



Highly flame-retardant, low recovery temperature, heat-shrinkable tubing

Versafit heat-shrinkable tubing is a cost-effective choice for many commercial and military applications. Versafit tubing is made from a specially formulated, crosslinked polyolefin to provide high flame-retardance (VW-1), excellent flexibility, and a low shrink temperature (to reduce installation time).

Versafit tubing performs a variety of functions in commercial and military applications:

- Electrically insulates and protects in-line components, disconnect terminals, and splices.
- Bundles wires for very flexible light-duty harnesses.
- Identifies or color-codes wires, cables, terminals, and components. Versafit tubing hot-stamps extremely well.

Compared to noncrosslinked materials, Versafit tubing has a higher temperature rating and exhibits better

thermal stability and resistance to physical abuse.

Unlike other typical flame-retardant tubings, Versafit tubing is free of polybrominated biphenyls (PBBs) and polybrominated biphenyl oxides and ethers (PBBOs/PBBEs). In Europe, these chemicals are classified as environmentally hazardous substances.

**Temperature rating**

|                                   |                |
|-----------------------------------|----------------|
| Full recovery temperature:        | 90°C           |
| Continuous operating temperature: | -55°C to 135°C |

**Specifications\***

| Type     | Raychem | UL                         | CSA                         | Military                           |
|----------|---------|----------------------------|-----------------------------|------------------------------------|
| Versafit | RW-3009 | E35586 VW-1<br>600V, 125°C | LR31929 VW-1<br>600V, 125°C | AMS-DTL-23053/5<br>Classes 1 and 3 |

\*When ordering, always specify latest issue.

**Dimensions (millimeters/inches)**



| Size  | Inside diameter           |                      | d (max.)                |                         | Wall thickness                 |                           |
|-------|---------------------------|----------------------|-------------------------|-------------------------|--------------------------------|---------------------------|
|       | D<br>Expanded as supplied | Expanded as supplied | Recovered after heating | Recovered after heating | W<br>Recovered after heating** | Recovered after heating** |
| 3/64  | 1.63 ± 0.2                | 0.064 ± 0.008        | 0.6                     | 0.023                   | 0.40 ± 0.08                    | 0.016 ± 0.003             |
| 1/16  | 1.85 ± 0.2                | 0.073 ± 0.007        | 0.8                     | 0.031                   | 0.43 ± 0.08                    | 0.017 ± 0.003             |
| 3/32  | 2.79 ± 0.2                | 0.110 ± 0.007        | 1.2                     | 0.046                   | 0.51 ± 0.08                    | 0.020 ± 0.003             |
| 1/8   | 3.43 ± 0.2                | 0.135 ± 0.007        | 1.6                     | 0.062                   | 0.51 ± 0.08                    | 0.020 ± 0.003             |
| 3/16  | 5.21 ± 0.3                | 0.205 ± 0.010        | 2.4                     | 0.093                   | 0.51 ± 0.08                    | 0.020 ± 0.003             |
| 1/4   | 7.11 ± 0.3                | 0.280 ± 0.010        | 3.2                     | 0.125                   | 0.64 ± 0.08                    | 0.025 ± 0.003             |
| 3/8   | 10.16 ± 0.4               | 0.400 ± 0.015        | 4.8                     | 0.187                   | 0.64 ± 0.08                    | 0.025 ± 0.003             |
| 1/2   | 13.72 ± 0.4               | 0.540 ± 0.015        | 6.4                     | 0.250                   | 0.64 ± 0.08                    | 0.025 ± 0.003             |
| 5/8   | 16.90 ± 0.4               | 0.665 ± 0.015        | 8.0                     | 0.315                   | 0.76 ± 0.08                    | 0.030 ± 0.003             |
| 3/4   | 20.45 ± 0.4               | 0.805 ± 0.015        | 9.5                     | 0.375                   | 0.76 ± 0.08                    | 0.030 ± 0.003             |
| 1     | 25.53 ± 0.4               | 1.055 ± 0.015        | 12.7                    | 0.500                   | 0.89 ± 0.13                    | 0.035 ± 0.005             |
| 1 1/4 | 33.40 ± 0.7               | 1.315 ± 0.025        | 15.9                    | 0.625                   | 1.02 ± 0.15                    | 0.040 ± 0.006             |
| 1 1/2 | 39.88 ± 0.8               | 1.570 ± 0.030        | 19.1                    | 0.750                   | 1.02 ± 0.15                    | 0.040 ± 0.006             |
| 2     | 52.83 ± 1.0               | 2.080 ± 0.040        | 25.4                    | 1.000                   | 1.14 ± 0.16                    | 0.045 ± 0.007             |
| 3     | 78.49 ± 1.0               | 3.090 ± 0.040        | 38.1                    | 1.500                   | 1.27 ± 0.20                    | 0.050 ± 0.008             |
| 4     | 104.14 ± 1.3              | 4.100 ± 0.050        | 50.8                    | 2.000                   | 1.40 ± 0.23                    | 0.055 ± 0.009             |

\*\*Wall thickness will be less if tubing recovery is restricted during shrinkage.

**Ordering information**

|                      |   |   |
|----------------------|---|---|
| Colors               | <b>Standard</b>   | Black, white, red, blue, yellow and green |
|                      | <b>Nonstandard</b>  | Brown, orange, violet, and gray           |
| Size selection       | Always order the largest size that will shrink snugly over the component being covered. A variety of special order sizes are available. |   |
| Standard packaging   | On spools.  |   |
| Ordering description | Specify product name, size, and color; for example, Versafit 1/4-0 (0=Black).   |   |

## Specification values

|                                   | Property  | Unit                        | Requirement   | Method of test              |
|-----------------------------------|---|-----------------------------|---|-----------------------------|
| Physical                          | Dimensions  | mm ( <i>inches</i> )        | See reverse   | ASTM D 2671                 |
|                                   | Longitudinal change                                     |                             |   |                             |
|                                   | ASTM D 2671   | percent                     | +1, -5  | ASTM D 2671                 |
|                                   | UL 224  | percent                     | +3, -3  | UL224                       |
|                                   | Eccentricity (recovered)                                | percent                     | 30 maximum  | ASTM D 2671                 |
|                                   | Tensile strength  | psi ( <i>MPa</i> )          | 1500 ( <i>10.3</i> ) minimum  | ASTM D 2671                 |
|                                   | Ultimate elongation                                     | percent                     | 200 minimum   | ASTM D 2671                 |
|                                   | Secant modulus (expanded)                               | psi ( <i>MPa</i> )          | 2.5 X 10 <sup>4</sup> ( <i>172</i> ) maximum  | ASTM D 2671                 |
|                                   | Low-temperature flexibility<br>(1 hour at -45°C/-49°F)  |                             | No cracking   | UL 224                      |
|                                   | Heat shock<br>(1 hour at 136°C/277°F)                   |                             | No cracking   | UL 224                      |
|                                   | Heat resistance<br>(7 days at 158°C/316°F)              |                             |   | ASTM D 2671                 |
|                                   | Followed by tests for:                                  |                             |   |                             |
|                                   | Tensile strength  | psi ( <i>MPa</i> )          | 70% minimum of unaged specimens   | UL 224                      |
|                                   | Ultimate elongation                                     | percent                     | 100 minimum   | UL 224                      |
|                                   | Flexibility   |                             | No cracking   | UL 224                      |
|                                   | Dielectric withstand<br>at 2500 V                       | seconds                     | 60 minimum  | UL 224                      |
|                                   | Dielectric breakdown                                    | volts                       | 50% minimum of unaged specimens   | ASTM D 2671                 |
|                                   | Dielectric strength                                     | volts/mil ( <i>kV/mm</i> )  | 500 ( <i>19.7</i> ) minimum   | ASTM D 2671                 |
|                                   | Restricted shrinkage                                    |                             | Pass  | UL 224                      |
|                                   | Electrical  | Dielectric strength         | volts/mil ( <i>kV/mm</i> )  | 500 ( <i>19.7</i> ) minimum |
| Dielectric withstand<br>at 2500 V |   | seconds                     | 60 minimum  | UL 224                      |
|                                   | Volume resistivity                                      | ohm-cm                      | 10 <sup>14</sup> minimum  | ASTM D 2671                 |
| Chemical                          | Corrosive effect<br>(7 days at 158°C/316°F)             |                             | No corrosion  | ASTM D 2671                 |
|                                   | Copper stability<br>(7 days at 158°C/316°F)             |                             | No brittleness, glazing, cracking,<br>or severe discoloration of tubing.<br>No pitting or blackening of copper. | ASTM D 2671                 |
|                                   | Followed by test for:                                   |                             |   |                             |
|                                   | Ultimate elongation                                     | percent                     | 100 minimum   | ASTM D 2671                 |
|                                   | Flammability  |                             | Pass  | UL 224, VW-1                |
|                                   | Water absorption (recovered)<br>(24 hours at 23°C/73°F) | percent                     | 0.5 maximum   | ASTM D 2671                 |
|                                   | Fungus resistance                                       |                             |   | ISO 846<br>Method B         |
|                                   | Followed by tests for:                                  |                             |   |                             |
|                                   | Tensile strength  | psi ( <i>MPa</i> )          | 1500 ( <i>10.3</i> ) minimum  | ASTM D 2671                 |
|                                   | Ultimate elongation                                     | percent                     | 200 minimum   | ASTM D 2671                 |
| Dielectric strength               | volts/mil ( <i>kV/mm</i> )                              | 500 ( <i>19.7</i> ) minimum | ASTM D 2671   |                             |

Note: Consult RW-3009 for specific details about test procedures.

Versafit and Raychem are trademarks of Tyco Electronics Corporation.

### 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

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

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

All information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their application. Tyco Electronics Corporation makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use. Tyco Electronics Corporation's only obligations are those in the Standard Terms and Conditions of Sale for these products and in no case will Tyco Electronics Corporation be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of the product. Tyco Electronics Corporation's Specifications are subject to change without notice. In addition, Tyco Electronics Corporation reserves the right to make changes in materials or processing without notification to the Buyer which do not affect compliance with any applicable specification.

For more information about this product visit [www.tycoelectronics.com](http://www.tycoelectronics.com)



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.