



Introducing
Raychem RT-780 Heat-Shrink
Tubing (Orange color)

*for Indicating High Power Circuits
in Vehicles and Equipment*



RT-780 Orange Tubing



KEY FEATURES

Provided or supplied in an orange color to easily identify high power circuits

Tubing has been hardened to withstand the damaging effect of NBC contamination and decontamination

Tubing meets all of the flammability and fluid resistance demands of current military ground vehicles

Temperature rating
-55°C to +175°C

DESCRIPTION

A special version of our 780 tubing has been created for indicating high power circuits in electrical propulsion systems. This orange color tubing meets all requirements of RT-780 Type I product and is compatible with RT-780 Type 2 molded parts and RT-1014 adhesive.

Product is provided in similar spool quantities as RT-780 standard tubing material.

APPLICATIONS

Indication for high amperage circuits and high power voltage circuits

High voltage electrical propulsion system in auxillary and commercial service vehicles

TEMPERATURE RATING

System 780 -55°C to +175°C

STANDARDS & SPECS

Tested to TE RT-780 specification additionally to SCX-115112 or SCX-15111 for survivability in standard military vehicle fluids at elevated temperatures.

| | Wire | Tubing | Molded Parts | Adhesive |
|------------|---------|---------------|----------------|----------|
| System 780 | SPEC 55 | RT-780 Type 1 | RT-780 Type II | RT-1014 |
| System 30 | SPEC 55 | RT-780 Type 1 | -50 Shapes | RT-1014 |

KEY COMPONENTS

| Description | System 780 | System 30 |
|----------------------------------|-------------------|--------------|
| Heat-shrinkable tubing | RT-780-x/x-3 | RT-780-x/x-3 |
| Molded part - boot (black) | -780 | -50 |
| Molded part - transition (black) | -780 | -50 |
| Adhesive | S1255-04 or S1264 | S1255-04 |
| Wire - primary | SPEC 55 | SPEC 55 |
| Marker sleeve | NBC-SCE | HT-SCE |
| Marker protection sleeve | RT-375 | RT-375 |
| Cable | Thermorad 780 | Thermorad HT |

PRODUCT DIMENSIONS

| Size | As Supplied Inside Diameter | | Recovered Dimensions | | | | | | | |
|-------|--------------------------------|-------|----------------------|-------|---------|------|----------------|------|---------|------|
| | | | Inside Diameter | | | | Wall Thickness | | | |
| | Minimum | | Maximum | | Minimum | | Maximum | | Nominal | |
| | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm |
| 3/8 | 0.375 | 9.50 | 0.187 | 4.74 | 0.018 | 0.46 | 0.024 | 0.61 | 0.020 | 0.51 |
| 1/2 | 0.500 | 12.70 | 0.250 | 6.35 | 0.020 | 0.51 | 0.026 | 0.66 | 0.022 | 0.56 |
| 5/8 | 0.625 | 15.90 | 0.312 | 7.93 | 0.023 | 0.58 | 0.030 | 0.76 | 0.026 | 0.66 |
| 3/4 | 0.750 | 19.05 | 0.375 | 9.50 | 0.029 | 0.74 | 0.036 | 0.91 | 0.032 | 0.81 |
| 1 | 1.000 | 25.40 | 0.500 | 12.70 | 0.034 | 0.86 | 0.041 | 1.04 | 0.037 | 0.99 |
| 1-1/4 | 1.250 | 31.75 | 0.625 | 15.87 | 0.037 | 0.94 | 0.044 | 1.12 | 0.040 | 1.01 |
| 1-1/2 | 1.500 | 38.10 | 0.750 | 19.05 | 0.041 | 1.04 | 0.048 | 1.22 | 0.045 | 1.14 |
| 2 | 2.000 | 50.80 | 1.000 | 25.40 | 0.044 | 1.12 | 0.052 | 1.32 | 0.048 | 1.22 |

PHYSICAL

| Property | Unit | RT-780 Type I Tubing | Test Method |
|-----------------------------------------------------------------------------|-------------|-------------------------------------|----------------|
| Dimensions | Inches (mm) | In accordance with Table 1 | RT-780 |
| Tensile Strength | Psi (MPa) | 3000 (20.7) minimum | ASTM D 412 |
| Ultimate Elongation | Percent | 300 minimum | ASTM D 412 |
| Secant Modulus (expanded), 2% | Psi (MPa) | 50,000 (345) maximum | ASTM 882 |
| Specific Gravity | - | 2.0 maximum | ASTM D 792 |
| Low Temperature Flexibility 4 hours at -55±3°C (-65±5°F) | - | No cracking | RT-780 |
| Heat Shock 4 hours at 275±5°C (527±9°F) | - | No dripping, flowing or cracking | RT-780 |
| Heat Resistance 336 hours at 200±3°C (392±5°F) Followed by tests for: | | | RT-780 |
| Tensile Strength | Psi (MPa) | 2000 (13.8) minimum | - |
| Ultimate Elongation | Percent | 250 minimum | - |

ELECTRICAL

| Property | Unit | RT-780 Type I Tubing | Test Method |
|--------------------------------|-----------|------------------------------|----------------|
| Dielectric Strength (kV/mm) | Volts/mil | 200 (7.9) minimum | ASTM D 149 |
| Volume Resistivity | Ohm-cm | 1 x 10 ¹¹ minimum | ASTM D 257 |

NUCLEAR

| Property | Unit | RT-780 Type I Tubing | Test Method |
|----------------------------------------------------------------|-----------|-------------------------|----------------|
| Radiation Resistance -10 Mrads gamma Followed by tests for: | | | RT-780 |
| Tensile Strength | Psi (MPa) | 2000 (13.8) minimum | |
| Ultimate Elongation | Percent | 150 minimum | |

CHEMICAL

| Property | Unit | RT-780 Type I Tubing | Test Method |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------|----------------------------|
| Copper Mirror Corrosion 16 hours at 175±3°C (347±5°F) | - | Non Corrosive | ASTM D 2671 Procedure A |
| Fungus Resistance | Growth | Rating of 1 or less | ASTM G 21 |
| Water Absorption 24 hours at 23±3°C (73±5°F) | Percent | 0.5 maximum | ASTM D 570 |
| Flammability | - | 1) 25% max. flag burn 2) No burning of cotton 3) No flaming or glowing longer than 30 seconds | ASTM D 2671 Procedure C |
| Average Burn Time | Seconds | - | ASTM D 635-98 |
| Average extent of burning | Inches | | |
| Fluid Resistance 24 hours at 23±3°C (73±5°F) a) JP-8 Jet Fuel (MIL-DTL-83133) | | | RT-780 |
| Followed by tests for: | | | |
| Tensile Strength | Psi (MPa) | 2000 (13.8) minimum | |
| Ultimate Elongation | Percent | 250 minimum | |
| Weight Increase | Percent | 3 maximum | |
| 24 hours at 50±3°C (122±5°F) a) Bore Cleaner (MIL-PRF-372) b) Diesel Fuel DF-2 (A-A-52557A) c) Anti-Icing Fluid (SAE-AMS-1424) d) Salt-5% solution (ASTM D 632) e) Lubricating Oil (MIL-PRF-2104) f) Lubricating Oil (MIL-PRF-23699) g) Arctic Lube (MIL-PRF-46167) h) Cleaning Compound (A-A-59133) i) Electrolyte (P/N 10873919) | | | |
| Followed by tests for: | | | |
| Tensile Strength | Psi (MPa) | 2000 (13.8) minimum | |
| Ultimate Elongation | Percent | 250 minimum | |
| Weight Increase | Percent | 3 maximum | |
| 24 hours at 71±3°C (160±5°F) Hydraulic, synthetic (MIL-PRF-46170) | | | |
| Followed by tests for: | | | |
| Tensile Strength | Psi (MPa) | 2000 (13.8) minimum | |
| Ultimate Elongation | Percent | 250 minimum | |
| Weight Increase | Percent | 3 maximum | |
| 4 hours at 23±3°C (73±5°F) a) Decontaminating Agent, DS-2 (MIL-D-50030) b) Decontaminating Agent, STB (MIL-DTL-12468) 5% Solution | | | RT-780 |
| Followed by tests for: | | | |
| Tensile Strength | Psi (MPa) | 2000 (13.8) minimum | |
| Ultimate Elongation | Percent | 250 minimum | |
| Weight Increase | Percent | 3 maximum | |

ORDERING INFORMATION

TE Connectivity offers a complete system of Raychem brand and other TE brand components that may be used for rugged military grade or NBC contamination survivable applications/requirements.

Examples of these components include Tinel-Lock backshells, CRES-Lock band adapters, molded parts, adhesives, heat-shrinkable tubing, over-braids, interconnection soldering devices, wires, cables, connectors, contacts, etc.

Part numbers, product sizes, additional characteristics of products can be found in Specification Control Drawings and Raychem RT or RW specifications. Contact a TE representative or visit www.te.com\ADM for more detailed information.

PART NUMBERING*



