

## Flexible, flame-retardant, high performance, polyolefin heat-shrinkable tubing

RNF-100 tubing is a high-quality, heat-shrinkable product for a wide variety of uses. It has become the industry standard for insulation, strain relief, wire bundling, and color-coding in both commercial and military applications. RNF-100 tubing meets the requirements of AMS-DTL-23053/5, Class 1 (colors) and Class 2 (clear).

It is also UL-recognized and CSA-certified at 125°C, 600 V.

Made from flame-retardant polyolefin, RNF-100 tubing has excellent physical, chemical, and electrical properties that meet industrial and military requirements for a highly reliable, general-purpose tubing. It sets itself apart in that it offers

a higher level of performance at elevated temperature, including mechanical abrasion and fluid resistance, than many heat-shrinkable polyolefin tubings available in the marketplace today.

Only a few sizes of RNF-100 tubing are required to cover many substrate diameters.

### Temperature rating

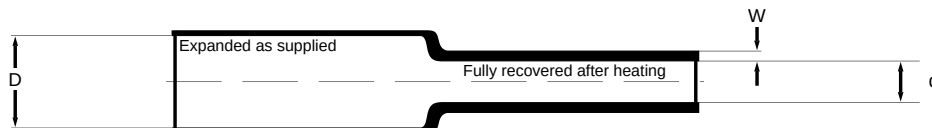
|                                   |                |
|-----------------------------------|----------------|
| Minimum shrink temperature:       | 121°C          |
| Continuous operating temperature: | -55°C to 135°C |

### Specifications\*

| Type                    | Raychem       | Military               | UL     | CSA     |
|-------------------------|---------------|------------------------|--------|---------|
| RNF-100 Type 1 (colors) | RT-350 Type 1 | AMS-DTL-23053/5, Cl. 1 | E35586 | LR31929 |
| RNF-100 Type 2 (clear)  | RT-350 Type 2 | AMS-DTL-23053/5, Cl. 2 |        |         |

\*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                              | 0.40 ± 0.08 0.016 ± 0.003         | 3/4             | 19.1 0.750                          | 9.5 0.375                              | 0.77 ± 0.08 0.030 ± 0.003         |
| 1/16            | 1.6 0.063                           | 0.8 0.031                              | 0.43 ± 0.08 0.017 ± 0.003         | 1               | 25.4 1.000                          | 12.7 0.500                             | 0.89 ± 0.12 0.035 ± 0.005         |
| 3/32            | 2.4 0.093                           | 1.2 0.046                              | 0.51 ± 0.08 0.020 ± 0.003         | 1 1/4           | 31.7 1.250                          | 15.9 0.625                             | 1.02 ± 0.15 0.040 ± 0.006         |
| 1/8             | 3.2 0.125                           | 1.6 0.062                              | 0.51 ± 0.08 0.020 ± 0.003         | 1 1/2           | 38.1 1.500                          | 19.1 0.750                             | 1.02 ± 0.15 0.040 ± 0.006         |
| 3/16            | 4.7 0.187                           | 2.4 0.093                              | 0.51 ± 0.08 0.020 ± 0.003         | 2               | 50.8 2.000                          | 25.4 1.000                             | 1.14 ± 0.16 0.045 ± 0.007         |
| 1/4             | 6.4 0.250                           | 3.2 0.125                              | 0.64 ± 0.08 0.025 ± 0.003         | 3               | 76.2 3.000                          | 38.1 1.500                             | 1.27 ± 0.20 0.050 ± 0.008         |
| 3/8             | 9.5 0.375                           | 4.8 0.187                              | 0.64 ± 0.08 0.025 ± 0.003         | 4               | 101.6 4.000                         | 50.8 2.000                             | 1.40 ± 0.23 0.055 ± 0.009         |
| 1/2             | 12.7 0.500                          | 6.4 0.250                              | 0.64 ± 0.08 0.025 ± 0.003         | 5               | 127.0 5.000                         | 63.5 2.500                             | 1.53 ± 0.23 0.060 ± 0.009         |

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

### Ordering information

|                      |                                                                                         |                                                                                              |
|----------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Colors               | <b>Standard</b>                                                                         | Black (all sizes); clear, white, red, blue, green, and yellow (3/64" through 3")             |
|                      | <b>Nonstandard</b>                                                                      | Clear, white, red, blue, and yellow (4" and 5"); brown, orange, violet, and gray (all sizes) |
| Size selection       | Always order the largest size that will shrink snugly over the component being covered. |                                                                                              |
| Standard packaging   | On spools or in 4 foot lengths                                                          |                                                                                              |
| Ordering description | Specify product name, size, and color; for example, RNF-100-1/4-BK (BK=Black).          |                                                                                              |

## Specification values

|            | Property                                                                                                                                                                       | Unit                          | Requirement                                                                |                                                                            | Method of test             |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------|
|            |                                                                                                                                                                                |                               | Type 1 (colors)                                                            | Type 2 (clear)                                                             |                            |
| Physical   | Dimensions                                                                                                                                                                     | mm ( <i>inches</i> )          | See Reverse                                                                | See Reverse                                                                | ASTM D 2671                |
|            | Longitudinal change                                                                                                                                                            | percent                       | +0, -5                                                                     | +0, -5                                                                     | ASTM D 2671                |
|            | Tensile strength                                                                                                                                                               | psi ( <i>Mpa</i> )            | 1500 (10.3) minimum                                                        | 1500 (10.3) minimum                                                        | ASTM D 2671                |
|            | Ultimate elongation                                                                                                                                                            | percent                       | 200 minimum                                                                | 200 minimum                                                                | ASTM D 2671                |
|            | Secant modulus (as supplied)                                                                                                                                                   | psi ( <i>Mpa</i> )            | 2.5 X 10 <sup>4</sup> (172) maximum                                        | 2.5 X 10 <sup>4</sup> (172) maximum                                        | ASTM D 2671                |
|            | Specific gravity                                                                                                                                                               |                               | 1.35 maximum                                                               | 1.0 maximum                                                                | ASTM D 2671                |
|            | Low temperature flexibility<br>(4 hours at -55°C/-67°F)                                                                                                                        |                               | No cracking                                                                | No cracking                                                                | AMS-DTL-23053              |
|            | Heat shock<br>(4 hours at 250°C/482°F)                                                                                                                                         |                               | No dripping,<br>flowing, or cracking                                       | No dripping,<br>flowing, or cracking                                       | AMS-DTL-23053              |
|            | Heat resistance<br>(336 hours at 175°C/347°F)                                                                                                                                  |                               |                                                                            |                                                                            | ASTM D 2671                |
|            | Followed by test for:                                                                                                                                                          |                               |                                                                            |                                                                            |                            |
|            | Ultimate Elongation                                                                                                                                                            | percent                       | 150 minimum                                                                | 150 minimum                                                                | ASTM D 2671                |
|            | Color                                                                                                                                                                          |                               | MIL-STD-104                                                                |                                                                            | MIL-STD-104                |
|            | Color stability<br>(48 hours at 175°C/347°F)                                                                                                                                   |                               | MIL-STD-104                                                                |                                                                            | ASTM D 2671                |
| Electrical | Dielectric strength                                                                                                                                                            | volts/mil ( <i>volts/mm</i> ) | 500 (19,680) minimum                                                       | 500 (19,680) minimum                                                       | ASTM D 2671                |
|            | Volume resistivity                                                                                                                                                             | ohm-cm                        | 10 <sup>14</sup> minimum                                                   | 10 <sup>16</sup> minimum                                                   | ASTM D 2671                |
| Chemical   | Copper mirror corrosion<br>(16 hours at 175°C/347°F)                                                                                                                           |                               | No removal of copper                                                       | No removal of copper                                                       | ASTM D 2671<br>Procedure A |
|            | Copper contact corrosion<br>(168 hours at 160°C/320°F)                                                                                                                         |                               | No pitting or blackening<br>of copper                                      | No pitting or blackening<br>of copper                                      | ASTM D 2671<br>Procedure B |
|            | Copper stability<br>(16 hours at 160°C/320°F)                                                                                                                                  |                               | No brittleness, glazing,<br>cracking, or severe<br>discoloration of tubing | No brittleness, glazing,<br>cracking, or severe<br>discoloration of tubing | ASTM D 2671<br>Procedure B |
|            | Followed by test for:                                                                                                                                                          |                               |                                                                            |                                                                            |                            |
|            | Ultimate Elongation                                                                                                                                                            | percent                       | 200 minimum                                                                | 200 minimum                                                                | ASTM D 2671                |
|            | Flammability                                                                                                                                                                   |                               | Self-extinguishing<br>within 1 minute, 25%<br>maximum flag burn            |                                                                            | ASTM D 2671<br>Procedure B |
|            | Fungus resistance                                                                                                                                                              |                               | Rating of 1 or less                                                        | Rating of 1 or less                                                        | ASTM G 21                  |
|            | Water absorption<br>(24 hours at 23°C/73°F)                                                                                                                                    | percent                       | 0.5 maximum                                                                | 0.2 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<br>(MIL-G-5572)<br>Water |                               |                                                                            |                                                                            | ASTM D 2671                |
|            | Followed by tests for:                                                                                                                                                         |                               |                                                                            |                                                                            |                            |
|            | Dielectric strength                                                                                                                                                            | volts/mil ( <i>volts/mm</i> ) | 400 (15,760) minimum                                                       | 400 (15,760) minimum                                                       | ASTM D 2671                |
|            | Tensile strength                                                                                                                                                               | psi ( <i>Mpa</i> )            | 1000 (6.9) minimum                                                         | 1000 (6.9) minimum                                                         | ASTM D 2671                |

Note: Consult RT-350 for specific details about test procedures.

Raychem is a trademark of Tyco Electronics Corporation.

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

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