°C x 7 days, min. 100%	500%
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	1.6 x 10 ¹⁶ Ω·cm
Chemical	Corrosion against bare copper	121°C x 16 hours, no corrosion	Pass
	Flammability	Flammable	—

*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)			Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)	
1/8	3.20	0.35	0.60	0.95	0.35	1.22
3/16	4.80	0.45	1.50	1.10	0.60	1.22
1/4	6.4	0.45	2.00	1.20	0.65	1.22
3/8	9.5	0.50	3.00	1.30	0.65	1.22
1/2	12.7	0.55	4.00	1.40	0.75	1.22
3/4	19.1	0.65	8.0	1.60	0.80	1.22
1	25.4	0.75	10.2	1.90	0.80	1.22

*3: Including inner adhesive

SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE™

B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V (600V)
K

SUMITUBE™

K2

SUMITUBE™

AN25

SUMITUBE™

B6

SUMITUBE™

O2C
W3C

SUMITUBE™

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE™

W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

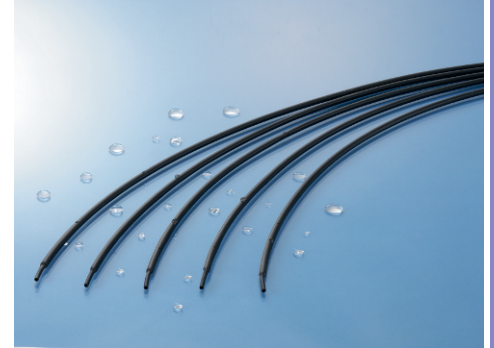
SUMISHRINKER / HEATING GUN

SUMITUBE™ O2B2

[Dual wall heat-shrinkable tubing with meltable adhesive for fixing and waterproofing of straight-shaped objects]
SAE-AMS/UL/CSA recognized

Catalog No. 890 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Outer : Irradiated cross-linked flexible flame-retarded polyolefin
: Inner : Meltable adhesive
- Shrink temperature : min. 110°C
- Shrink ratio : Radial change: min. 50%
: Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 125°C (SAE-AMS-DTL-23053: -55 to 110°C)

Features

- SAE-AMS/UL224/CSA recognized
- Flame-retarded (PBDE/PBB-free)
- Flexible
- Thinner adhesive (than SUMITUBE™ W3F2)

Specifications/Approvals

UL224

File No. E75077 Catalog No. SUMITUBE™ W3F2 or 843
Rating temperature: 125°C Rating voltage: 600V

CSA C22.2 No. 198.1

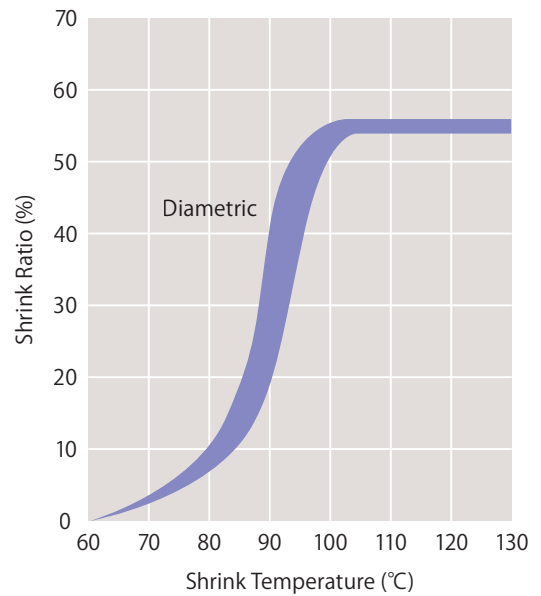
File No. LR33298 Rating temperature: 125°C
Rating voltage: 600V

SAE-AMS-DTL-23053/4 Class 2 (for select sizes)

Applications

- Corrosion protection of pipes
- Waterproof sealing for electronic devices
- Insulation and protection for wire joints

Shrink Properties



Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

IRRAX™TUBE
IRRAX™TAPE
A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL
IRRAX™SLEEVE
SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)*2	min. 10.4MPa	16.4MPa
	Tensile strength (after aging)*2	158°C x 7 days, min. 7.3MPa	10.5MPa
	Elongation (before aging)	min. 200%	500%
	Elongation (after aging)	158°C x 7 days, min. 100%	305%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric strength (before aging)	min. AC2.5kV	37.5kV
	Dielectric strength (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	2.3 x 10 ¹⁴ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
Chemical	Flammability	Flame-retarded, pass All Tubing Flame Test	Pass

*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)			Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)	
1/8	3.20	0.40	1.60	0.70	0.20	1.22
3/16	4.80	0.40	2.40	0.70	0.20	1.22
1/4 *4	6.4	0.40	3.20	0.75	0.20	1.22
3/8 *4	9.5	0.40	4.80	0.75	0.20	1.22
1/2 *4	12.7	0.40	6.4	0.75	0.20	1.22
3/4	19.1	0.50	9.5	0.90	0.20	1.22
1 *4	25.4	0.55	12.7	1.10	0.20	1.22

*3: Including inner adhesive *4: SAE-AMS-DTL-23053 approved

SUMITUBE™ W3F2

[Dual wall, flame-retarded heat-shrinkable tubing with meltable adhesive for waterproofing of irregular-shaped objects] UL/CSA recognized

Catalog No. 843 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material : Outer : Irradiated cross-linked flexible flame-retarded polyolefin
: Inner : Meltable adhesive
- Shrink temperature : min. 110°C
- Shrink ratio : Radial change: min. 60%
: Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 125°C

Features

- UL224/CSA recognized
- Watertight sealing with good adhesion to metals, polyolefin and PVC
- Flame-retarded (PBDE/PBB-free)
- Flexible
 - Thicker adhesive (than SUMITUBE™ O2B2)

Specifications/Approvals

UL224

File No. E75077 Catalog No. SUMITUBE™ W3F2 or 843
Rating temperature: 125°C Rating voltage: 600V

CSA C22.2 No. 198.1

File No. LR33298 Rating temperature: 125°C
Rating voltage: 600V

Marking on Surface

CSA HS X PO MELTABLE LINER 125°C ◆SUMITOMO-K
SUMITUBE W3F2 843 125°C

Applications

- Waterproof sealing for electronic devices with irregular shapes
- Encapsulation for wire branches
- Insulation and protection for wire joints

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)*2	min. 10.4MPa	12.0MPa
	Tensile strength (after aging)*2	158°C x 7 days, min. 7.3MPa	11.6MPa
	Elongation (before aging)	min. 200%	438%
	Elongation (after aging)	158°C x 7 days, min. 100%	425%
	Heat shock	250°C x 4 hours, no crack	Pass
	Cold bend	-30°C x 1 hour, no crack	Pass
Electrical	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric strength (before aging)	min. AC2.5kV	24.9kV
	Dielectric strength (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$4.4 \times 10^{14} \Omega \cdot \text{cm}$
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
Chemical	Flammability	Flame-retarded, pass All Tubing Flame Test	Pass

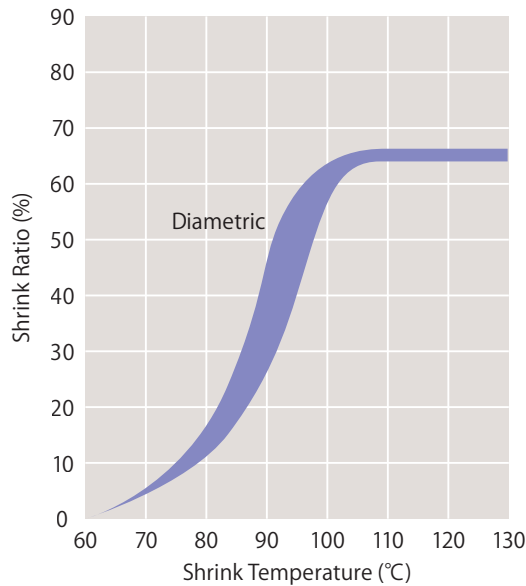
*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size (inch)	Supplied ID (mm)		Recovered ID (mm)			Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness* (nom.)	
1/8	3.20	0.35	0.60	0.95	0.35	1.22
3/16	4.80	0.45	1.50	1.10	0.60	1.22
1/4	6.4	0.45	2.00	1.20	0.65	1.22
3/8	9.5	0.50	3.00	1.30	0.65	1.22
1/2	12.7	0.55	4.00	1.40	0.75	1.22
3/4	19.1	0.65	8.0	1.60	0.80	1.22
1	25.4	0.75	10.2	1.90	0.80	1.22

*3: Including inner adhesive

Shrink Properties



SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE™

B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V(300V)

F2 (Z)
F4 (Z)
SUMITUBE B2
B2 (3X)
B8
V(600V)
K

SUMITUBE™

K2

SUMITUBE™

AN25

SUMITUBE™

B6

SUMITUBE™

O2C

SUMITUBE™

W3C

SUMITUBE™

O2B2
W3F2
SUMITUBE W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE™

W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2

IRRAX™TAPE

VZL

IRRAX™SLEEVE

SCM2
SBI
IRRAXSLEEVE 300/350
SCD
SNHM

Composite articles

SUMISEAL

SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ W3B2/W3B2 (4X)

[Dual wall, flame-retarded heat-shrinkable tubing with meltable adhesive for waterproofing of irregular-shaped objects]
 W3B2: SAE-AMS/UL/CSA recognized
 W3B2 (4X): UL recognized

Catalog No. 891 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized

Basic Properties

- **Material** : Outer : Irradiated cross-linked flexible flame-retarded polyolefin
 : Inner : Meltable adhesive
- **Shrink temperature** : min. 110°C
- **Shrink ratio** : Radial change (W3B2): min. 60%
 : Radial change (W3B2 (4X)): min. 80%
 : Longitudinal change: min. -15%
- **Continuous operating temperature** : -55 to 125°C

Features

- SAE-AMS/UL224/CSA recognized (for W3B2)
 UL224 recognized (for W3B2 (4X))
- Watertight sealing with good adhesion to metals, polyolefin and PVC
- Flame-retarded (PBDE/PBB-free)
- Flexible
- Thicker adhesive (than SUMITUBE™ O2B2)

Specifications/Approvals

- SAE-AMS-DTL-23053/4 Class 3 (for select sizes)
 UL224
 File No. E75077
 Catalog No. SUMITUBE™ W3B2 or 891, SUMITUBE™ W3B2 (4X)
 Rating temperature: 125°C
 Rating voltage: 600V
- CSA C22.2 No. 198.1
 File No. LR33298
 Rating temperature: 125°C
 Rating voltage: 600V

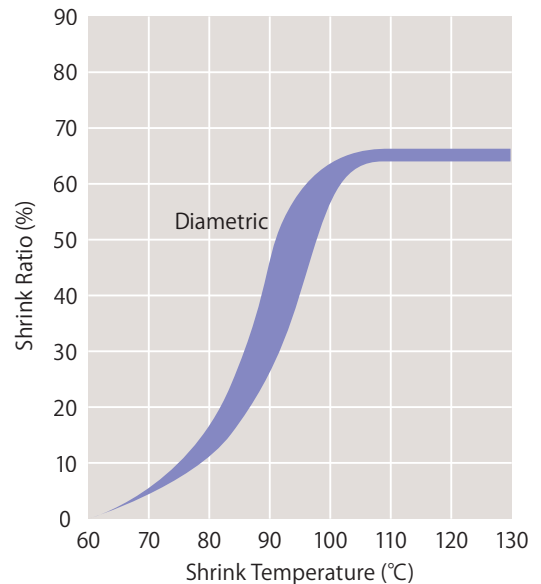
Applications

- Waterproof sealing for electronic devices with irregular shapes or profiles
- Encapsulation for wire branches
- Insulation and protection for wire joints

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Gray, White

Shrink Properties



A
 LA
 A4
 SUMITUBE C
 C (UL)
 D
 A2

B
 LB

F (Z)
 F3 (Z)
 SUMITUBE NHR2
 NHR4
 R
 V(300V)

F2 (Z)
 F4 (Z)
 B2
 SUMITUBE B2 (3X)
 B8
 V(600V)
 K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

O2C
 SUMITUBE W3C

O2B2
 W3F2
 SUMITUBE W3B2
 W3B2 (4X)
 SA2
 SA3

SUMITUBE W

IRRAX™TUBE
 IRRAX™TAPE

A
 B
 F2
 F2 (UL)
 V2

IRRAXTUBE RP3
 B8
 ER2
 NHR
 NHR4
 FE2
 IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
 SBI
 300/350
 IRRAXSLEEVE SCD
 SNHM

Composite articles

SUMISEAL
 SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN



SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

SUMITUBE F (Z)
F3 (Z)
NHR2
NHR4
R
V(300V)

SUMITUBE F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V(600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

SUMITUBE O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE
IRRAX™TAPE

A
B
F2
F2 (UL)
V2

IRRAX™TUBE RP3
B8
ER2
NHR
NHR4
FE2

IRRAX™TAPE VZL

IRRAX™SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Properties [UL224]

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)*2	min. 10.4MPa	17.0MPa
	Tensile strength (after aging)*2	158°C x 7 days, min. 7.3MPa	11.6MPa
	Elongation (before aging)	min. 200%	520%
	Elongation (after aging)	158°C x 7 days, min. 100%	300%
	Heat shock	250°C x 4 hours, no crack	Pass
	Cold bend	-30°C x 1 hour, no crack	Pass
Electrical	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric strength (before aging)	min. AC2.5kV	24.9kV
	Dielectric strength (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	2.3 x 10 ¹⁴ Ω·cm
Chemical	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Flammability	Flame-retarded, pass All Tubing Flame Test	Pass

*1: For reference use only *2: Calculated by using outer cross section

Sizes

W3B2

Nominal size (inch)	Inch size						Unit length (min.) (m)
	Supplied ID (mm)		Recovered ID (mm)				
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)		
1/8 *4	3.20	0.35	0.60	0.95	0.35	1.22	
3/16	4.80	0.45	1.50	1.10	0.60	1.22	
1/4 *4	6.4	0.45	2.00	1.20	0.65	1.22	
3/8	9.5	0.50	3.00	1.30	0.65	1.22	
1/2 *4	12.7	0.55	4.00	1.40	0.75	1.22	
3/4	19.1	0.65	8.0	1.60	0.80	1.22	
1	25.4	0.75	10.2	1.90	0.80	1.22	

Nominal size (mm)	Metric size						Unit length (min.) (m)
	Supplied ID (mm)		Recovered ID (mm)				
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)		
19/6	19.0	0.60	6.0	1.80	0.70	1.22	
24/8 *4	24.0	0.90	8.0	2.50	1.00	1.22	
40/13 *4	40.0	0.90	13.0	2.50	1.00	1.22	

W3B2 (4X)

Nominal size (mm)	Metric size						Unit length (min.) (m)
	Supplied ID (mm)		Recovered ID (mm)				
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)		
4/1	4.00	0.40	1.00	1.00	0.50	1.22	
8/2	8.0	0.45	2.00	1.20	0.50	1.22	
12/3	12.0	0.50	3.00	1.40	0.60	1.22	
16/4	16.0	0.60	4.00	1.80	0.80	1.22	
24/6 *4	24.0	0.70	6.0	2.20	0.80	1.22	
32/8	32.0	0.70	8.0	2.50	1.00	1.22	

*3: Including inner adhesive *4: SAE-AMS-DTL-23053

SUMITUBE™ SA2

[Dual wall, highly water/heat resistant, high shrink ratio flame-retarded heat-shrinkable tubing with meltable adhesive]

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Properties

- Material : Outer : Irradiated cross-linked semi-rigid flame-retarded polyolefin
: Inner : Meltable adhesive
- Shrink temperature : min. 115°C
- Shrink ratio : Radial change: min. 75%
: Longitudinal change : min. -10%
- Continuous operating temperature : -40 to 130°C

Features

- Watertight sealing with excellent adhesion to automotive grade wire insulations
- High shrink ratio and effective for waterproofing of irregular-shaped objects
- Effective for sealing of single or multi-wire splices
- Flame-retarded (outer jacket only)
- Abrasion resistant

Specifications/Approvals

SFP standard (R4-B100)

Marking on Surface

See size table

Applications

- Waterproof sealing, insulation and reinforcement for harness joints of motor vehicles/electronic devices
- Waterproof sealing of irregular-shaped components or devices used in automotive environments

Colors

- Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength*2	min. 10.4MPa	31.7MPa
	Elongation	min. 300%	558%
	Heat shock	225°C x 4 hours, no crack	Pass
	Heat resistance	130°C x 7 days, no crack	Pass
	Secant modulus	min. 150MPa	200.8MPa
	Dynamic cut-through	min. 134N	597.2N
Electrical	Dielectric strength	min. 19.7kV/mm	22.7kV/mm
	Volume resistivity	min. $1.0 \times 10^{12} \Omega \cdot \text{cm}$	$1.2 \times 10^{16} \Omega \cdot \text{cm}$
Chemical	Flammability	SAE J1128, self-extinguish within 70 sec.,	Pass
Splice performance (on representative splice configurations)	Testing to SFP internal standard		
	•Heat aging:	125°C x 1008 hours	Pass
	•Heat cycle:	125 cycles, 125°C (30 minutes) to -40°C (30 minutes)	Pass
	•Fluid resistance:	2-hour immersion in: brake fluid, engine coolant, ASTM Reference Oil #3, automatic transmission fluid	Pass

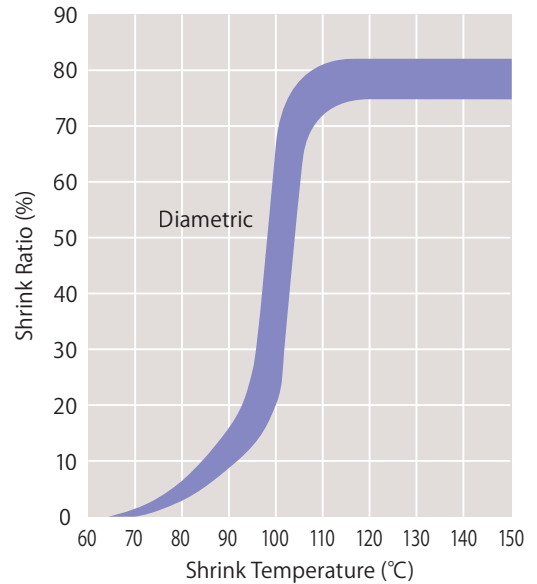
*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)			Unit length (min.) (m)	Marking
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)		
5.8/1.2	5.80	0.45	1.26	1.20	0.56	1.22	SA2-1
7.5/1.6	7.5	0.60	1.64	1.52	0.76	1.22	SA2-2
10.9/2.4	10.9	0.70	2.40	1.91	1.02	1.22	SA2-3
17.8/4.4	17.8	0.80	4.45	2.41	1.37	1.22	SA2-4

*3: Including inner adhesive

Shrink Properties



Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™ SA3

[Dual wall, flame-retarded heat-shrinkable tubing with meltable adhesive for harness joints of motor vehicles]

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material : Outer : Irradiated cross-linked semi-rigid flame-retarded polyolefin
: Inner : Meltable adhesive
- Shrink temperature : min. 135°C
- Shrink ratio : Radial change : min. 75%
: Longitudinal change : min. -10%
- Continuous operating temperature : -40 to 130°C

Features

- High shrink ratio and effective for waterproofing of multiple harness joints and splices
- Recovered tube remains in position at elevated temperatures
- Flame-retarded (PBDE/PBB-free)
- Abrasion resistant

Specifications/Approvals

SFP standard (R4-F307)

Marking on Surface

See size table

Applications

- Waterproof sealing, insulation and reinforcement for harness joints of motor vehicles/electronic devices
- Waterproof sealing of irregular-shaped components or devices used in automotive environments

Colors

- Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength*2	min. 10.4MPa	25.8MPa
	Elongation	min. 300%	550%
	Heat shock	225°C x 4 hours, no crack	Pass
	Heat resistance	130°C x 7 days, no crack	Pass
	Secant modulus	min. 150MPa	463MPa
Electrical	Dynamic cut-through	min. 134N	529N
	Dielectric strength	min. 15kV/mm	20.6kV/mm
Chemical	Volume resistivity	min. $1.0 \times 10^{12} \Omega \cdot \text{cm}$	$9.6 \times 10^{13} \Omega \cdot \text{cm}$
	Flammability	SAE J1128, self-extinguish within 70 sec.	Pass
Splice performance (on representative splice configurations)	Testing to SFP internal standard		
	•Heat aging:	125°C x 1008 hours	Pass
	•Heat cycle:	125 cycles, 125°C (30 minutes) to -40°C (30 minutes)	Pass
	•Fluid resistance:	2-hour immersion in: brake fluid, engine coolant, ASTM Reference Oil #3, automatic transmission fluid	Pass

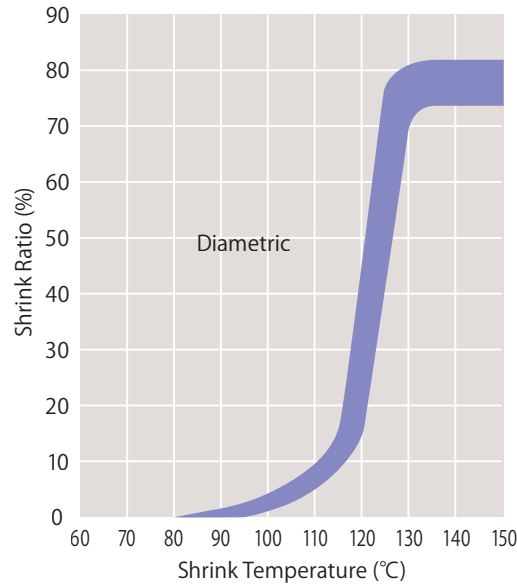
*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)			Unit length (min.) (m)	Marking
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (nom.)	Adhesive thickness (nom.)		
5.8/1.2	5.80	0.45	1.26	1.20	0.56	1.22	SA3-1
7.5/1.6	7.5	0.60	1.64	1.52	0.76	1.22	SA3-2
10.9/2.4	10.9	0.70	2.40	1.91	1.02	1.22	SA3-3
17.8/4.4	17.8	0.80	4.45	2.41	1.37	1.22	SA3-4

*3: Including inner adhesive

Shrink Properties



SUMITUBE™

A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

SUMITUBE F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

SUMITUBE F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

SUMITUBE O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2

IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2

IRRAXTAPE VZL

IRRAX™SLEEVE

IRRAXSLEEVE SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL SA3 CAP

Processing equipment

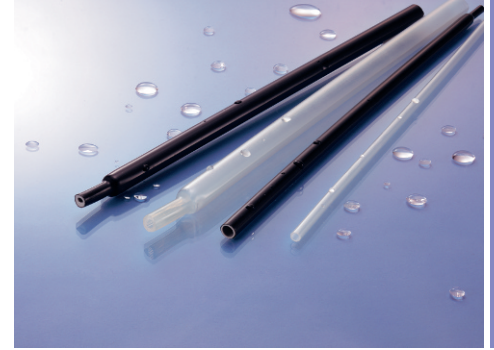
SUMISHRINKER / HEATING GUN

SUMITUBE™ W

[Dual wall heat-shrinkable tubing with meltable liner]

Catalog No. 803  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
SUMITUBE NHR2
NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™TUBE
IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Basic Properties

- Material : Outer : Irradiated cross-linked flexible polyolefin
: Inner : Meltable polyolefin
- Shrink temperature : min. 115°C
- Shrink ratio : Radial change: min. 60%
: Longitudinal change: min. -15%
- Continuous operating temperature : -55 to 105°C

Features

- Dual wall structure using two concentric tubings
- Effective filling for large gaps and voids

Specifications/Approvals



SFP standard (R4-1080)

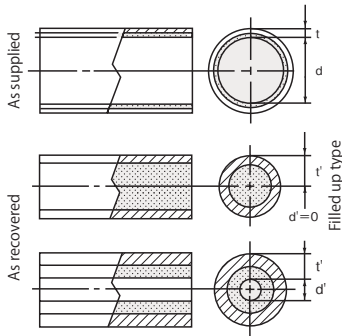
Applications

- Insulation, protection and reinforcement for termination and joints of electric wire
- Corrosion protection of pipes or bimetallic joints

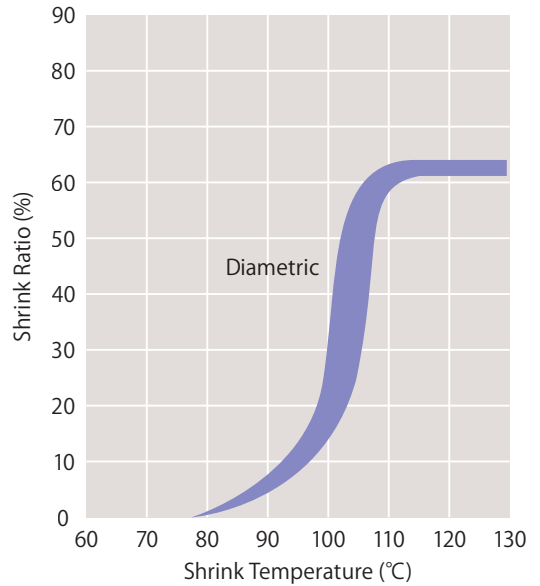
Colors

- Black (Inner: Gray), Clear (Inner: Clear)

 : Outer d : Supplied inside diameter t : Supplied wall thickness
 : Inner d' : Recovered inside diameter t' : Recovered wall thickness



Shrink Properties



Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	13.8MPa
	Elongation	min. 200%	475%
	Specific gravity	—	0.94
	Hardness (Shore D)	—	42
Electrical	Dielectric withstand	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$1.7 \times 10^{16} \Omega \cdot \text{cm}$
Chemical	Water absorption	23°C x 24 hours, max. 0.30%	0.06%
	Flammability	Flammable	—

*1: For reference use only; data are for outer tubing

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (d)	Wall thickness (nom.) (t)	Inside diameter (max.) (d')	Wall thickness (nom.) (t')	
1.5	1.70 ± 0.20	0.50	Filled up	1.10	0.3
2.5	2.70 ± 0.20	0.50	Filled up	1.40	0.3
3.5	3.50 ± 0.30	0.55	Filled up	1.60	0.3
4.5	4.60 ± 0.30	0.60	Filled up	2.00	0.3
5.5	5.50 ± 0.40	0.65	Filled up	2.20	0.3
7	7.3 ± 0.5	0.65	2.80	1.50	0.3
8	8.2 ± 0.5	0.75	2.80	1.80	0.3
9	9.0 ± 0.5	0.75	2.80	1.90	0.3
10	10.0 ± 0.5	0.75	3.50	1.90	0.3
11	11.0 ± 0.5	0.80	4.00	2.00	0.3
14	14.0 ± 0.6	0.80	5.50	2.10	0.3



IRRAX™ TUBE & IRRAX™ TAPE

IRRAXSLEEVE is a relatively large bore heat-shrinkable tube made from cross-linked plastic.

IRRAXSLEEVE is used for protecting pipes and cables in infrastructure applications.

This heat-shrinkable tube with a hot-melt adhesive inner liner provides a waterproof seal after shrinking.

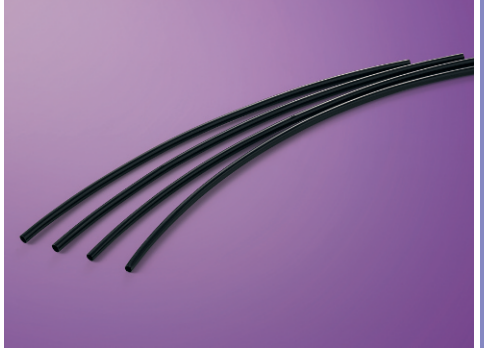
IRRAX™ TUBE/IRRAX™ TAPE

	A
	B
	F2
	F2 (UL)
	V2
IRRAX TUBE	RP3
	B8
	ER2
	NHR
	NHR4
	FE2
IRRAX TAPE	VZL

IRRAX™ TUBE A

[Heat-resistant tubing]

Catalog No. 801 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized


Basic Properties

- Material: Cross-linked flexible polyolefin
- Continuous operating temperature: -55 to 105°C

Features

- Excellent oil and chemical resistance
- Transparent colors

Specifications/Approvals

SFP standard (R1-0280)

Applications

- Insulation and protection of lead wires of resistors and capacitors
- Protection of lead wires and parts which are subject to high temperature
- Insulation of lead wires for wiring of AV, OA, telecommunication equipment, and measuring instruments

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White, Clear

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
IRRAX TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAX TAPE VZL

IRRAX™ SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	19.2MPa
	Elongation	min. 200%	440%
	Specific gravity	—	0.92
	Hardness (Shore D)	—	42
Electrical	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. $1.0 \times 10^{16} \Omega \cdot \text{cm}$	$1.6 \times 10^{16} \Omega \cdot \text{cm}$
Chemical	Water absorption	23°C x 24 hours, max. 0.10%	0.09%
	Flammability	Flammable	—

*1: For reference use only

Sizes

Nominal size (mm)	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
0.4 × 0.25	0.40 ± 0.05	0.25 ± 0.05	1,000 min.
0.7 × 0.25	0.70 ± 0.10	0.25 ± 0.05	1,000 min.
1 × 0.3	1.00 ± 0.10	0.30 ± 0.05	500 min.
1.5 × 0.3	1.50 ± 0.10	0.30 ± 0.05	400 min.
2 × 0.3	2.00 ± 0.20	0.30 ± 0.05	300 min.
3 × 0.3	3.00 ± 0.20	0.30 ± 0.05	400 min.
4 × 0.3	4.00 ± 0.30	0.30 ± 0.05	400 min.
5 × 0.3	5.00 ± 0.30	0.30 ± 0.05	200 min.
6 × 0.3	6.0 ± 0.5	0.30 ± 0.05	200 min.
8 × 0.4	8.0 ± 0.5	0.40 ± 0.05	100 min.
10 × 0.4	10.0 ± 0.5	0.40 ± 0.05	100 min.

Longitudinal change: min. -20% (125°C x 1 minute)

IRRAX™ TUBE B

[Heat-resistant, flame-retarded tubing]

Catalog No. 829 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -45 to 120°C

Features

- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

SFP standard (R1-0380)

Applications

- Insulation and heat protection of wire harnesses and parts for automobiles
- Protection of aircraft wiring where flame retardance is required
- Protection of lead wires and parts which are subject to high temperature

Colors

- Standard colors: Black, Brown, Red, Orange, Yellow, Green, Blue, Violet, White (all colors are in pastel tone)

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength	min. 10.4MPa	18.6MPa
	Elongation	min. 200%	450%
	Specific gravity	—	1.03
	Hardness (Shore D)	—	42
Electrical	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$1.1 \times 10^{17} \Omega \cdot \text{cm}$
Chemical	Water absorption	23°C x 24 hours, max. 0.30%	0.15%
	Flammability	Flame-retarded (by FMVSS method*2)	Pass

*1: For reference use only *2: FMVSS = Federal Motor Vehicle Safety Standard (regulation in the U.S.A)

Sizes

Nominal size (mm)	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
0.7 × 0.35	0.70 ± 0.10	0.35 ± 0.05	1,000 min.
1 × 0.35	1.00 ± 0.10	0.35 ± 0.05	500 min.
1.5 × 0.35	1.50 ± 0.10	0.35 ± 0.05	400 min.
2 × 0.35	2.00 ± 0.20	0.35 ± 0.05	200 min.
3 × 0.35	3.00 ± 0.20	0.35 ± 0.05	400 min.
4 × 0.35	4.00 ± 0.30	0.35 ± 0.05	400 min.
5 × 0.35	5.00 ± 0.30	0.35 ± 0.05	200 min.
6 × 0.35	6.0 ± 0.5	0.35 ± 0.05	200 min.
8 × 0.4	8.0 ± 0.5	0.40 ± 0.05	100 min.
10 × 0.4	10.0 ± 0.5	0.40 ± 0.05	100 min.
12 × 0.4	12.0 ± 0.5	0.40 ± 0.05	100 min.
14 × 0.5	14.0 ± 0.5	0.50 ± 0.05	100 min.

Longitudinal change: min. -20% (125°C x 1 minute)

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

K2

AN25

B6

O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

W

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
RP3
B8
ER2
NHR
NHR4
FE2
VZL

IRRAX™ SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

IRRAX™TUBE F2

[Flexible heat-resistant tubing compliant with Electrical Appliance and Material Safety Law]

Catalog No. 901  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

IRRAX™TUBE F2 is made of the same materials as IRRAX™TUBE F2 (UL). (Both products are compliant with the UL224 standard and the Electrical Appliance and Material Safety Law.) The description of the markings, colors, and sizes are shown below.

Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -55 to 125°C

Features

- Flexible
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

Electrical Appliance and Material Safety Law (Japan)
 Operating temperature 125°C (provisional registration)
 (Registration No.: 004CC0176)
 Registration of flammability rating (-F-)
 (Registration No.: F-ST53-009 to F-ST53-016)

Marking on Surface

◆SUMITOMO IRRAX F2 125°C -F-

Applications

- Insulation, protection and reinforcement of terminations and joints of electric wires
- Identification and bundling of electric wires

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
IRRAXTUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAXTAPE VZL

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	12.1MPa
	Tensile strength (after aging)	158°C x 7 days, min. 7.3MPa	11.7MPa
	Elongation (before aging)	min. 200%	300%
	Elongation (after aging)	158°C x 7 days, min. 100%	325%
	Heat shock	250°C x 4 hours, no crack	Pass
	Cold bend	-30°C x 1 hour, no crack	Pass
Electrical	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	19.7kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$1.3 \times 10^{16} \Omega \cdot \text{cm}$
Chemical	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	158°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	350%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (mm)	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
1 × 0.4	1.00 ± 0.10	0.40 min.	500 min.
1.5 × 0.4	1.50 ± 0.10	0.40 min.	300 min.
2 × 0.4	2.00 ± 0.20	0.40 min.	200 min.
3 × 0.4	3.00 ± 0.20	0.40 min.	400 min.
4 × 0.4	4.00 ± 0.30	0.40 min.	400 min.
5 × 0.4	5.00 ± 0.30	0.40 min.	200 min.
6 × 0.4	6.0 ± 0.5	0.40 min.	200 min.
7 × 0.4	7.0 ± 0.5	0.40 min.	100 min.
8 × 0.4	8.0 ± 0.5	0.40 min.	100 min.
9 × 0.4	9.0 ± 0.5	0.40 min.	100 min.
10 × 0.4	10.0 ± 0.5	0.40 min.	100 min.

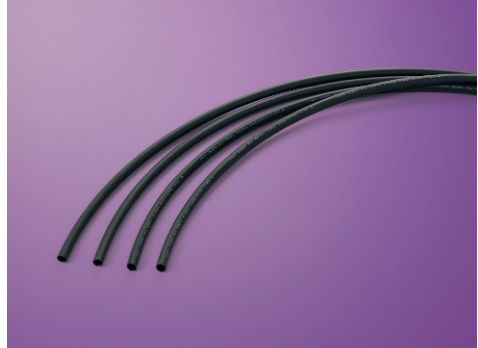
Longitudinal change: min. -20% (125°C x 1 minute)

IRRAX™ TUBE F2 (UL)

[Flexible heat-resistant tubing compliant with Electrical Appliance and Material Safety Law] UL recognized

Catalog No. 715, 845  RoHS directive

 Waterproofing  Flame-retarded  UL recognized  CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -55 to 125°C

Features

- Flexible
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

UL224 For sizes AWG24 to AWG18 (Catalog No. 715)

File No.: E70631

Flammability rating: VW-1

UL224 For sizes bigger than AWG17 (Catalog No. 845)

File No.: E75077

Operating temperature: 125°C

Voltage rating: 600V

Flammability rating: VW-1

Electrical Appliance and Material Safety Law (Japan)

Operating temperature 125°C (provisional registration)

(Registration No.: 004CC0176)

Registration of flammability rating (-F-)

(Registration No.: F-ST53-009 to F-ST53-016)

Marking on Surface

For sizes AWG24 to AWG18 (Catalog No. 715)

◆VW-1 SUMITOMO IRRAX™ TUBE F2 -F-

For sizes bigger than AWG17 (Catalog No. 845)

◆VW-1 SUMITOMO IRRAX™ TUBE F2 125°C -F-

Applications

- Insulation, protection and reinforcement of terminations and joints of electric wires
- Identification and bundling of electric wires

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	13.2MPa
	Tensile strength (after aging)	158°C x 7 days, min. 7.3MPa	13.4MPa
	Elongation (before aging)	min. 200%	325%
	Elongation (after aging)	158°C x 7 days, min. 100%	350%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	19.1kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	1.6 x 10 ¹⁶ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	158°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	325%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)	Nominal size	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
AWG24	0.55 ± 0.10	0.50 ± 0.06	500 min.	AWG10	2.60 ± 0.15	0.62 ± 0.06	400 min.
AWG22	0.65 ± 0.10	0.50 ± 0.06	500 min.	AWG 9	2.90 ± 0.15	0.62 ± 0.06	400 min.
AWG20	0.80 ± 0.10	0.50 ± 0.06	500 min.	AWG 8	3.30 ± 0.15	0.62 ± 0.06	400 min.
AWG19	0.90 ± 0.10	0.50 ± 0.06	500 min.	AWG 7	3.70 ± 0.15	0.62 ± 0.06	400 min.
AWG18	1.00 ± 0.10	0.50 ± 0.06	250 min.	AWG 6	4.10 ± 0.20	0.62 ± 0.06	200 min.
AWG17	1.15 ± 0.10	0.62 ± 0.06	250 min.	AWG 5	4.60 ± 0.20	0.62 ± 0.06	200 min.
AWG16	1.30 ± 0.10	0.62 ± 0.06	250 min.	AWG 4	5.20 ± 0.20	0.62 ± 0.06	200 min.
AWG15	1.45 ± 0.10	0.62 ± 0.06	200 min.	AWG 3	5.80 ± 0.20	0.62 ± 0.06	100 min.
AWG14	1.65 ± 0.10	0.62 ± 0.06	200 min.	AWG 2	6.5 ± 0.2	0.62 ± 0.06	100 min.
AWG13	1.80 ± 0.15	0.62 ± 0.06	200 min.	AWG 1	7.3 ± 0.3	0.62 ± 0.06	100 min.
AWG12	2.10 ± 0.15	0.62 ± 0.06	400 min.	AWG 0	8.3 ± 0.3	0.62 ± 0.06	100 min.
AWG11	2.30 ± 0.15	0.62 ± 0.06	400 min.				

Longitudinal change: min. -20% (125°C x 1 minute)

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

SUMITUBE W

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
IRRAX™ TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAX™ TAPE VZL

IRRAX™ SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

IRRAX™ TUBE V2

[Heat-resistant tubing] UL and CSA recognized

Catalog No. 806, 807, 816, 817 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2
SUMITUBE B
LB
F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V (300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

IRRAX™ TUBE
IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
IRRAX TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAX TAPE VZL

IRRAX™ SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Basic Properties

- Material: Flexible flame-retarded polyvinyl chloride
- Continuous operating temperature: -30 to 105°C

Features

- Flame-retarded

Specifications/Approvals

UL224

File No.: E48762 Operating temperature: 105°C
Voltage rating: 300V or 600V Flammability rating: VW-1

CSA C22.2 No.198.1

File No.: LR33298 Operating temperature: 105°C
Voltage rating: 300V or 600V Flammability rating: VW-1

Electrical Appliance and Material Safety Law (Japan)

Registration of flammability rating (-F-)
(Registration No.: F-ST53-001 to F-ST53-008)

Note: Operating voltage and colors differ according to Catalog No., see table to right.

Marking on Surface

105°C VW-1 SUMITOMO-K IRRAX TUBE V2 CAT XXX CSA 105°C VW-1

indicates UL logotype. XXX indicates Catalog No.

Applications

- Insulation, protection and reinforcement of terminations and joints of electric wires
- Identification and bundling of electric wires

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White, Clear

Catalog No.	Operating temperature	Operating voltage	Colors
806	105°C	300V	Colored
807	105°C	600V	Colored
816	105°C	300V	Clear
817	105°C	600V	Clear

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	28.6MPa
	Tensile strength (after aging)	136°C x 7 days, min. 7.3MPa	29.0MPa
	Elongation (before aging)	min. 100%	310%
	Elongation (after aging)	136°C x 7 days, min. 100%	320%
	Deformation	131°C x 1 hour, max. 35%	25%
	Heat shock	180°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	136°C x 7 days AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	Pass
	Dielectric breakdown (after aging)	136°C x 7 days, min. 50% of original	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁰ Ω·cm	4.8 x 10 ¹² Ω·cm
	Corrosion against bare copper	136°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	136°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	190%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Catalog No. 806, 816 (300V, Colored and Clear)				Catalog No. 807, 817 (600V, Colored and Clear)			
Nominal size	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)	Nominal size	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
AWG24	0.55±0.10	0.32±0.06	1,000 min.	AWG24	0.55±0.10	0.50±0.06	500 min.
AWG22	0.65±0.10	0.32±0.06	500 min.	AWG22	0.65±0.10	0.50±0.06	500 min.
AWG20	0.80±0.10	0.40±0.06	500 min.	AWG20	0.80±0.10	0.50±0.06	500 min.
AWG19	0.90±0.10	0.40±0.06	500 min.	AWG19	0.90±0.10	0.50±0.06	500 min.
AWG18	1.00±0.10	0.40±0.06	500 min.	AWG18	1.00±0.10	0.50±0.06	250 min.
AWG17	1.15±0.10	0.40±0.06	250 min.	AWG17	1.15±0.10	0.62±0.06	250 min.
AWG16	1.30±0.10	0.40±0.06	250 min.	AWG16	1.30±0.10	0.62±0.06	250 min.
AWG15	1.45±0.10	0.40±0.06	200 min.	AWG15	1.45±0.10	0.62±0.06	200 min.
AWG14	1.65±0.10	0.40±0.06	200 min.	AWG14	1.65±0.10	0.62±0.06	200 min.
AWG13	1.80±0.15	0.40±0.06	200 min.	AWG13	1.80±0.15	0.62±0.06	200 min.
AWG12	2.10±0.15	0.40±0.06	400 min.	AWG12	2.10±0.15	0.62±0.06	400 min.
AWG11	2.30±0.15	0.40±0.06	400 min.	AWG11	2.30±0.15	0.62±0.06	400 min.
AWG10	2.60±0.15	0.40±0.06	400 min.	AWG10	2.60±0.15	0.62±0.06	400 min.
AWG 9	2.90±0.15	0.50±0.06	400 min.	AWG 9	2.90±0.15	0.62±0.06	400 min.
AWG 8	3.30±0.15	0.50±0.06	400 min.	AWG 8	3.30±0.15	0.62±0.06	400 min.
AWG 7	3.70±0.15	0.50±0.06	400 min.	AWG 7	3.70±0.15	0.62±0.06	400 min.
AWG 6	4.10±0.20	0.50±0.06	200 min.	AWG 6	4.10±0.15	0.62±0.06	200 min.
AWG 5	4.60±0.20	0.50±0.06	200 min.	AWG 5	4.60±0.20	0.62±0.06	200 min.
AWG 4	5.20±0.20	0.50±0.06	200 min.	AWG 4	5.20±0.20	0.62±0.06	200 min.
AWG 3	5.80±0.20	0.50±0.06	100 min.	AWG 3	5.80±0.20	0.62±0.06	100 min.
AWG 2	6.5 ±0.2	0.50±0.06	100 min.	AWG 2	6.5 ±0.20	0.62±0.06	100 min.
AWG 1	7.3 ±0.3	0.50±0.06	100 min.	AWG 1	7.3 ±0.2	0.62±0.06	100 min.
AWG 0	8.3 ±0.3	0.50±0.06	100 min.	AWG 0	8.3 ±0.3	0.62±0.06	100 min.

Longitudinal change: 0±5% (100°C x 2 hours)

IRRAX™ TUBE RP3

[Very flexible heat-resistant tubing] UL recognized

Catalog No. 702 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material: Cross-linked very flexible flame-retarded polyolefin
- Continuous operating temperature: -55 to 105°C

Features

- Very flexible
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

UL224

File No.: E75077

Operating temperature: 105°C

Voltage rating: 300V

Flammability rating: VW-1

Electrical Appliance and Material Safety Law (Japan)

Registration of flammability rating (-F-)

(Registration No.: F-ST53-009 to F-ST53-016)

Marking on Surface

105 VW-1 SUMITOMO-K IRRAX™ TUBE RP3 -F-

indicates UL logotype.

Applications

- Insulation, protection and reinforcement of terminations and joints of electric wires
- Identification and bundling of electric wires

Colors

- Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	12.5MPa
	Tensile strength (after aging)	136°C x 7 days, min. 7.3MPa	12.8MPa
	Elongation (before aging)	min. 200%	425%
	Elongation (after aging)	136°C x 7 days, min. 100%	450%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	136°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	16.4kV
	Dielectric breakdown (after aging)	136°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$3.0 \times 10^{14} \Omega \cdot \text{cm}$
	Corrosion against bare copper	136°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper	136°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours	425%
	Flammability	Flame-retarded, pass VW-1	Pass

*1: For reference use only

Sizes

Nominal size (mm)	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
3 × 0.5	3.00 ± 0.15	0.50 ± 0.06	400 min.
4 × 0.5	4.00 ± 0.20	0.50 ± 0.06	200 min.
5 × 0.5	5.00 ± 0.20	0.50 ± 0.06	200 min.
6 × 0.5	6.00 ± 0.2	0.50 ± 0.06	100 min.
7 × 0.5	7.00 ± 0.3	0.50 ± 0.06	100 min.
8 × 0.5	8.00 ± 0.3	0.50 ± 0.06	100 min.
9 × 0.5	9.00 ± 0.3	0.50 ± 0.06	100 min.
10 × 0.5	10.00 ± 0.4	0.50 ± 0.06	100 min.
12 × 0.5	12.00 ± 0.4	0.50 ± 0.06	100 min.

Longitudinal change: 0 ± 5%

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

K2

AN25

B6

O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

W

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
IRRAX™ TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAX™ TAPE VZL

IRRAX™ SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

IRRAX™ TUBE B8

[Semi-rigid heat-resistant tubing compliant with Electrical Appliance and Material Safety Law] UL recognized

Catalog No. 838, 897 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2

SUMITUBE B
LB

F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE O2C
W3C

O2B2
W3F2

SUMITUBE W3B2
W3B2 (4X)

SA2
SA3

SUMITUBE W

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
IRRAX TUBE RP3

B8
ER2
NHR
NHR4
FE2
IRRAX TAPE VZL

IRRAX™ SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Basic Properties

- Material: Cross-linked semi-rigid flame-retarded polyolefin
- Continuous operating temperature: -55 to 125°C

Features

- Semi-rigid
- Flame-retarded (PBDE/PBB-free)

Specifications/Approvals

UL224 (for Catalog No. 838)
 File No.: E75077
 Operating temperature: 125°C
 Voltage rating: 600V
 Flammability rating: VW-1
 Electrical Appliance and Material Safety Law (Japan)
 (for Catalog No. 838, 897)
 Registration of flammability rating (-F-)
 (Registration No.: STS3-009 to STS3-016)

Marking on Surface

- ❖ VW-1 SUMITOMO IRRAX B8 125-F- (for Catalog No. 838)
- ❖ SUMITOMO IRRAX B8 -F- (for Catalog No. 897)

Applications

- Insulation and protection of electric terminations where mechanical strength is required
- Reinforcement of objects to be covered

Colors

- Black, Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 13.8MPa	19.0MPa
	Tensile strength (after aging)	158°C x 7 days, min. 9.7MPa	17.1MPa
	Elongation (before aging)	min. 200%	340%
	Elongation (after aging)	158°C x 7 days, min. 100%	340%
	Heat shock	250°C x 4 hours, no crack	Pass
Electrical	Cold bend	-30°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	15.0kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁴ Ω·cm	2.3 x 10 ¹⁶ Ω·cm
	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Stability against copper Flammability	158°C x 7 days, elongation min. 100% after leaving under 95% humidity, 23°C x 24 hours Flame-retarded, pass VW-1	304% Pass

*1: For reference use only

Sizes

Catalog No. 838			
Nominal size	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
AWG24	0.55 ± 0.10	0.50 ± 0.06	500 min.
AWG22	0.65 ± 0.10	0.50 ± 0.06	500 min.
AWG20	0.80 ± 0.10	0.50 ± 0.06	500 min.
AWG19	0.90 ± 0.10	0.50 ± 0.06	500 min.
AWG18	1.00 ± 0.10	0.50 ± 0.06	250 min.
AWG17	1.15 ± 0.10	0.62 ± 0.06	250 min.
AWG16	1.30 ± 0.10	0.62 ± 0.06	250 min.
AWG15	1.45 ± 0.10	0.62 ± 0.06	200 min.
AWG14	1.65 ± 0.10	0.62 ± 0.06	200 min.
AWG13	1.80 ± 0.15	0.62 ± 0.06	200 min.
AWG12	2.10 ± 0.15	0.62 ± 0.06	400 min.
AWG11	2.30 ± 0.15	0.62 ± 0.06	400 min.
AWG10	2.60 ± 0.15	0.62 ± 0.06	400 min.
AWG 9	2.90 ± 0.15	0.62 ± 0.06	400 min.
AWG 8	3.30 ± 0.15	0.62 ± 0.06	400 min.
AWG 7	3.70 ± 0.15	0.62 ± 0.06	400 min.
AWG 6	4.10 ± 0.20	0.62 ± 0.06	200 min.
AWG 5	4.60 ± 0.20	0.62 ± 0.06	200 min.
AWG 4	5.20 ± 0.20	0.62 ± 0.06	200 min.
AWG 3	5.80 ± 0.20	0.62 ± 0.06	100 min.
AWG 2	6.5 ± 0.2	0.62 ± 0.06	100 min.
AWG 1	7.3 ± 0.3	0.62 ± 0.06	100 min.
AWG 0	8.3 ± 0.3	0.62 ± 0.06	100 min.

Catalog No. 897			
Nominal size	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
1 × 0.4	1.00 ± 0.10	0.38 min.	500 min.
1.5 × 0.4	1.50 ± 0.10	0.38 min.	300 min.
2 × 0.4	2.00 ± 0.20	0.38 min.	200 min.
3 × 0.4	3.00 ± 0.20	0.38 min.	400 min.
4 × 0.4	4.00 ± 0.30	0.38 min.	400 min.
5 × 0.4	5.00 ± 0.30	0.38 min.	200 min.
6 × 0.4	6.0 ± 0.5	0.38 min.	200 min.
7 × 0.4	7.0 ± 0.5	0.38 min.	100 min.
8 × 0.4	8.0 ± 0.5	0.38 min.	100 min.
9 × 0.4	6.0 ± 0.5	0.38 min.	100 min.
10 × 0.4	10.0 ± 0.5	0.38 min.	100 min.

Longitudinal change: min. -10% (200°C x 5 minutes)

IRRAX™ TUBE ER2

[150°C heat-resistant flame-retarded tubing]

✓ RoHS directive

Waterproofing

Flame-retarded

UL recognized

CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -55 to 150°C

Features

- Highly heat resistant
- Flame-retarded (PBDE/PBB-free)
- Excellent abrasion resistance

Specifications/Approvals

SFP standard (R1-2998)

Marking on Surface

◆ SUMITOMO IRRAX™ TUBE ER2

Applications

- Insulation and heat protection of wire harnesses and parts for automobiles
- Protection of wiring where flame retardance is required
- Protection of lead wires and parts which are subject to high temperature

Colors

- Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 15.7MPa	23.4MPa
	Tensile strength (after aging)	180°C x 200 hours, min. 9.8MPa	22.2MPa
	Elongation (before aging)	min. 150%	430%
	Elongation (after aging)	180°C x 200 hours, min. 50%	420%
	Heat shock	250°C x 4 hours, no crack	Pass
	Cold bend	-55°C x 4 hours, no crack	Pass
Electrical	Secant modulus	107.9±19.6MPa	106.4MPa
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	180°C x 200 hours, AC2.5kV x 60 sec., no breakdown	Pass
Chemical	Volume resistivity	min. 1.0 x 10 ¹⁰ Ω·cm	1.8 x 10 ¹⁵ Ω·cm
	Flammability	Flame-retarded (UL224 All Tubing Flame Test)	Pass

*1: For reference use only

Sizes

Nominal size (mm)	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
6 × 0.45	6.0 ± 0.5	0.45 ± 0.05	200 min.
8 × 0.45	8.0 ± 0.5	0.45 ± 0.05	100 min.
10 × 0.45	10.0 ± 0.5	0.45 ± 0.05	100 min.
12 × 0.45	12.0 ± 0.5	0.45 ± 0.05	100 min.

Longitudinal change: min. -10% (125°C x 5 minutes)

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

K2

AN25

B6

O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

W

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
IRRAX™ TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAX™ TAPE VZL

IRRAX™ SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

IRRAX™ TUBE NHR

[Halogen-free flame-retarded heat-resistant tubing]

✓ RoHS directive

Waterproofing

Flame-retarded

UL recognized

CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -40 to 105°C

Features

- Free of halogens
- Highly flame-retarded (compliant with the Combustion Standards for Railway Vehicle Materials by Japan Railway Rolling Stock & Machinery Association)
- Reduced amounts of smoke and harmful gasses when burned

Specifications/Approvals

SFP standard (R1-3699)

Applications

- Protection and insulation of cables for subway and railway vehicles
- Protection of wiring of equipment in buildings, marine vessels, tunnels, and mass transit vehicles

Colors

- Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 5.9MPa	8.4MPa
	Tensile strength (after aging)	136°C x 7 days, min. 4.0MPa	7.4MPa
	Elongation (before aging)	min. 200%	380%
	Elongation (after aging)	136°C x 7 days, min. 100%	340%
	Heat resistivity	105°C x 1 hour, min. 50%	8%
Electrical	Cold bend	-40°C x 1 hour, no crack	Pass
	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
Chemical	Volume resistivity	min. $1.0 \times 10^{10} \Omega \cdot \text{cm}$	$2.7 \times 10^{14} \Omega \cdot \text{cm}$
	Flammability	Flame-retarded*2	Pass

*1: For reference use only *2: Combustion Standards for Railway Vehicle Materials by Japan Railway Rolling Stock & Machinery Association (18-1011K)

Sizes

	Nominal size (mm)	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)		
IRRAXSLEEVE	SCM2	5 × 0.7	5.00 ± 0.50	0.70 ± 0.10	100 min.	
	SBI 300/350	6 × 0.7	6.0 ± 0.5	0.70 ± 0.10	100 min.	
	SCD	8 × 0.7	8.0 ± 0.5	0.70 ± 0.10	100 min.	
	SNHM	10 × 0.7	10.0 ± 0.5	0.70 ± 0.10	100 min.	
	Composite articles		12 × 0.7	12.0 ± 0.5	0.70 ± 0.10	100 min.
			14 × 0.7	14.0 ± 0.7	0.70 ± 0.10	100 min.
			16 × 0.7	16.0 ± 0.7	0.70 ± 0.10	100 min.
			20 × 0.7	20.0 ± 0.7	0.70 ± 0.10	100 min.
		SUMISEAL	24 × 1	24.0 ± 1.0	1.00 ± 0.15	2 min.
		SA3 CAP	28 × 1	28.0 ± 1.0	1.00 ± 0.15	2 min.
Processing equipment			30 × 1	30.0 ± 1.0	1.00 ± 0.15	2 min.
			35 × 1	35.0 ± 1.0	1.00 ± 0.15	2 min.
			42 × 1	42.0 ± 1.0	1.00 ± 0.15	2 min.
			50 × 1.2	50.0 ± 1.5	1.20 ± 0.20	2 min.

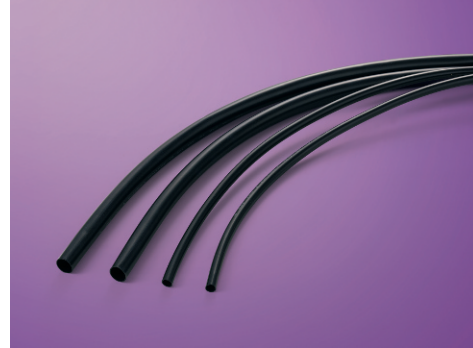
Longitudinal change: min. -20% (150°C x 3 minutes)

IRRAX™ TUBE NHR4

[Halogen-free flame-retarded heat-resistant tubing]
UL recognized

Catalog No. 719 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -55 to 125°C

Features

- Free of halogens
- Flame-retarded

Specifications/Approvals

UL224

File No.: E48762
Operating temperature: 125°C
Voltage rating: 300V
Flammability rating: VW-1

Marking on Surface

125°C VW-1 IRRAX™ TUBE NHR4 -F- indicates UL logotype.

Colors

- Black, Red, Yellow, Green, Blue, Gray, Pink

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 10.4MPa	11.7MPa
	Tensile strength (after aging)	158°C x 7 days, min. 7.3MPa	11.4MPa
	Elongation (before aging)	min. 200%	500%
	Elongation (after aging)	158°C x 7 days, min. 100%	465%
	Heat shock	250°C x 4 hours, no crack	Pass
	Cold bend	-30°C x 1 hour, no crack	Pass
Electrical	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric withstand (after aging)	158°C x 7 days, AC2.5kV x 60 sec., no breakdown	Pass
	Dielectric breakdown (before aging)	min. AC2.5kV	15.5kV
	Dielectric breakdown (after aging)	158°C x 7 days, min. 50% of original and min. AC2.5kV	Pass
	Volume resistivity	min. $1.0 \times 10^{14} \Omega \cdot \text{cm}$	$4.2 \times 10^{15} \Omega \cdot \text{cm}$
Chemical	Corrosion against bare copper	158°C x 7 days, no corrosion after leaving under 95% humidity, 23°C x 24 hours	Pass
	Flammability	Flame-retarded, pass VW-1	410% Pass

*1: For reference use only

Sizes

Nominal size (mm)	Inside diameter (mm)	Wall thickness (mm)	Unit length (m)
3 × 0.45	3.00 ± 0.20	0.48 ± 0.04	400
4 × 0.45	4.00 ± 0.20	0.48 ± 0.04	400
5 × 0.45	5.00 ± 0.20	0.48 ± 0.04	200
6 × 0.45	6.0 ± 0.2	0.48 ± 0.04	100
7 × 0.45	7.0 ± 0.3	0.48 ± 0.04	100
8 × 0.45	8.0 ± 0.3	0.48 ± 0.04	100
9 × 0.45	9.0 ± 0.3	0.48 ± 0.04	100
10 × 0.45	10.0 ± 0.4	0.48 ± 0.04	100

Longitudinal change: min. -20% (150°C x 3 minutes)

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

K2

AN25

B6

O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

W

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
IRRAX™ TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAX™ TAPE VZL

IRRAX™ SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2SUMITUBE
B
LBF (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)SUMITUBE
F2 (Z)
F4 (Z)
B2SUMITUBE
B2 (3X)
B8
V (600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

SUMITUBE
O2C
W3CSUMITUBE
O2B2
W3F2SUMITUBE
W3B2
W3B2 (4X)SUMITUBE
SA2
SA3

SUMITUBE W

SUMITUBE W

IRRAX™TUBE
IRRAX™TAPEA
B
F2
F2 (UL)
V2IRRAXTUBE
RP3

B8

ER2

NHR

NHR4

FE2

IRRAXTAPE
VZL

IRRAX™SLEEVE

SCM2

IRRAXSLEEVE
SBI
300/350

SCD

SNHM

Composite
articles

SUMISEAL

SA3 CAP

Processing
equipment

SUMISHRINKER / HEATING GUN

IRRAX™TUBE FE2

[Fluoroelastomer heat-resistant tubing]

✓ RoHS directive

Waterproofing

Flame-retarded

UL recognized

CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded fluoroelastomer
- Continuous operating temperature: -40 to 200°C

Features

- Excellent oil, high heat, and chemical resistance
- Flexible
- Flame-retarded

Specifications/Approvals

SFP standard (R1-8792)

Applications

- Protection of wires where heat and oil resistance is required
- Protection of wiring where flexibility is required

Colors

- Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 8.2MPa	23.2MPa
	Tensile strength (after aging)	250°C x 7 days, min. 8.2MPa	10.7MPa
	Elongation (before aging)	min. 200%	220%
	Elongation (after aging)	250°C x 7 days, min. 150%	180%
	Secant modulus	—	120MPa
	Heat shock	300°C x 4 hours, no crack	Pass
Electrical	Dielectric withstand (before aging)	AC2.5kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. 1.0 x 10 ¹² Ω·cm	1.5 x 10 ¹⁴ Ω·cm
Chemical	Oil resistance	Automatic transmission oil 150°C x 1,000 hours	
	Tensile strength	min. 8.2MPa	23.6MPa
	Elongation	min. 100%	233%
	Flammability	Flame-retarded	

*1: For reference use only

Sizes

Nominal size (mm)	Inside diameter (mm)	Wall thickness (mm) (nom.)	Outside diameter (mm)	Unit length (m)
2.4 × 3.2	2.40 ± 0.20	0.40	3.20 ± 0.30	100 min.
4.5 × 5.5	4.50 + ^{0.30} / _{0.50}	0.50	5.50 + ^{0.30} / _{0.50}	100 min.
6 × 7	6.0 + ^{0.4} / _{0.6}	0.50	7.0 + ^{0.4} / _{0.6}	100 min.
7 × 8	7.0 + ^{0.4} / _{0.6}	0.50	8.0 + ^{0.4} / _{0.6}	100 min.

Longitudinal change: min. -10% (200°C x 10 minutes)

IRRAX™ TAPE VZL

[Heat-resistant tape]

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded polyvinyl chloride resin (with pressure sensitive adhesive backing)
- Continuous operating temperature: -30 to 105°C

Features

- Free of lead, lead compounds and dioctyl phthalate
- Flame-retarded

Specifications/Approvals

SFP standard (R2-1300)

Applications

- Insulation, bundling, and protection of wire harnesses and parts for automobiles
- Protection and bundling of lead wires and parts which are subject to high temperature
- Protection of wiring where flame retardance is required

Colors

- Gray, Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	29.4N/19mm in width min.	33.2N/19mm in width
	Tensile strength (after aging)	120°C x 7 days, 29.4N/19mm in width min.	33.6N/19mm in width
	Elongation (before aging)	min. 125%	172%
	Elongation (after aging)	120°C x 7 days, min. 100%	143%
	Heat shock	200°C x 0.5 hours, no melting	Pass
	Low temperature resistance	-45°C x 1 hour, no crack	Pass
	Peeling	No adhesive sticking to the back surface of the next layer	Pass
Electrical	Lap joint adhesion (before aging)	29.4N/19mm in width min.	35.0N/19mm in width
	Adhesion strength (before aging)	1.96N/19mm in width min.	3.3N/19mm in width
	Adhesion strength (after aging)	*2 85% of original	105%
Electrical	Dielectric withstand (before aging)	AC1.0kV x 60 sec., no breakdown	Pass
	Volume resistivity	min. 1.0 x 10 ¹² Ω·cm	1.3 x 10 ¹⁵ Ω·cm
Chemical	Flammability	Flame-retarded (Oxygen index ≥23.5)	25.0

*1: For reference use only *2: 70°C x 4 hours, immersion in water x 0.5 hours, 70°C x 5 hours

Sizes

Nominal size (mm)	Wall thickness (mm)	Width (mm)	Unit length (m)
0.09 x 19	0.09 ± 0.02	19.0 ± 1.0	30 min.
0.09 x 25	0.09 ± 0.02	25.0 ± 1.0	30 min.

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

K2

AN25

B6

O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

W

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
RP3
B8
ER2
NHR
NHR4
FE2
VZL

IRRAX™ SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

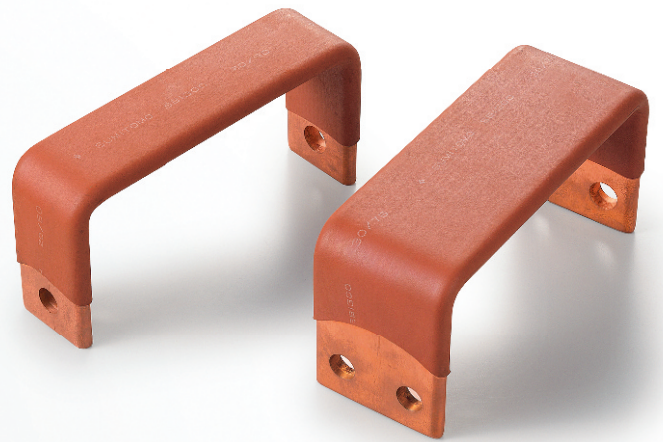
SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

IRRAX™ SLEEVE

IRRAXSLEEVE is a cross-linked, plastic heat-shrinkable tube with a comparatively large inside diameter, and is mainly used for pipes and cables in infrastructure applications. A heat-shrinkable tube with a hot-melt adhesive inner liner, it exhibits a waterproof performance immediately after shrinking.



IRRAX™ SLEEVE

IRRAXSLEEVE	SCM2
	SBI 300/350
	SCD
	SNHM

IRRAX™ SLEEVE SCM2

[Medium wall heat-shrinkable tubing with meltable adhesive]

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -55 to 120°C

Features

- Very flexible
- Dual wall, hot-melt adhesive inner liner
- High shrink ratio, 3:1
- Quick shrink
- Excellent adhesion to metal, polyethylene and polyvinyl chloride

Marking on Surface

IRRAXSLEEVE SCM2 XX (XX indicates nominal size)

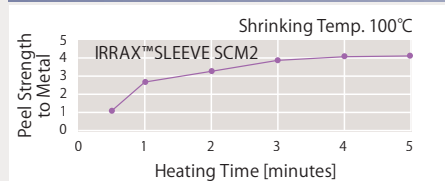
Applications

- Waterproof sealing and insulation for joints of communications equipment and low voltage cable terminals
- Waterproof sealing and insulation for joints of connectors and cables
- Corrosion protection for metal pipe joints
- Replacement for taping and molding process

Colors

- Black

Adhesion Properties



Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)*2	min. 10.0MPa	21.7MPa
	Tensile strength (after aging)*2	150°C x 168 hours, min. 8.0MPa	23.5MPa
	Elongation (before aging)	min. 350%	568%
	Elongation (after aging)	150°C x 168 hours, min. 300%	532%
	Low temperature flexibility	-55°C x 1 hour, no crack	Pass
Electrical	Hardness (Shore D)	—	41
	Volume resistivity	min. 1.0 x 10 ¹³ Ω·cm	2.0 x 10 ¹⁴ Ω·cm
	Tracking resistance	—	2.75kV x 1 hour
Chemical	Dielectric constant	—	4.1
	Weather resistance	—	94% of original value after 4,000 hours
	Weatherometer exposure test	—	91% of original value after 4,000 hours
	Tensile strength	—	70°C / 90°C
	Elongation	—	
	Shrinking temperature (start/finish)	—	

*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size*3	Supplied ID (mm)		Recovered ID (mm)		Unit length (min.) (m)
	Inside diameter (min.)	Inside diameter (max.)*4	Inside diameter (max.)*4	Wall thickness (nom.)*4	
04—1220	10.2	3.80	1.50	1220	
07—1220	19.0	5.60	2.00	1220	
11—1220	28.0	9.5	2.00	1220	
13—1220	33.0	10.2	2.30	1220	
15—1220	38.1	12.7	2.30	1220	
17—1220	44.0	14.0	2.30	1220	
20—1220	52	18.2	2.30	1220	
27—1220	70	25.5	2.30	1220	
35—1220	90	30.0	2.50	1220	
50—1220	125	40.0	2.50	1220	

Longitudinal change: min. -10% *3: Nominal size shows 10 times value of supplied ID in inches (i.e. 04 is 0.4 inches) *4: Size of outer jacket

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

K2

AN25

B6

O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

W

IRRAX™ TUBE IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
IRRAX TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRAX TAPE VZL

IRRAX™ SLEEVE

SCM2
SBI 300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

IRRAX™ SLEEVE SBI300 / SBI350

[Halogen-free, insulation for busbars in switchgear, heat-shrinkable tubing]

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -40 to 120°C

Features

- Excellent electrical performance
- Protection against flashover
- Stable performance for continuous use in switchgear
- Flexible enough to heat-shrink on bent (90°C) busbars
- Flame retardancy (self-extinguishing)

Applications

- Insulation for busbars in switchgear up to 36kV

Colors

- Red

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength (before aging)	min. 5.0MPa	7.6MPa
	Tensile strength (after aging)	160°C x 168 hours, min. 5.0 MPa	9.6MPa
	Elongation (before aging)	min. 300%	525%
	Elongation (after aging)	160°C x 168 hours, min. 200%	490%
	Specific gravity	—	1.31
Electrical	Low temperature flexibility	-40°C x 4 hours, no crack	Pass
	Dielectric strength	min. 10.0kV/mm	39.5kV/mm (wall thickness 0.94mm)
	Volume resistivity	—	7.8 x 10 ¹⁶ Ω·cm
Chemical	Dielectric constant	—	2.7
	Water absorption	23°C x 24 hours	0.45
	Flammability	Pass	Pass
	Shrinking temperature (start/finish)	—	70°C / 100°C

*1: For reference use only

Sizes

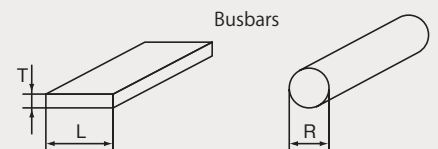
IRRAX™ SLEEVE SBI300							
Nominal size (mm)	As supplied (mm)		After shrinkage (mm)		Unit length (min.) (m)	Suitable busbar size (mm)	
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (nom.)		Rectangular L+T (min.) (max.)	Round R (min.) (max.)
6/15	15.0	1.10	6.00	2.00	25	12 – 18	6.5 – 12.0
12/30	30.0	1.10	12.0	2.30	25	22 – 38	13.5 – 25.0
20/50	50	1.10	20.0	2.50	25	36 – 65	22.0 – 43.0
30/75	75	1.10	30.0	2.50	25	55 – 95	33.0 – 63.0
40/100	100	1.10	40.0	2.50	25	70 – 130	44.0 – 86.0
50/120	120	1.30	50	3.00	25	90 – 165	55.0 – 105.0

IRRAX™ SLEEVE SBI350							
Nominal size (mm)	As supplied (mm)		After shrinkage (mm)		Unit length (min.) (m)	Suitable busbar size (mm)	
	Inside diameter (min.)	Wall thickness (nom.)	Inside diameter (max.)	Wall thickness (nom.)		Rectangular L+T (min.) (max.)	Round R (min.) (max.)
10/25	25.0	1.60	10.0	4.00	25	17 – 28	11.0 – 20.0
16/40	40.0	1.60	16.0	4.00	25	28 – 45	18.0 – 32.0
25/65	65	1.60	25.0	4.00	25	45 – 67	28.0 – 47.0
40/100	100	1.60	40.0	4.00	25	67 – 102	44.0 – 72.0

Longitudinal change: min. -15%

Minimum Clearances (Typical Values)

	Commercial voltage	Impulse voltage	Phase to phase clearances for rectangular busbars
IRRAX™ SLEEVE SBI300	12kV	75kV	20mm
	24kV	125kV	70mm
IRRAX™ SLEEVE SBI350	36kV	170kV	120mm



Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

IRRAX™ SLEEVE SCD

[Medium wall heat-shrinkable tubing with meltable adhesive]

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material: Cross-linked semi-rigid flame-retarded polyolefin
- Continuous operating temperature: -55 to 110°C

Features

- Dual wall, hot-melt adhesive liner
- Excellent mechanical strength
- High shrink ratio, 3:1
- Excellent adhesion properties
- Approved by Lloyd's Register of Shipping (Certificate No. KOB 9921598/1)

Marking on Surface

- SUMITOMO IRRAXSLEEVE SCD XX/YY (XX/YY indicates size)

Applications

- Joint covering for cables and pipes
- Termination of low-voltage cables
- Connector covering for CATV systems
- Replacement of tapes

Colors

- Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength*2 (before aging)	min. 10.0MPa	16.8MPa
	Tensile strength*2 (after aging)	min. 8.0MPa	20.7MPa
	Elongation (before aging)	120°C x 500 hours, min. 200%	508%
	Elongation (after aging)	120°C x 500 hours, min. 100%	550%
	Specific gravity	—	1.20
	Low temperature flexibility	-55°C x 1 hour, no crack	Pass
Electrical	Hardness	—	48
	Volume resistivity	min. $1 \times 10^{12} \Omega \cdot \text{cm}$	$6 \times 10^{15} \Omega \cdot \text{cm}$
	Tracking resistance	—	3.25kV x 20 minutes, pass
Chemical	Dielectric constant	min. 5.0	1.6
	Shrinking temperature (start/finish)	—	90°C / 115°C

*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size	As supplied (mm)		After shrinkage (mm)		Unit length (min.) (mm)
	Inside diameter (min.)	—	Inside diameter*3 (max.)	Wall thickness*3 (nom.)	
12 / 4—1200	12.0	—	4.00	2.20	1200
20 / 6—1200	20.0	—	6.00	2.50	1200
28 / 9—1200	28.0	—	9.0	2.65	1200
38 / 12—1200	38.0	—	12.0	3.05	1200
48 / 15—1200	48	—	15.0	2.75	1200
56 / 18—1200	56	—	18.0	2.75	1200
75 / 23—1200	75	—	23.0	2.90	1200
90 / 29—1200	90	—	29.0	2.85	1200
120 / 36—1200	120	—	36.0	3.00	1200

Longitudinal change: min. -10% *3: Outer layer only

SUMITUBE™

SUMITUBE	A
	LA
	A4
	C
	C (UL)
	D
A2	

SUMITUBE	B
	LB

SUMITUBE	F (Z)
	F3 (Z)
	NHR2
	NHR4
	R
	V (300V)

SUMITUBE	F2 (Z)
	F4 (Z)
	B2
	B2 (3X)
	B8
	V (600V)
	K

SUMITUBE	K2
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SUMITUBE	AN25
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SUMITUBE	B6
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SUMITUBE	O2C
	W3C

SUMITUBE	O2B2
	W3F2
	W3B2
	W3B2 (4X)
	SA2
	SA3

SUMITUBE	W
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IRRAX™ TUBE IRRAX™ TAPE

IRRAX TUBE	A
	B
	F2
	F2 (UL)
	V2
	RP3
	B8
	ER2
	NHR
	NHR4
IRRAX TAPE	FE2
	VZL

IRRAX™ SLEEVE

IRRAX SLEEVE	SCM2
	SBI
	300/350
	SCD
SNHM	

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMITUBE™

IRRAX™ SLEEVE SNHM

[Halogen-free flame-retarded medium wall tubing]



✓ RoHS directive

Waterproofing

Flame-retarded

UL recognized

CSA recognized

Basic Properties

- Material: Cross-linked flexible flame-retarded polyolefin
- Continuous operating temperature: -30 to 105°C

Features

- Halogen-free
- Reduced acidic gas emission and smoke generation in case of fire
- Flame-retarded
- High shrink ratio, 3:1
- Excellent encapsulation

Applications

- Protection of cables and pipes for mass transit vehicles and ships or in tunnels and buildings
- Encapsulation of connectors and cables

Colors

- Black

Properties

Properties	Items	Requirement	Typical values*1
Mechanical	Tensile strength*3 (before aging)	min. 7.8MPa	11.3MPa
	Tensile strength*3 (after aging)	140°C x 168 hours, min. 70%	96%
	Elongation (before aging)	min. 200%	530%
	Elongation (after aging)	140°C x 168 hours, min. 100%	320%
	Low temperature flexibility	-30°C x 1 hour, no crack	Pass
Electrical	Volume resistivity	min. 1.0 x 10 ¹² Ω·cm	8.0 x 10 ¹⁴ Ω·cm
	Hardness		42
Chemical	Weather resistance for 4,000 hours		
	Tensile strength		98%
	Elongation		72%
	Flammability*2	Flame-retarded	Flame-retarded
	Oxygen index	—	26
	Copper mirror corrosion: 175°C x 16 hours	No corrosion	Pass
	Smoke generation		
	Flaming mode	—	50
	Non-flaming mode	—	150
Chlorine gas generation	—	0mg/g	

*1: For reference use only *2: Combustion Standards for Railway Vehicle Materials by Japan Railway Rolling Stock & Machinery Association

*3: Calculated by using outer cross section

Sizes

Nominal size	As supplied (mm)		After shrinkage (mm)		Unit length (min.) (mm)
	Inside diameter (min.)		Inside diameter*4 (max.)	Wall thickness*4 (nom.)	
7/ 25— 900	23.0		7.0	1.50	900
11/ 25— 900	25.0		11.0	1.70	900
16/ 40— 900	40.0		16.0	1.70	900
20/ 50— 900	50		20.0	1.70	900
24/ 65— 900	65		24.0	2.30	900
28/ 75— 900	75		28.0	2.30	900
32/ 85— 900	85		32.0	2.30	900
33/ 110— 900	110		33.0	2.30	900
55/ 150— 900	150		55	3.00	900

Longitudinal change: min. -10% *4: Outer layer only

IRRAX™ TUBE
IRRAX™ TAPE

A
B
F2
F2 (UL)
V2
RP3
B8
ER2
NHR
NHR4
FE2
VZL

IRRAX™ SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN



Composite articles and processing equipment

Composite articles

SUMISEAL
SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMISEAL

[Watertight crimp connector tube]

Catalog No. 987 ✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



A
LA
A4
SUMITUBE C
C (UL)
D
A2

B
SUMITUBE LB

F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V(300V)

F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V(600V)
K

SUMITUBE K2

SUMITUBE AN25

SUMITUBE B6

O2C
SUMITUBE W3C

O2B2

W3F2

W3B2

SUMITUBE W3B2 (4X)

SA2

SA3

SUMITUBE W

IRRAX™TUBE
IRRAX™TAPE

A

B

F2

F2 (UL)

V2

IRRAXTUBE RP3

B8

ER2

NHR

NHR4

FE2

IRRAXTAPE VZL

IRRAX™SLEEVE

SCM2

SBI

IRRAXSLEEVE 300/350

SCD

SNHM

Composite articles

SUMISEAL

SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

Basic Properties

- Material: Electron beam cross-linked semi-rigid polyolefin, hot-melt adhesive, and copper crimp barrel

Advantages

- Sumiseal comprises a copper crimp barrel and heat-shrinkable semi-rigid two-layer polyolefin tube. The crimp barrel connects electrical wires when crimped, while the tube insulates the wires. Hot-melt adhesive is coated over the inner wall of the two-layer tube so that the adhesive melts and fills the gap between the crimped barrel and wire when the tube is shrunk. Because of the above feature, Sumiseal can be used to connect electrical wires, and at the same time, protect the wire joint from water, dust, and other undesirable external influences. Moreover, connecting wires using this product makes the wire joint smoother, more compact, and more reliable than conventional tape-based waterproofing processes.

Applications

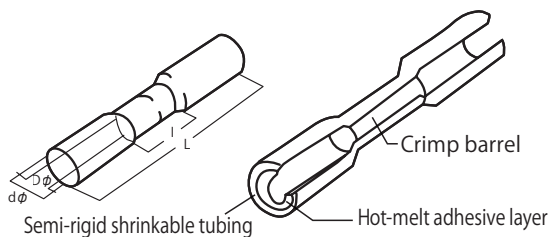
- Protection of wire harnesses in automobiles and wire joints in household electrical appliances, ships, machine tools, and other equipment from water, oil, vibration, and dust

Colors

- Transparent Yellow, Transparent Red, Transparent Blue

Specifications

Product serial number	Material	Performance		
		Rated voltage	Rated current	Rated temperature
SS-2220	Copper sleeve	600V	19A	105°C
SS-1816	Copper	600V	19A	105°C
SS-1414	Semi-rigid shrinkable tubing	600V	27A	105°C
SS-1010	Two-layer shrinkable tubing	600V	49A	105°C



Properties

Items	Test method and judgment criteria
Withstand voltage	Apply AC3,400V (60 Hz) between the outer surface of the test specimen (seal) and the electrical wire inside the specimen. The specimen must withstand the test voltage for 1 minute.
Sealing performance	After immersing in water for 1 month at a depth of 1m, the test specimen must pass the withstand voltage test.
Thermal cycle	After 5 thermal cycles (1 cycle = -25°C x 30 min → 20°C x 10 min → 75°C x 30 min → 20°C x 10 min), the test specimen must pass the withstand voltage test.
Low-temperature performance	Crimp the test specimen at -20°C, leave it for 1 hour at -55°C, then allow it to return to room temperature. The test specimen must pass the withstand voltage test.
Low-vibration fatigue performance	After subjecting to vibration for 8 hours at an acceleration of 7G, the test specimen must pass the withstand voltage test.

Size

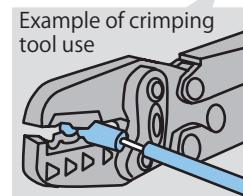
Product serial number	Dimensions (mm)				Applicable wire size		Specialized crimping tool	Standard colors
	dφ	Dφ	L	l	mm ²	AWG		
SS-2220	1.4	3.8	25	11.5	0.3 - 0.5	22-20	NH-82	Transparent Yellow
SS-1816	1.7	4.2	37	15.0	0.75 - 1.25	18-16	NH-82	Transparent Red
SS-1414	2.3	4.9	37	15.0	2.0	14	NH-82	Transparent Blue
SS-1010	3.4	6.4	42	15.0	5.5	10	NH-82	Transparent Yellow

Crimping Process

① Insert electrical wires into sleeve



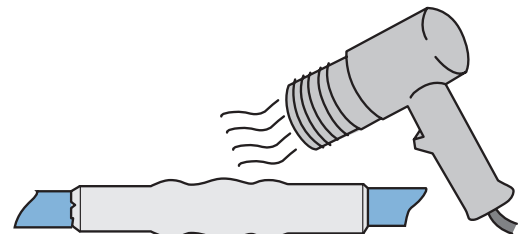
② Crimp



Example of crimping tool use

To ensure that SUMISEAL achieves its full performance, always use the crimping tool specified by Sumitomo Electric.

③ Heat shrink



Heat the outer sleeve with a heat gun or other suitable heater. The adhesive inside the tubing will melt and bind the wires and outer insulation closely together, optimizing the sealing of the finished splice.

Shrinkage temperature: 120°C

SA3 CAP

[Sealing caps for automobiles, flame-retarded heat-shrinkable tubing with meltable adhesive]

✓ RoHS directive

Waterproofing Flame-retarded UL recognized CSA recognized



Basic Properties

- Material: Outer: Irradiated cross-linked semi-rigid flame-retarded polyolefin
Inner: Meltable adhesive
- Shrink temperature: min. 135°C
- Shrink ratio: Radial change: min. 75%
- Continuous operating temperature: -40 to 105°C

Features

- High shrink ratio and effective for waterproofing of multiple harness terminations
- Retains positioning at high temperature
- Flame-retarded outer jacket (PBDE/PBB-free)
- Abrasion resistant

Applications

- Waterproof sealing, insulation and reinforcement for harness joints and splices of motor vehicles/electronic devices

Colors

- Black

Properties

Properties	Items	Requirements	Typical values*1
Mechanical	Tensile strength*2	min. 10.4MPa	25.8MPa
	Elongation	min. 300%	550%
	Heat shock	225°C x 4 hours, no crack	Pass
	Heat resistance	130°C x 7 days, no crack	Pass
	Secant modulus	min. 150MPa	463MPa
Electrical	Dielectric strength	min. 15kV/mm	20.6kV/mm
	Volume resistivity	min. 1.0 x 10 ¹² Ω·cm	9.6 x 10 ¹⁵ Ω·cm
Chemical	Flammability	SAE J1128, self-extinguish within 70 sec.	Pass
Splice performance (on representative splice configurations)	Testing to SFP internal standard		
	• Heat aging: 125°C x 1008 hours		Pass
	• Heat cycle: 125 cycles, 125°C (30 minutes) to -40°C (30 minutes)		Pass
	• Fluid resistance: 2-hour immersion in: brake fluid, engine coolant, ASTM Reference Oil #3, automatic transmission fluid		Pass

*1: For reference use only *2: Calculated by using outer cross section

Sizes

Nominal size (mm)	Supplied ID (mm)		Recovered ID (mm)			Unit length (min.) (m)
	Inside diameter (min.)	Wall thickness*3 (nom.)	Inside diameter (max.)	Wall thickness*3 (min.)	Adhesive thickness (nom.)	
5.8/1.2	5.80	0.45	1.26	1.20	0.56	50
7.5/1.6	7.5	0.60	1.64	1.52	0.76	50
10.9/2.4	10.9	0.70	2.40	1.91	1.02	50

*3: Including inner adhesive

SUMITUBE™

A
LA
A4
C
C (UL)
D
A2

B
LB

F (Z)
F3 (Z)
NHR2
NHR4
R
V (300V)

F2 (Z)
F4 (Z)
B2
B2 (3X)
B8
V (600V)
K

K2

AN25

B6

O2C
W3C

O2B2
W3F2
W3B2
W3B2 (4X)
SA2
SA3

W

IRRAX™TUBE IRRAX™TAPE

A
B
F2
F2 (UL)
V2
RP3
B8
ER2
NHR
NHR4
FE2
VZL

IRRAX™SLEEVE

SCM2
SBI
300/350
SCD
SNHM

Composite articles

SUMISEAL

SA3 CAP

Processing equipment

SUMISHRINKER / HEATING GUN

SUMISHRINKER (SS001)

[Tube shrinking machine for harness joints]

This machine is used to shrink SUMITUBE heat-shrinkable tubing products over wire splices and harness joints.

A
LA
A4
SUMITUBE C
C (UL)
D
A2
B
SUMITUBE LB
F (Z)
F3 (Z)
NHR2
SUMITUBE NHR4
R
V(300V)
F2 (Z)
F4 (Z)
B2
SUMITUBE B2 (3X)
B8
V(600V)
K
SUMITUBE K2
SUMITUBE AN25
SUMITUBE B6
O2C
SUMITUBE W3C
O2B2
W3F2
W3B2
SUMITUBE W3B2 (4X)
SA2
SA3
SUMITUBE W

Basic Characteristics

- Continuous processing of harness joints on a belt conveyor
- High-reliability waterproofing of joints by proper temperature/speed control
- Fail-proof system that reverses the belt conveyor direction if the heating temperature deviates from a preset range
- Stable temperature control with upper and lower ceramic heaters
- Desktop device with an overall length of 1m

Specifications

Item	Description
Power source	Single-phase AC200V, 50/60Hz
Power consumption	2.0kW
Heater	Far-infrared ceramic surface heater 200V 1 kW x 2 (upper and lower surfaces)
Temperature control	PID control by K-thermocouple on upper heater
Heating temperature range	Recommended preset temperature: 550°C
Workpiece conveyance method	Conveys workpieces on two belts Distance between belts: 170mm
Belt conveyor speed variable range	0.3 - 3.0m/min
Applicable tube size	Inside diameter: max. 20mm
Applicable tube length	max. 80mm
Weight	40kg
Outside dimensions	202 (W) x 980 (L) x 670 (H) mm
Safety measures	Circuit breaker (turns off power source)
	Emergency stop button (stops heaters, belt conveyor, and fan)
	Door-open detection switch (stops heaters and belt conveyor)

Note: Use a power plug that matches the power socket at the SUMISHRINKER installation site.



HEATING GUN (882 / 883-13)

[Industrial heating tool]

A
B
F2
F2 (UL)
V2
IRRX™TUBE RP3
B8
ER2
NHR
NHR4
FE2
IRRX™TAPE VZL

Advantages

- An industrial hot-air processor for shrinking, drying, fusing, or bending an object with hot air
- Speeds up the process by heating the object continuously with a powerful heater
- The heater is wound on a glass insulator to provide extended life of the gun
- Plastic body reduces weight

Specifications

Item	Description	
	882	883-13
Power source	AC100V 50/60Hz	
Power consumption	1,000W	
Plug shape	Flat plug	
Maximum hot-air temperature*1	Room temperature — 450°C (continuous scale)	500°C
Hot-air speed	360m/min.	1,250m/min.
Hot-air flow rate	0.2m ³ /min.	
Outside dimensions	285 (W) x 185 (H) x 70 (D) mm	260 (W) x 190 (H) x 75 (D) mm
Weight*2	700g	750g

*1: Maximum hot-air temperature is an approximate value measured 10mm from nozzle outlet.

*2: Weight does not include weight of cord.



Sumitomo Electric Industries, Ltd.

Irradiated Products Sales Department, Fine Polymer Sales Division,
Electronics Sales Unit

4-5-33, Kitahama, Chuo-ku, Osaka 541-0041, Japan

Tel. +81-6-6220-4280 Fax. +81-6-6222-6489

Sumitomo Electric Interconnect Products, Inc.

915 Armorlite Drive San Marcos, CA92069, U.S.A.

Tel. +1-760-761-0600 Fax. +1-760-761-0620

SEI Interconnect Products (Europe), Ltd.

Oststrasse 89, D-22844, Norderstedt, Germany

Tel. +49-40-526-501-60 Fax. +49-40-526-501-69

Sumi-Pac Corp.

No.15, Gongye 5th Rd., Hukou Township, Hsinchu County 303, Taiwan

Tel. +886-3-598-4165 Fax. +886-3-598-4168

Sumitomo Electric Fine Polymer (Suzhou) Ltd.

No.232 Jinfeng Road, Suzhou New District, Suzhou, Jiangsu, 215129, China

Tel. +86-512-8918-6680 Fax. +86-512-8918-6686

Shanghai Branch

Tel. +86-021-6212-6600 Fax. +86-021-5237-3196

Sumitomo Electric Interconnect Products (Hong Kong) Ltd.

Room 1005-6, 10/F., West Wing, Tsim Sha Tsui Centre, 66 Mody Road,
Kowloon, Hong Kong

Tel. +852-2805-6777 Fax. +852-2504-4690

Sumitomo Electric Interconnect Products (Singapore) Pte. Ltd.

31 International Business Park, #02-10, Singapore 609921

Tel. +65-6261-3388 Fax. +65-6266-7165

Sumitomo Electric (Thailand) Ltd.

15th Floor, B.B. Building, No. 54 Sukhumvit 21 Road, North Klongtoey,
Wattana, Bangkok 10110, Thailand

SEI Trading India Pte. Ltd.

501, Vatika City Point, M.G. Road, Gurgan, 122002, Haryana, India

Tel. +91-124-4577470 Fax. +91-124-4577477

 **SUMITOMO ELECTRIC INDUSTRIES, LTD.**
<http://www.sei.co.jp>