

Semirigid, flame-retardant, polyolefin heat-shrinkable tubing

Heat-shrinkable CRN tubing is ideally suited for wire strain-relief applications. It provides excellent strain-relief and insulation of weak points such as wire splices and terminations. CRN tubing helps ensure a reliable connection because it transfers the flex stress away from typically sensitive points such as solder and crimp joints.

CRN tubing has a broad range of uses including component protective covering and packaging. The flame-retardant material is fabricated from radiation-crosslinked polyolefin and exhibits excellent mechanical and chemical properties. It meets major military and industrial specifications for an all-purpose, semirigid tubing.

CRN tubing is abrasion-resistant. It's superior chemical properties permit satisfactory performance after exposure to common chemicals and solvents.

Only a few sizes of CRN tubing are required to cover a wide range of substrate diameters.

Temperature rating

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

Specifications*

| Type | Raychem | Military | UL | CSA |
|---------------------|---------------|-----------------------|--------|----------------------|
| CRN Type 1 (colors) | RT-360 Type 1 | AMS-DTL-23053/6 Cl. 1 | E35586 | LR31929 (Black only) |
| CRN Type 2 (clear) | RT-360 Type 2 | AMS-DTL-23053/6 Cl. 2 | | |

*When ordering, always specify latest issue.

Dimensions (millimeters/inches)



| Size | Inside diameter | | Wall thickness | |
|------|----------------------------------|-------------------------------------|--------------------------------|---------------|
| | D (min.) Expanded as supplied | d (max.) Recovered after heating | W Recovered after heating** | |
| 3/64 | 1.2 0.046 | 0.6 0.023 | 0.51 ± 0.08 | 0.020 ± 0.003 |
| 1/16 | 1.6 0.063 | 0.8 0.031 | 0.51 ± 0.08 | 0.020 ± 0.003 |
| 3/32 | 2.4 0.093 | 1.2 0.046 | 0.51 ± 0.08 | 0.020 ± 0.003 |
| 1/8 | 3.2 0.125 | 1.6 0.062 | 0.51 ± 0.08 | 0.020 ± 0.003 |
| 3/16 | 4.8 0.187 | 2.4 0.093 | 0.64 ± 0.08 | 0.025 ± 0.003 |
| 1/4 | 6.3 0.250 | 3.2 0.125 | 0.64 ± 0.08 | 0.025 ± 0.003 |
| 3/8 | 9.5 0.375 | 4.8 0.187 | 0.76 ± 0.08 | 0.030 ± 0.003 |
| 1/2 | 12.7 0.500 | 6.4 0.250 | 0.76 ± 0.08 | 0.030 ± 0.003 |
| 3/4 | 19.0 0.750 | 9.5 0.375 | 0.89 ± 0.12 | 0.035 ± 0.005 |

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

Ordering information

| | |
|----------------------|---|
| Colors | Standard Black Nonstandard Clear (not flame-retardant) |
| Size selection | Always order the largest size that will shrink snugly over the component being covered. |
| Standard packaging | 4-foot lengths |
| Ordering description | Specify product name, size, and color; for example, CRN 1/4-0 (0 = Black). |

Specification values

| | Property | Unit | Requirement Type 1 (Colors) | Requirement Type 2 (Clear) | Method of test |
|------------------------|--|-------------------------------|--|--|---|
| Physical | Dimensions | mm (<i>inches</i>) | See reverse | See reverse | ASTM D 2671 |
| | Longitudinal change | percent | 5 maximum | 5 maximum | ASTM D 2671 |
| | Tensile strength | psi (<i>MPa</i>) | 2000 (<i>13.8</i>) minimum | 2000 (<i>13.8</i>) minimum | ASTM D 2671 |
| | Ultimate elongation | percent | 200 minimum | 200 minimum | ASTM D 2671 |
| | Secant modulus (expanded) | psi (<i>MPa</i>) | 2.5 x 10 ⁴ (<i>172</i>) minimum | 2.5 x 10 ⁴ (<i>172</i>) minimum | ASTM D 2671 |
| | Specific gravity | | 1.35 maximum | 1.0 maximum | ASTM D 792 |
| | Low-temperature flexibility (4 hours at -55°C/-67°F) | | No cracking | No cracking | AMS-DTL 23053 ASTM D 2671 Procedure C |
| | Heat shock (4 hours at 250°C/482°F) | | No dripping, flowing, or cracking | No dripping, flowing, or cracking | AMS-DTL 23053 ASTM D 2671 |
| | Heat resistance (168 hours at 175°C/347°F) | | | | ASTM D 2671 |
| | Followed by test for: | | | | |
| Ultimate elongation | percent | 150 minimum | 150 minimum | ASTM D 2671 | |
| Electrical | Dielectric strength | volts/mil (<i>volts/mm</i>) | 500 (<i>19,680</i>) minimum | 500 (<i>19,680</i>) minimum | ASTM D 2671 |
| | Volume resistivity | ohm-cm | 10 ¹⁴ minimum | 10 ¹⁶ minimum | ASTM D 2671 |
| Chemical | Copper mirror corrosion (16 hours at 150°C/302°F) | | No removal of copper | No removal of copper | ASTM D 2671 Procedure A |
| | Copper contact corrosion (168 hours at 150°C/302°F) | | No pitting or blackening of copper | No pitting or blackening of copper | ASTM D 2671 Procedure B |
| | Flammability | | Self-extinguishing within 1 minute; 25% of indicator burned or charred; no falling, burning particles. | Not applicable | ASTM D 2671 Procedure B |
| | Fungus resistance | | | | ISO 846 Method B |
| | Followed by tests for: | | | | |
| | Tensile strength | psi (<i>MPa</i>) | 2000 (<i>13.8</i>) minimum | 2000 (<i>13.8</i>) minimum | ASTM D 2671 |
| | Ultimate elongation | percent | 200 minimum | 200 minimum | ASTM D 2671 |
| | Dielectric strength | volts/mil (<i>volts/mm</i>) | 500 (<i>19,680</i>) minimum | 500 (<i>19,680</i>) minimum | ASTM D 2671 |
| | Water absorption (24 hours at 23°C/73°F) | percent | 0.5 maximum | 0.2 maximum | ASTM D 2671 |
| | Fluid resistance (24 hours at 23°C/73°F) in: JP-8 Fuel (MIL-T-5624) Skydrol* 500 Hydraulic fluid (MIL-H-5606) Aviation gasoline (100/130) (MIL-G-5572) Water | | | | ASTM D 2671 |
| Followed by tests for: | | | | | |
| Dielectric strength | volts/mil (<i>volts/mm</i>) | 400 (<i>15,760</i>) minimum | 400 (<i>15,760</i>) minimum | ASTM D 2671 | |
| Tensile strength | psi (<i>MPa</i>) | 1600 (<i>11.0</i>) minimum | 1600 (<i>11.0</i>) minimum | ASTM D 2671 | |

Note: Consult RT-360 for specific details about test procedures.

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*Trademark of the Monsanto Company.

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

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