

Basic Properties

- (1) Materials : Irradiated cross-linked flexible flame-retardant polyolefin
- (2) Shrink temperature : min. 90°C
- (3) Shrink Ratio : Radial change: min. 50%
: Longitudinal change: min. -15%
- (4) Continuous Operating Temperature : -55 to 105°C

Features

- (1) UL224 approved
- (2) Flexible
- (3) Flame-retardant

Specification/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-STS3-009 - F-STS3-012

Marking on the surface

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

Application

- (1) Insulation, protection and reinforcement for termination and joints of electric wire
- (2) Colour identification and bundling for electric wires
- (3) Insulation and protection for resistor and condenser

Colours

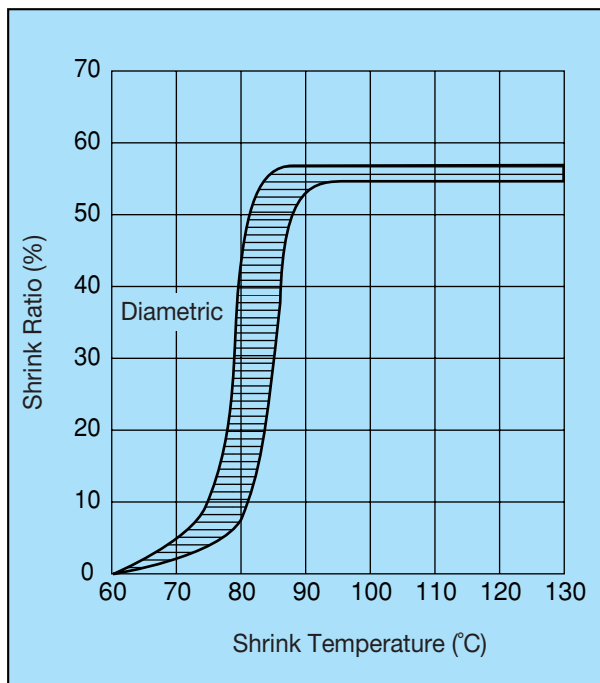
Black, Brown, Red, Orange, Yellow, Green, Blue, Purple, Grey, White

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
	Cold bend	-30°C x 1 hour, no crack	pass
Electrical	Voltage resistance (before aging)	AC2.5kV x 60 sec. no breakdown	pass
	Voltage resistance (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
	Volume resistivity	min. 1.0 x 10 ¹⁶ Ω·cm	2.7 x 10 ¹⁶ Ω·cm
Chemical	Corrosion against bare copper	136°C x 7 days, no corrosion after leaving under humidity 95%, 23°C x 24 hours	pass
	Stability against copper	136°C x 7 days, elongation min. 100% after leaving under humidity 95%, 23°C x 24 hours	358%
	Flammability	Flame-retardant, pass VW-1	pass

*1: For reference use only

Shrink Property



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