



SWFR

Single Wall, Heat Shrink Tubing Highly flame-retardant, UL VW-1 rated, Zerohal tubing

PRODUCT DESCRIPTION

SWFR tubing from TE Connectivity (TE) is a cost effective, highly flame-retardant, 2:1 shrink ratio tubing made irradiated, cross-linked polyolefin. It insulates and mechanically protects components, electrical connections, and terminations. SWFR is offered in two very flexible types. X2 is a thin wall tubing, and X4 is a very thin wall tubing. The thicker wall of the X2 offers better protection, while the space-saving thinner wall of the X4 permits denser packing of protected components and a faster shrink time to better protect against thermal damage of temperature-sensitive components. Both types are halogen free, permitting their use in enclosed spaces where toxic gasses from burning materials containing halogens is undesirable.

KEY FEATURES

- Highly flame-retardant with UL VW-1 and CSA OFT flammability rating
- Environmentally friendly formula is essentially free of halogens, permitting use in enclosed areas where emission of toxic gasses from burning materials containing halogens is undesirable.

APPLICATIONS

- Household appliances
- Automotive
- Commercial electronics & communications
- Consumer products
- Industrial equipment

STANDARDS AND SPECIFICATIONS

- Customer drawings: SWFR X2 and SWFR X4
- UL 224 VW-1, CSA OFT
- UL file E35586
- CSA file LR31929

ELECTRICAL, MECHANICAL, & MATERIALS

- Provides excellent electrical insulation
- Provides mechanical protection from abrasion
- Highly flexible X2 thin wall & X4 very thin wall types
- Non-halogenated irradiated polyolefin
- RoHS & REACH compliant

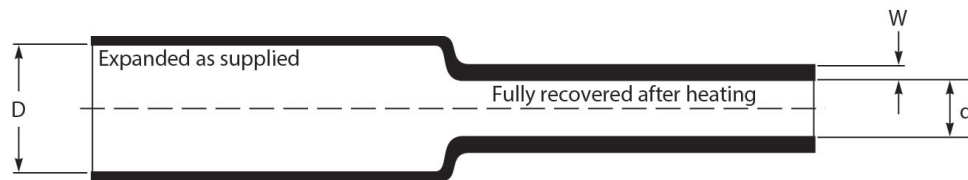
TEMPERATURE RATING

- Minimum shrink temperature 70°C [158°F]
- Full recovery temperature 90°C [194°F]
- Operating temperature -30°C to 125°C [22°F to 257°F]

ORDERING INFORMATION

- Color: Black (-O)
- Packaging: (-SP) spool, varying lengths (consult TE for details) & (-FSP) flat on spool (only for sizes 8mm & larger)
- Ordering description: Specify product type, size, color & packaging. For example, X2-2/1-O-SP
- Standard product is unmarked, but marking on product is available on a special order basis

DIMENSIONS

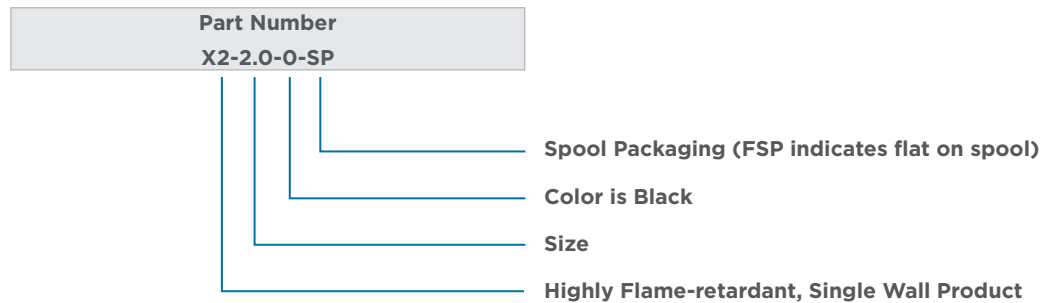


Product Type	Size	Minimum Expanded I.D. (D)	Maximum Recovered I.D. (d)	Total Recovered Wall Thickness (W)
X2 (Thin Wall)	1.0	1.3	0.5	0.44
	1.5	1.9	0.75	0.44
	2.0	2.4	1.0	0.44
	2.5	2.9	1.25	0.44
	3.0	3.4	1.5	0.44
	3.5	3.8	1.75	0.46
	4.0	4.3	2.0	0.46
	5.0	5.3	2.5	0.56
	6.0	6.3	3.0	0.56
	7.0	7.3	3.5	0.56
	8.0	8.3	4.0	0.56
	9.0	9.3	4.5	0.56
	10.0	10.1	5.0	0.56
	12.0	12.4	6.0	0.56
	18.0	18.6	9.0	0.77
	25.0	26.4	12.5	0.77
	30.0	31.6	15.0	0.89
X4 (Very Thin Wall)	0.8	0.95	0.4	0.25
	1.0	1.15	0.5	0.25
	1.5	1.65	0.75	0.25
	2.0	2.05	1.0	0.26
	2.5	2.55	1.25	0.28
	3.0	3.05	1.5	0.28
	3.5	3.55	1.75	0.28
	4.0	4.15	2.0	0.28
	6.0	6.1	3.0	0.33
	9.0	9.1	4.5	0.33
	13.0	13.2	6.5	0.41
	18.0	18.6	9.0	0.46
	25.0	25.4	12.5	0.46

PRODUCT DESCRIPTION & ORDERING INFORMATION

Product Type	Material Description	Material Number
X2 (Thin Wall)	X2-1.0-0-SP	EJ1477-000
	X2-1.5-0-SP	EJ1478-000
	X2-2.0-0-SP	EJ1479-000
	X2-2.5-0-SP	EJ1480-000
	X2-3.0-0-SP	EJ1481-000
	X2-3.5-0-SP	EJ1482-000
	X2-4.0-0-SP	EJ1483-000
	X2-5.0-0-SP	EJ1484-000
	X2-6.0-0-SP	EJ1485-000
	X2-7.0-0-SP	EJ1486-000
	X2-8.0-0-FSP	EJ1488-000
	X2-9.0-0-FSP	EJ1489-000
	X2-10.0-0-FSP	EJ1490-000
	X2-12.0-0-FSP	EJ1492-000
	X2-18.0-0-FSP	EJ1497-000
	X2-25.0-0-FSP	EJ1500-000
	X2-30.0-0-FSP	EJ1502-000

Product Type	Material Description	Material Number
X4 (Very Thin Wall)	X4-0.8-0-SP	EJ1505-000
	X4-1.0-0-SP	EJ1506-000
	X4-1.5-0-SP	EJ1507-000
	X4-2.0-0-SP	EJ1508-000
	X4-2.5-0-SP	EJ1509-000
	X4-3.0-0-SP	EJ1510-000
	X4-3.5-0-SP	EJ1511-000
	X4-4.0-0-SP	EJ1512-000
	X4-6.0-0-SP	EJ1514-000
	X4-9.0-0-FSP	EJ1517-000
	X4-13.0-0-FSP	EJ2608-000
	X4-18.0-0-FSP	EJ2612-000
	X4-25.0-0-FSP	EJ2616-000



X2 THIN WALL PROPERTY REQUIREMENTS

Property	Unit	Requirement	Test Method
Physical			
Dimensions	mm	As shown in DIMENSIONS table	ASTM D 2671
Longitudinal change			
ASTM D 2671	percent	+1, -5	ASTM D 2671
UL 224	percent	+3, -3	UL 224
Eccentricity (recovered)	percent	30 maximum	ASTM D 2671
Tensile strength	MPa (psi)	10.3 (1500) minimum	ASTM D 2671
Ultimate elongation	percent	200 minimum	ASTM D 2671
Secant modulus (as supplied)	MPa (psi)	172 (2.5 x 10 ⁴) maximum	ASTM D 2671
Low-temperature flexibility (1 hour at -30°C/-22°F)		No cracking	UL 224
Heat shock (4 hours at 250°C/482°F)		No cracking	UL 224
Heat aging (7 days at 158°C/316°F)			UL 224
<i>Followed by tests for:</i>			
Tensile strength	MPa (psi)	70% minimum of unaged specimens	UL 224
Ultimate elongation	percent	100 minimum	UL 224
Flexibility		No cracking	ASTM D 2671
Dielectric withstand at 2500V	seconds	60 minimum	ASTM D 2671
Dielectric breakdown	volts	50% minimum of unaged specimens	UL 224
Dielectric strength	kV/mm (volts/mil)	19.7 (500) minimum	ASTM D 2671
Restricted shrinkage		Pass	UL 224
Electrical			
Dielectric withstand at 2500V	seconds	60 minimum	ASTM D 2671
Dielectric strength	kV/mm (volts/mil)	19.7 (500) minimum	ASTM D 2671
Volume resistivity	ohm-cm	10 ¹⁴ minimum	ASTM D 2671
Chemical			
Corrosive effect (7 days at 158°C/316°F)		No corrosion	ASTM D 2671
Copper stability (7 days at 158°C/316°F)		No brittleness, glazing, cracking, or severe discoloration of tubing. No pitting or blackening of copper.	ASTM D 2671
<i>Followed by tests for:</i>			
Ultimate elongation	percent	100 minimum	ASTM 2671
Flammability		Pass	UL 224, VW-1

X4 VERY THIN WALL PROPERTY REQUIREMENTS

Property	Unit	Requirement	Test Method
Physical			
Dimensions	mm	As shown in DIMENSIONS table	ASTM D 2671
Longitudinal change			
ASTM D 2671	percent	+1, -15	ASTM D 2671
UL 224	percent	+3, -3	UL 224
Eccentricity (recovered)	percent	30 maximum	ASTM D 2671
Tensile strength	MPa (psi)	10.3 (1500) minimum	ASTM D 2671
Ultimate elongation	percent	200 minimum	ASTM D 2671
Secant modulus (as supplied)	MPa (psi)	103 (1.5 x 10 ⁴) maximum	ASTM D 2671
Low-temperature flexibility (1 hour at -30°C/-22°F)		No cracking	UL 224
Heat shock (4 hours at 250°C/482°F)		No cracking	UL 224
Heat aging (7 days at 158°C/316°F)			UL 224
<i>Followed by tests for:</i>			
Tensile strength	MPa (psi)	70% minimum of unaged specimens	UL 224
Ultimate elongation	percent	100 minimum	UL 224
Flexibility		No cracking	ASTM D 2671
Dielectric withstand at 2500V	seconds	60 minimum	ASTM D 2671
Dielectric breakdown	volts	50% minimum of unaged specimens	UL 224
Dielectric strength	kV/mm (volts/mil)	19.7 (500) minimum	ASTM D 2671
Restricted shrinkage		Pass	UL 224
Electrical			
Dielectric withstand at 2500V	seconds	60 minimum	ASTM D 2671
Dielectric strength	kV/mm (volts/mil)	19.7 (500) minimum	ASTM D 2671
Volume resistivity	ohm-cm	10 ¹⁴ minimum	ASTM D 2671
Chemical			
Corrosive effect (7 days at 158°C/316°F)		No corrosion	ASTM D 2671
Copper stability (7 days at 158°C/316°F)		No brittleness, glazing, cracking, or severe discoloration of tubing. No pitting or blackening of copper.	ASTM D 2671
<i>Followed by tests for:</i>			
Ultimate elongation	percent	100 minimum	ASTM 2671
Flammability		Pass	UL 224, VW-1

SWFR Tubing

Single Wall, Highly Flame-Retardant Heat Shrink Tubing

FOR MORE INFORMATION

Visit www.te.com and enter search term "SWFR," or visit www.te.com/SWFRtubing.

TE TECHNICAL SUPPORT CENTER

USA:	+1 (800) 522-6752
Canada:	+1 (905) 475-6222
Mexico:	+52 (0) 55-1106-0800
Latin/S. America	+54 (0) 11-4733-2200
Germany:	+49 (0) 6251-133-1999
UK:	+44 (0) 800-267666
France:	+33 (0) 1-3420-8686
Netherlands:	+31 (0) 73-6246-999
China:	+86 (0) 400-820-6015

te.com

TE Connectivity, TE Connectivity (logo), Zerohal, and Every Connection Counts are trademarks. All other logos, products and/or company names referred to herein might be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

© 2016 TE Connectivity Ltd. family of companies All Rights Reserved.

1-1773894-4 10/16 Original

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9