

### **Electronics**

## Versafit V4

# Raychem

Very-thin-wall, highly flame-retardant, metric-sized heat-shrinkable tubing



Versafit V4 heat-shrinkable tubing is a cost-effective, environmentally friendly choice for many commercial applications. Versafit V4 tubing is a very thin-wall version of Versafit, a specially formulated polyolefin with low recovery temperature, excellent flexibility, and high flame-retardance (VW-1).

Versafit V4 tubing is typically applied where space savings is important,

offering the ability to pack components more closely than is possible with standard tubings. Versafit V4 tubing can shrink more than twice as fast as standard products. This rapid shrinking may be important in the prevention of overheating of temperature-sensitive components.

Unlike other typical flame-retardant tubings, Versafit V4 tubing is free of polybrominated biphenyls (PBBs)

and polybrominated biphenyl oxides (PBBOs). In Europe, these chemicals are classified as environmentally hazardous substances.

Versafit V4 products are UL-recognized at 125°C, 300 V, and CSA-certified at 125°C, 150 V, with UL VW-1 and CSA OFT flame-retardancy ratings.

### Temperature rating

Full recovery temperature:	90°C
Continuous operating temperature:	-45°C to 125°C

# Specifications\* Specifications Type Raychem UL CSA Versafit V4 RW-3023 E35586 VW-1 LR31929 VW-1

### Dimensions (millimeters)



	As supplied		Fully recovered	
	D	Wall	d (max.)	W (min.)
	Inside	thickness	Inside	Wall
Size	diameter	(nominal)	diameter	thickness**
1.0	1.4 ± 0.25	0.10	0.50	0.25
1.5	1.9 ± 0.25	0.10	0.75	0.25
2.0	2.3 ± 0.25	0.10	1.00	0.25
2.5	2.8 ± 0.25	0.15	1.25	0.25
3.0	3.3 ± 0.25	0.15	1.50	0.25
3.5	3.8 ± 0.25	0.15	1.75	0.25
4.0	4.4 ± 0.25	0.15	2.00	0.25

	As supplied		Fully recovered	
	D	Wall	d (max.)	W (min.)
	Inside	thickness	Inside	Wall
Size	diameter	(nominal)	diameter	thickness**
5.0	5.5 ± 0.25	0.15	2.5	0.25
6.0	6.5 ± 0.40	0.15	3.0	0.28
7.0	7.5 ± 0.40	0.15	3.5	0.28
8.0	8.5 ± 0.40	0.15	4.0	0.28
9.0	9.5 ± 0.40	0.15	4.5	0.28
10.0	10.5 ± 0.50	0.15	5.0	0.28

#### Ordering information

Colors	Standard	Black
001013	Nonstandard	Other colors available on request.
Size selection	Always order the largest size that will shrink snugly over the component being covered.	
Standard packaging	On spools	
Marking	Marked with UL, CSA, and Japan -F- Mark legends.	
Ordering description	Specify product name, size, and color; for example, V4 2.0-0 (0=Black).	

<sup>\*</sup>When ordering, always specify latest issue.

<sup>\*\*</sup>Wall thickness will be less if tubing recovery is restricted during shrinkage.

#### Specification values **Property** Unit Requirement Method of test **Physical** Dimensions mm See reverse **ASTM D 2671** Longitudinal change **ASTM D 2671 ASTM D 2671** percent +1, -15**UL 224** percent +3, -3**UL 224** Eccentricity (recovered) **ASTM D 2671** percent 30 maximum Tensile strength MPa (psi) 10.3 (1500) minimum **ASTM D 2671** Ultimate elongation percent 200 minimum **ASTM D 2671** Secant modulus MPa (psi) 103 (1.5 x 104) maximum **ASTM D 2671** (as supplied) Low-temperature flexibility No cracking **UL 224** (1 hour at -30°C/-22°F) UL 224 Heat shock No cracking (4 hours at 250°C/482°F) UL 224 Heat aging (7 days at 158°C/316°F) Followed by tests for: Tensile strength MPa (psi) 70% minimum **UL 224** of unaged specimens Ultimate elongation percent 100 minimum **UL 224 UL 224** Flexibility No cracking Dielectric withstand seconds 60 minimum **ASTM D 2671** at 2500 V Dielectric breakdown volts 50% minimum **ASTM D 2671** of unaged specimens Dielectric strength kV/mm (volts/mil) 19.7 (500) minimum **ASTM D 2671** Pass UL 224 Restricted shrinkage Electrical Dielectric withstand **ASTM D 2671** seconds 60 minimum at 2500 V Dielectric strength kV/mm (volts/mil) 19.7 *(500)* minimum **ASTM D 2671** Volume resistivity ohm-cm 1014 minimum **ASTM D 2671** Chemical Corrosive effect No corrosion **ASTM D 2671** (7 days at 158°C/316°F) Copper stability No brittleness, glazing, **ASTM D 2671** (7 days at 158°C/316°F) cracking, or severe discoloration of tubing. No pitting or blackening of copper. Followed by test for: Ultimate elongation percent 100 minimum **ASTM D 2671** Flammability Pass UL 224, VW-1 Water absorption (recovered) 0.5 maximum **ASTM D 2671** percent (24 hours at 23°C/73°F) Fungus resistance ISO 846 Method B Followed by tests for: 10.3 (1500) minimum **ASTM D 2671** Tensile strength MPa (psi) Ultimate elongation percent 200 minimum **ASTM D 2671**

Note: Consult RW-3023 for specific details about test procedures. Versafit and Raychem are trademarks of Tyco Electronics Corporation.

Dielectric strength

#### Users should independently evaluate the suitability of the product for their application.

Tyco Electronics Corporation 300 Constitution Drive Menlo Park, CA 94025-1164 USA Tel: (800) 926-2425 (US & Canada) Tel: +1 (650) 361-3860 (All other countries)

Faraday Road Dorcan, Swindon, SN3 5HH United Kingdom Tel: +44 1793 528171

kV/mm (volts/mil)

3816 Noborito, Tama-ku Kawasaki, Kanagawa 214-8533 Japan Tel: +81 44 900 5102

19.7 (500) minimum

Asia Pacific Headquarters 26 Ang Mo Kio, Industrial Park 2 Singapore 569507 Tel: +65 4866 151

**ASTM D 2671** 

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