

## Thin-wall, semirigid, fluoropolymer heat-shrinkable tubing

RW-175 heat-shrinkable tubing is a tough, semirigid, very-thin-wall insulation. It is especially suitable for applications requiring high-temperature performance, outstanding abrasion and cut-through resistance, or superior chemical and solvent properties. The translucent polyvinylidene fluoride material permits visual inspection of covered components.

RW-175 tubing provides electrical insulation and strain relief of multipin connectors and solder joints. It is also widely used as insulation for high-temperature components and heater leads. With its thin-wall construction, RW-175 is ideal for applications that require dense packing of components.

RW-175 provides protection from most industrial solvents, fuels, and chemicals – including JP-8, oxidants, and strong acids. It is UL-recognized and CSA-certified at 150°C, 600 V, with VW-1 and OFT flame-retardancy ratings.

### Temperature rating

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Full recovery temperature:                                      | 175°C          |
| Continuous operating temperature:                               | -55°C to 175°C |
| Recommended maximum temperature for use as a primary insulator: | 135°C          |

### Specifications\*

| Type   | Raychem   | Military        | UL          | CSA         |
|--------|-----------|-----------------|-------------|-------------|
| RW-175 | RW-3029/2 | AMS-DTL-23053/8 | E35586 VW-1 | LR31929 OFT |

\*When ordering, always specify latest issue.

### Dimensions (millimeters/inches)



| Inside diameter |                                     | Wall thickness                         |                                   | Inside diameter |                                     | Wall thickness                         |                                   |
|-----------------|-------------------------------------|----------------------------------------|-----------------------------------|-----------------|-------------------------------------|----------------------------------------|-----------------------------------|
| Size            | D (min.)<br>Expanded<br>as supplied | d (max.)<br>Recovered<br>after heating | W<br>Recovered<br>after heating** | Size            | D (min.)<br>Expanded<br>as supplied | d (max.)<br>Recovered<br>after heating | W<br>Recovered<br>after heating** |
| 3/64            | 1.2 0.046                           | 0.6 0.023                              | 0.25 ± 0.05 0.010 ± 0.002         | 1/2             | 12.7 0.500                          | 6.4 0.250                              | 0.33 ± 0.05 0.013 ± 0.002         |
| 1/16            | 1.6 0.063                           | 0.8 0.031                              | 0.25 ± 0.05 0.010 ± 0.002         | 3/4             | 19.1 0.750                          | 9.5 0.375                              | 0.43 ± 0.08 0.017 ± 0.003         |
| 3/32            | 2.4 0.093                           | 1.2 0.046                              | 0.25 ± 0.05 0.010 ± 0.002         | 1               | 25.4 1.000                          | 12.7 0.500                             | 0.48 ± 0.08 0.019 ± 0.003         |
| 1/8             | 3.2 0.125                           | 1.6 0.062                              | 0.25 ± 0.05 0.010 ± 0.002         | 1 1/2           | 38.1 1.500                          | 19.1 0.750                             | 0.51 ± 0.08 0.020 ± 0.003         |
| 3/16            | 4.7 0.187                           | 2.4 0.093                              | 0.25 ± 0.05 0.010 ± 0.002         | 2               | 50.8 2.000                          | 25.4 1.000                             | 0.51 ± 0.08 0.020 ± 0.003         |
| 1/4             | 6.4 0.250                           | 3.2 0.125                              | 0.33 ± 0.05 0.013 ± 0.002         | 3               | 76.2 3.000                          | 38.1 1.500                             | 0.64 ± 0.10 0.025 ± 0.004         |
| 3/8             | 9.5 0.375                           | 4.7 0.187                              | 0.33 ± 0.05 0.013 ± 0.002         | 4               | 101.6 4.000                         | 50.8 2.000                             | 0.76 ± 0.13 0.030 ± 0.005         |

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

### Ordering information

|                      |                                                                                                                    |                              |
|----------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------|
| Colors               | Standard<br>Nonstandard                                                                                            | Translucent (clear)<br>Black |
| Size selection       | Always order the largest size that will shrink snugly over the component being covered.                            |                              |
| Nonstandard sizes    | Sizes of 2 inches and larger are by special order only. In addition, a variety of nonstandard sizes are available. |                              |
| Standard packaging   | 4-foot lengths                                                                                                     |                              |
| Ordering description | Specify product name, size, and color; for example, RW-175 1/4-X (X=Clear).                                        |                              |

## Specification values

|            | Property                                                                                                                                                                                                                                                                              | Unit                       | Requirement                           | Method of test             |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|----------------------------|
| Physical   | Dimensions                                                                                                                                                                                                                                                                            | mm ( <i>inches</i> )       | See reverse                           | ASTM D 2671                |
|            | Longitudinal change                                                                                                                                                                                                                                                                   | percent                    | +0, -10 maximum                       | ASTM D 2671                |
|            | Tensile strength                                                                                                                                                                                                                                                                      | psi ( <i>MPa</i> )         | 5000 (34.5) minimum                   | ASTM D 2671                |
|            | Ultimate elongation                                                                                                                                                                                                                                                                   | percent                    | 150 minimum                           | ASTM D 2671                |
|            | Secant modulus (expanded)                                                                                                                                                                                                                                                             | psi ( <i>MPa</i> )         | 1 x 10 <sup>5</sup> (690) minimum     | ASTM D 2671                |
|            | Specific gravity                                                                                                                                                                                                                                                                      |                            | 1.8 maximum                           | ASTM D 2671                |
|            | Low-temperature flexibility<br>(4 hours at -55°C/-67°F)                                                                                                                                                                                                                               |                            | No cracking                           | AMS-DTL-23053/8            |
|            | Heat shock<br>(4 hours at 300°C/572°F)                                                                                                                                                                                                                                                |                            | No dripping, flowing,<br>or cracking  | AMS-DTL-23053              |
|            | Heat resistance<br>(168 hours at 250°C/482°F)<br>Followed by test for:                                                                                                                                                                                                                |                            |                                       | ASTM D 2671                |
|            | Ultimate elongation                                                                                                                                                                                                                                                                   | percent                    | 50 minimum                            | ASTM D 2671                |
|            | Vacuum outgassing                                                                                                                                                                                                                                                                     |                            |                                       | ASTM E 595                 |
|            | TML (total mass loss)                                                                                                                                                                                                                                                                 | percent                    | 1.0 maximum                           |                            |
|            | VCM (volatile condensable material)                                                                                                                                                                                                                                                   | percent                    | 0.1 maximum                           |                            |
| Electrical | Dielectric strength                                                                                                                                                                                                                                                                   | volts/mil ( <i>kV/mm</i> ) |                                       | ASTM D 2671                |
|            | Sizes 3/64 through 1/2                                                                                                                                                                                                                                                                |                            | 800 (31.5) minimum                    |                            |
|            | Sizes 3/4 through 2                                                                                                                                                                                                                                                                   |                            | 600 (23.6) minimum                    |                            |
| Chemical   | Volume resistivity                                                                                                                                                                                                                                                                    | ohm-cm                     | 10 <sup>13</sup> minimum              | ASTM D 2671                |
|            | Copper mirror corrosion<br>(16 hours at 175°C/347°F)                                                                                                                                                                                                                                  |                            | Noncorrosive                          | ASTM D 2671<br>Procedure A |
|            | Copper contact corrosion<br>(168 hours at 175°C/347°F)<br>Followed by test for:                                                                                                                                                                                                       |                            | No pitting or blackening<br>of copper | ASTM D 2671<br>Procedure B |
|            | Ultimate elongation                                                                                                                                                                                                                                                                   | percent                    | 100 minimum                           | ASTM D 2671                |
|            | Flammability<br>(average time of burning)                                                                                                                                                                                                                                             | seconds                    | 15 maximum                            | ASTM D 2671<br>Procedure A |
|            | Fungus resistance<br>Followed by tests for:                                                                                                                                                                                                                                           |                            |                                       | ISO 846<br>Method B        |
|            | Tensile strength                                                                                                                                                                                                                                                                      | psi ( <i>MPa</i> )         | 5000 (34.5) minimum                   | ASTM D 2671                |
|            | Ultimate elongation                                                                                                                                                                                                                                                                   | percent                    | 150 minimum                           | ASTM D 2671                |
|            | Dielectric strength                                                                                                                                                                                                                                                                   | volts/mil ( <i>kV/mm</i> ) |                                       | ASTM D 2671                |
|            | Sizes 3/64 through 1/2                                                                                                                                                                                                                                                                |                            | 800 (31,500) minimum                  |                            |
|            | Sizes 3/4 through 2                                                                                                                                                                                                                                                                   |                            | 600 (23,600) minimum                  |                            |
|            | Water absorption<br>(24 hours at 23°C/73°F)                                                                                                                                                                                                                                           | percent                    | 0.5 maximum                           | ASTM D 2671                |
|            | Fluid resistance<br>(24 hours at 23°C/73°F) in:<br>JP-8 fuel (MIL-T-5624)<br>Skydrol 500<br>Hydraulic fluid (MIL-H-5606)<br>Aviation gasoline 100/300 (MIL-G-5572)<br>Salt water (5% salt)<br>Anti-icing fluid (MIL-A-8243)<br>Lubricating oil (MIL-L-7808)<br>Followed by tests for: |                            |                                       | ASTM D 2671                |
|            | Dielectric strength                                                                                                                                                                                                                                                                   | volts/mil ( <i>kV/mm</i> ) |                                       | ASTM D 2671                |
|            | Sizes 3/64 through 1/2                                                                                                                                                                                                                                                                |                            | 700 (27.6) minimum                    |                            |
|            | Sizes 3/4 through 2                                                                                                                                                                                                                                                                   |                            | 500 (19.7) minimum                    |                            |
|            | Tensile strength                                                                                                                                                                                                                                                                      | psi ( <i>MPa</i> )         | 5000 (34.5) minimum                   | ASTM D 2671                |

Note: Consult RW-3029/2 for specific details about test procedures.

Skydrol is a trademark of Monsanto Company. Raychem is a trademark of Tyco Electronics Corporation.

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

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