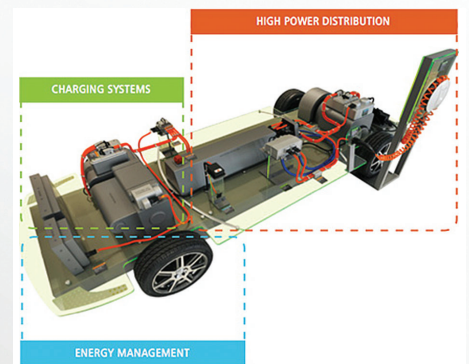
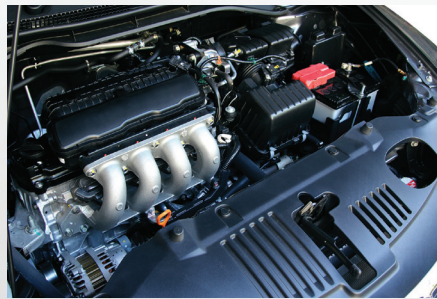




# AUTOMOTIVE MARKETS INNOVATIVE SOLUTIONS GUIDE





## Welcome to Sumitomo Electric Interconnect Products, Inc. ....

Since our inception in 1985, Sumitomo Electric Interconnect Products, Inc. (SEIP) has become one of the leading-edge technology manufacturers, producing state-of-the-art SUMITUBE® Heat Shrinkable Tubing. Our North American facility in San Marcos, California is the center of our Manufacturing, Sales, Fulfillment and Innovation.

Sumitomo products conform to the latest industry standards for Quality, Testing, Safety and Environment.

Sumitomo products are the simple and superior solutions for challenging and critical applications encountered in the automotive world. Originally supplied for use on brake lines for cars produced in Japan, Sumitomo heat-shrinkable products are now in wide use on vehicles built around the world. Our products are cost-effective, environmentally responsible and offer lighter weight, space savings and performance in the most demanding automotive environments. They are the products of choice for platforms utilizing internal combustion engines to hybrids to electric vehicles and beyond.

Utilizing advanced materials science and irradiation technology, Sumitomo expanded its automotive product lineup to include a wide array of splice sealing products, high temperature materials, general purpose insulation, non-shrinkable irradiated tubing, irradiated tape and Poreflon® micro porous expanded PTFE membranes, which are used in sensor, venting and contamination protection applications.

Sumitomo... ..Simply Superior!

Sincerely,  
Nobuyoshi Fujinami  
President



Sumitomo Electric Interconnect Products, Inc.  
915 Armorlite Drive  
San Marcos, CA 92069-1440

## PIPE PROTECTION PRODUCTS

*Brake, Fuel, A/C, Power Steering*

### The Ultimate Solution for Pipe Protection

The SUMITUBE® **O2 Series**, the world leader of products in this category, are specifically formulated to provide **mechanical** and **corrosion protection** when installed over **brake, fuel, air conditioning, and power steering lines**. **Salt, gravel, moisture, heat, abrasion and vibration** are no match for the protection provided by the SUMITUBE® O2 series of products.

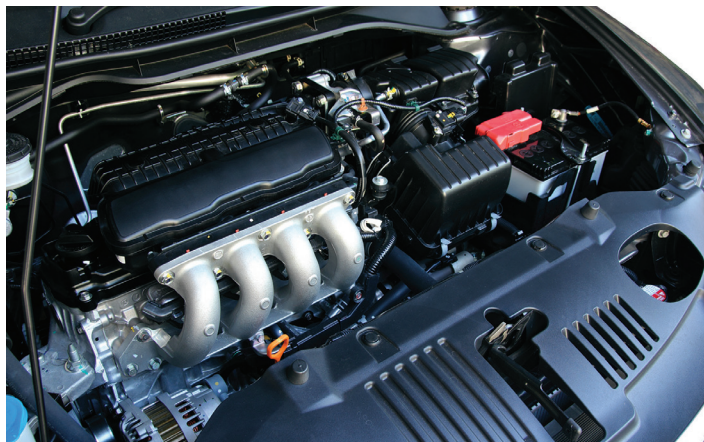
Better protection equals increased reliability and reduced warranty costs. These products fit all common pipe diameters and are available with or without an inner liner of adhesive sealant.

They are field performance proven for over 40 years by major automotive manufacturers.



Product Series	Product Description	Shrink Ratio*	Shrink Temp Minimum	Operating Temp Range	Colors	Size Range (as supplied inside diameter)
Sumitube O2	Polyolefin with thin adhesive inner layer	<2:1	115°C	-30°C to +100°C	Black, Grey	6 mm – 15 mm
Sumitube O2N	Same without adhesive	<2:1	115°C	-30°C to +100°C	Black, Grey	9 mm – 19 mm
Sumitube O2A20	High temperature version of O2	<2:1	115°C	-30°C to +135°C	Black	6 mm – 15 mm

\*Custom shrink ratios and wall thicknesses available



## General Purpose Single Wall Polyolefin Products

*Wire Harness, Bundling, Insulation*

SUMITUBE® single wall polyolefin products are recommended for general purpose applications. Our products provide **SIMPLY SUPERIOR** protection in a variety of applications. These include *light weight harnessing, strain relief, mechanical protection, electrical insulation, sub-system assemblies, general wire management, bundling, and identification.*



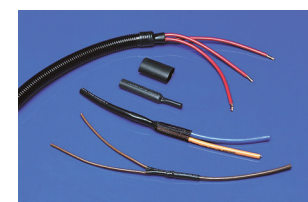
Product Series	Product Description	Shrink Ratio	Shrink Temp Minimum	Operating Temp Range	Colors	Size Range <i>(as supplied inside diameter)</i>
Sumitube A2 & B2	Flexible polyolefin	2:1	110°C [A2], 90°C [B2]	-55°C to +135°C	A2 clear B2 colors (including orange 600 volt rated)	3/64 – 4"
Sumitube A2(3X) & B2(3X)	Flexible polyolefin	3:1	110°C [A2(3X)], 90°C [B2(3X)]	-55°C to +135°C	A2(3X) clear B2(3X) colors	1.5 mm – 75 mm A2(3X) 1.5 mm – 102 mm B2(3X)
Sumitube B2(4XC)	Flexible polyolefin, overexpanded	4:1	90°C	-55°C to +135°C	Black	3/4" – 3"
Sumitube A4	Commercial grade polyolefin, non-flame retarded, highly UV resistant	2:1	115°C	-55°C to +110°C	Clear, glossy colors	3/64 – 2"
Sumitube F2(Z)	UL/CSA surface printed polyolefin	2:1	90°C	-55°C to +125°C	Black	3/64 – 4"
Sumitube F4(Z)	Same as above, thin wall	2:1	90°C	-55°C to +125°C	Black	3/64 – 1 1/4"

## SUMITUBE® SA3 Dual Wall Splice Sealing Products

*Under the Hood Wire Harness & Others*

SUMITUBE® SA3 dual wall heat-shrinkable tubing is specifically formulated to environmentally seal electrical splice connections in a wide range of environments. A durable, flame retarded **modified polyolefin outer jacket** is internally lined with fluid resistant adhesive and supplied in a **4:1 shrink ratio**.

Splices sealed with SUMITUBE® SA3 are resistant to all **automotive fluids, dirt and contamination, moisture, under the hood temperature cycling, flexing and vibration, while maintaining electrical integrity.**

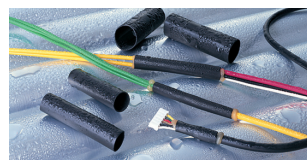
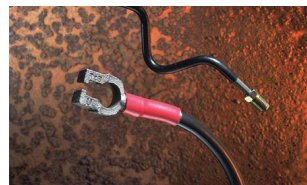


Product Series	Product Description	Shrink Ratio	Shrink Temp Minimum	Operating Temp Range	Colors	Size Range <i>(as supplied inside diameter)</i>
Sumitube SA3	Flame retarded outer jacket with thick adhesive inner layer	4:1	130°C	-40°C to +135°C	Black	0.228 – 0.701" Supplied as cut pieces (sizes #1 - #4) or coil

## General Purpose Adhesive Lined Products

### Waterproofing & Environmental Sealing

Sumitomo offers a large variety of general purpose heat-shrinkable SUMITUBE® dual wall adhesive lined tubing products with either a **hot melt adhesive or encapsulant** type of inner liner. These products provide **moisture and splash resistance** as well as **outstanding mechanical protection** and insulation properties. They are used in a diverse range of applications that include **general harnessing, component covers, battery cable assemblies, tailgate cable covers, interior and exterior lighting.**



Product Series	Product Description	Shrink Ratio	Shrink Temp Minimum	Operating Temp Range	Colors	Size Range (as supplied inside diameter)
Sumitube O2B2, O2B2S*	Dual wall polyolefin with adhesive liner	2:1	110°C	-55°C to +110°C	Black	1/8 – 2"
Sumitube W3B2, W3F2 W3B2S*	Dual wall polyolefin with thick adhesive liner	3:1	110°C	-55°C to +110°C	Black (Colors, W3F2)	1/8 – 1½"
Sumitube O2C	Clear dual wall polyolefin	2:1	115°C	-55°C to +105°C	Clear	1/8 – 1"
Sumitube W3C	Clear dual wall polyolefin	3:1	115°C	-55°C to +105°C	Clear	1/8 – 1"
Sumitube W5DL	Semi-rigid polyolefin with encapsulant	Up to 4:1	140°C	-55°C to +110°C	Various	1/8 – 1"

\*spooled product

## SUMITUBE® Special Purpose Tubing Products

### Special Purpose Tubing Products

#### Extreme Temperature Range, Special Properties

These high performance SUMITUBE® products offer enhanced resistance to abrasion and liquids or vapors. Examples include hot oils, fuels, hydraulic & transmission fluids and lubricants at elevated temperatures found in many automotive applications. Some of these special purpose items are used for unique applications in hybrid and electric vehicle designs.



Product Series	Product Description	Shrink Ratio	Shrink Temp Minimum	Operating Temp Range	Colors	Size Range (as supplied inside diameter)
Sumitube K	Semi-rigid PVDF	2:1	170°C	-55°C to +175°C	Clear	3/64 - 2"
Sumitube K2	Flexible PVDF	2:1	150°C	-55°C to +175°C	Clear	3/64 - 2"
Sumitube K3	Very flexible fluoropolymer	2:1	130°C	-55°C to +150°C	Clear	1/8 – 1"
Sumitube KH200 & KH200(TW)*	Very flexible fluoropolymer, high temperature	2:1	130°C	-55°C to +200°C	Clear	1/8 – 1"
Sumitube KH230 & KH230(TW)*	Very flexible fluoropolymer, ultra high temperature	2:1	130°C	-55°C to +230°C	Black	1/8 – 1"
Sumitube FE3	Fluoroelastomer	2:1	120°C	-40°C to +200°C	Black	1/8 – 2"
Sumitube R10	Chlorinated elastomer	2:1	150°C	-70°C to +121°C	Black	1/8 – 3"
Sumitube R120	Elastomeric polyolefin	2:1	150°C	-75°C to +120°C	Black	1/8 – 2"

\*(TW) = thin wall version

## SUMITUBE® Non-Shrinkable Irradiated Products

### *Chafe Protection & Special Applications*

**Irrax®Tube** and **Irrax®Tape** irradiated products are made using the same material and irradiation technology as Sumitube® products. These products are used in applications that require extreme resistance to chafing and abrasion in a non-shrink version or to replace standard low temperature PVC tape.

Irrax®Tube and Irrax®Tape products will **not melt, drip, crack, or flow** even when the melting point of the base material is exceeded.



Product Series	Product Description	Shrink Ratio	Shrink Temp Minimum	Operating Temp Range	Colors	Size Range <i>(as supplied inside diameter)</i>
Irrax® Tube B	Flexible polyolefin, flame retarded	N/A	N/A	-45°C to +120°C	Black	0.7 mm – 14 mm
Irrax® Tube ER2	Flexible polyolefin, flame retarded, extended temperature range	N/A	N/A	-55°C to +150°C	Black	6 mm – 20 mm
Irrax® Tube FE2	Fluoroelastomer heat-resistant tubing	N/A	N/A	-40°C to +200°C	Black	2.4 mm - 7 mm
Irrax® Tape VZL	Crosslinked PVC tape with pressure sensitive adhesive	N/A	N/A	-30°C to +105°C	Black	19 mm (width) 25 mm (width)



**Poreflon® e-PTFE Products**  
Sensors, Vents, Contamination Control Applications

Poreflon®, *e-PTFE membrane material*, is made from pure expanded PTFE and is available in a number of different pore sizes and thicknesses.

- *hydrophobic and hydrophilic* types

Discs made from Poreflon are used for:

- contamination control, venting, breather, and sensor applications
- Poreflon® products can operate at temperatures in excess of 200°C



**Typical properties of POREFLON VENT FILTER**

	Grade	Support Backing	Gurley Number (sec)*	Water Entry Pressure (KPa)	Application
Standard Type	AVP-050-300	No	10	200	Vent filters for automotive electronic devices and sensors
	AVP-100-100	No	10	100	
	AVP-100-300	No	5	100	
	AVP-045-40L	Yes	10	200	
	AVP-100-100L	Yes	5	100	
	AVP-500-50L	Yes	1	30	
	AVP-1500-30L	Yes	0.5	7	
Oil Repellent Type	AVP-100-300G	No	7	100	
	AVP-500-300G	No	2	50	

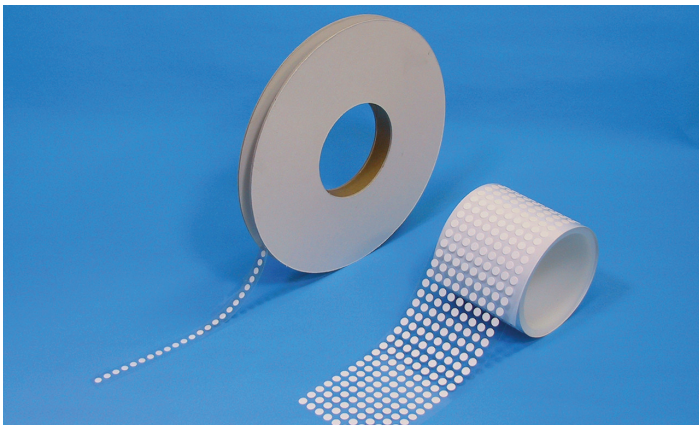
\*ASTM D 726

**Capability of oil repellent types**

Test Liquid	Engine Oil	Battery Electrolyte	Window Cleaning Fluid	Gasoline	Isopropyl alcohol	Ethanol
Result	Dry	Dry	Dry	Dry	Dry	Dry

1 minute after one drop of above liquid is applied

Product Series	Product Description	Shrink Ratio	Shrink Temp Minimum	Operating Temp Range	Colors	Size Range (as supplied inside diameter)
Poreflon	Pure expanded PTFE microporous membrane sheet	N/A	N/A	>200°C	White	Various thicknesses & pore sizes, cut to size, hydrophobic or hydrophilic



# SUMITOMO ELECTRIC INTERCONNECT PRODUCTS, INC.

[www.seipusa.com](http://www.seipusa.com)  
[www.sumitube.com](http://www.sumitube.com)

The information contained in this brochure is believed to be correct and in accordance with accepted engineering practices. Because of the varied nature of the uses for these products, each user should make their own evaluation regarding the suitability of these products for their specific application.

Sumitomo Electric Fine Polymer, Inc. and/or Sumitomo Electric Interconnect Products, Inc. make no warranties expressed or implied regarding the accuracy and completeness of the information and data contained herein, and disclaims any liability from the use or misuse of its products.

Sumitomo Electric Fine Polymer, Inc. and/or Sumitomo Electric Interconnect Products, Inc. shall not be liable for any injury, loss or damage directly, indirectly or as a consequence arising from the use or misuse of its products mentioned in this catalog, other than the replacement of materials considered defective.



ISO 9001:2008  
ISO 14001:2004

Sumitomo Electric Interconnect Products, Inc.  
915 Armorlite Drive  
San Marcos  
CA 92069-1440  
[www.seipusa.com](http://www.seipusa.com)

Customer Service  
1-800-758-3515 (USA & Canada)  
1-760-761-0600 (Outside USA & Canada)  
[customerservice@seipusa.com](mailto:customerservice@seipusa.com)  
Fax: 1-800-758-3517 (USA & Canada)  
or 1-760-761-0620 (Outside USA & Canada)  
[www.seipusa.com](http://www.seipusa.com)

©2014 Sumitomo Electric Interconnect Products, Inc. All rights reserved. The Sumitomo Electric logo is a registered trademark of Sumitomo Electric Industries. Other products and brand names may be trademarks of their respective owners. The information on this datasheet is believed to be correct at the time of publication. Specifications given in this publication are subject to change without notice.