

RAYCHEM TUBING PRODUCTS

Versatile Raychem brand heat-shrinkable tubing products will cover just about all your needs. With high-performance tubing from TE Connectivity, you can insulate, cover, protect, bundle, strain-relieve, seal, identify, beautify and otherwise take care of a broad range of projects.

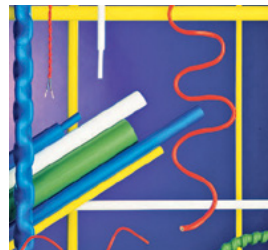
Single wall tubing gives optimum flexibility and space savings along with mechanical protection and chemical resistance. Dual wall tubing, with inner walls of adhesive or encapsulant, also reliably seals out moisture. Elastomeric tubing products are specifically designed for use in applications where resistance to abrasion, chemicals and other fluids, and flexibility over a wide range of temperatures is required. Heavy duty tubing products are intended for use in the most rugged environments. Whether your application is commercial, industrial, or military, there are Raychem brand tubing products to meet your precise needs.

Part numbers in this Selection Guide are RoHS and REACH Compliant. These products comply with European Union Directive 2002/95/EC, as amended 1 January 2006, that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

ELECTRICAL INSULATION/STRAIN RELIEF/FLAME-RETARDANCE

General-purpose polyolefin tubing is widely used to provide insulation and strain relief of wire terminations and connections, plus a variety of other applications.

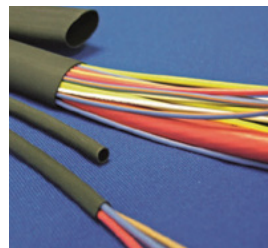
- The tubing is cost effective, and with its low shrink temperature, installs quickly
- It is flexible but does not easily wrinkle when bent
- Flame-retardant tubing is available in a wide range of sizes and colors
- Flame-retardant types are offered in both standard and low toxicity Zero Halogen versions
- Most polyolefin tubing products meet UL and CSA standards for a wide range of commercial applications as well as military specifications



WIRE BUNDLING AND ORGANIZATION

Raychem single wall tubing products allow you to bundle wires to create very flexible, lightweight harnesses that can stand up to harsh environments. Raychem elastomeric tubings are intended for use in the most rugged harnessing applications where abrasion and temperature resistance as well as resistance to chemicals and fluids are required.

- The broad range of tubing products in the Raychem line ensures that the appropriate solution to your wire bundling and harnessing requirements will be available
- A variety of tubing products meet military and commercial standards
- Where space saving is important, very-thin-wall tubing allows you to pack components tightly



MECHANICAL PROTECTION

Raychem tubing products provide mechanical protection to assure reliability of harnesses and terminations.

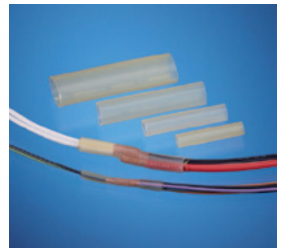
- Many tubing products offer excellent protection for cables and harnesses that are dragged along the ground, flexed frequently, or subjected to abrasion during installation
- HFT5000 heat-shrinkable fabric tubing and Versaflex expandable braided polyester tubing are designed to provide mechanical protection for components such as rubber hoses, plastic pipes, and harness wiring bundles
- Semirigid tubing products provide strain relief to ensure that delicate connections will be protected from damage during use



ENVIRONMENTAL SEALING AND PROTECTION

High-shrink-ratio tubing products environmentally protect connector-to-cable transitions. The adhesives used in our dual wall tubing products bond to a wide variety of plastics, rubbers and metals.

- High shrink ratios accommodate large size differences between cables and cable connectors and backshells, thus simplifying cable repair
- Medium wall tubing is available for increased mechanical protection
- Other tubing products are available in flexible, semirigid, or flame-retardant materials



PROTECTION FROM MOISTURE AND CORROSION

Adhesive-lined, flexible polyolefin tubing seals and protects electrical splices and in-line electronic components from fluids, moisture and corrosion. Rugged, adhesive-lined tubing protects wiring and components from the corrosive effects of moisture, engine fuels and lubricants.

- Tubing provides one-step electrical insulation and moisture sealing
- When adhesive-lined flexible polyolefin tubing is used both the tubing and adhesive are flexible, creating a moisture seal that accommodates bending
- In more rugged applications, specially formulated hot-melt adhesive forms an effective barrier against fluids and moisture
- The dimensions of some tubing products are engineered to accommodate multiple wire splices



MECHANICAL AND ENVIRONMENTAL PROTECTION

Heat-shrinkable end caps fully encapsulate or seal terminations and protect them from dust, dirt, and moisture. The encapsulant or adhesive lining in the caps melts and flows to fill surface irregularities in the substrate.

- End caps inexpensively insulate and encapsulate or seal crimped electrical connections
- These caps resist abrasion, vibration and flexing
- End caps' splash resistant, moisture resistant coverings provide environmental protection



PROTECTION FROM IMPACT AND ABRASION

Heavy duty tubing products were designed for applications where strength and durability are needed such as underground splice sealing, high ratio back end connector sealing, battery terminal insulation, and mechanical protection for wiring systems.

- Thick wall tubing is highly resistant to impact and abrasion and provides a high level of strain relief
- Flame-retardant and halogen-free tubing products are available
- Heavy duty tubing products are resistant to chemicals, moisture and oils



Note: Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For the latest compliance status and to answer all of your RoHS questions, refer to www.te.com/usa-en/utilities/product-compliance.html.

| Product Category | Product Name | Operating Temperature °C[°F] | Minimum Full Recovery Temperature °C[°F] | Shrink Ratio | Product Description | Features/Benefits | Standard Size Range (Inside Diameter as supplied) mm [In.] | Colors | Applicable Specifications | Flammability Rating | Typical Applications | Available in |
|------------------|-------------------------|---|--|--------------|---|--|---|---|--|---|--|------------------------------|
| Single Wall | CGPE-105 | -70 to 105 [-40 to 257] | Black 110 [230]; All Others 100 [212] | 2:1 | Flexible, brightly colored, non-flame-retardant polyolefin tubing | Bright, shiny appearance; UV resistance; clear offers exceptional clarity. Easily hot stamped. | 1.2 to 50.8 [0.046 to 2.000] | Black, white, clear, red, blue, yellow, green and violet | CGPE-105 SCD | N/A | Insulation and protection of components and wires. Color-coding and identification. Clear tubing is ideal for protecting marked surfaces. | Americas Asia Pacific |
| | CGPT | -40 to 135 [-40 to 275] | 120 [248] | 2:1 3:1 | Single wall, flame-retardant polyolefin tubing | Tough and flexible with good chemical resistance. Flame-retardant (except clear). | 2:1: 1.2 to 102.0 [0.046 to 4.016] 3:1: 1.5 to 39.0 [0.059 to 1.540] | Standard: Black, white, red, blue, yellow, brown, gray, clear (nonflame-retardant), yellow/green (limited size range); Nonstandard: Orange, green, violet (2: 1 sizes 1.2 through 51.0 only) | RW-2059, UL 224/CSA | ASTM D2671, Procedure B (not clear) | Suitable for a wide range of applications including electrical insulation, strain relief, cable bundling, color-coding, and mechanical protection. | Europe Asia Pacific |
| | CRN | -55 to 135 [-67 to 275] | 135 [275] | 2:1 | Semirigid polyolefin tubing | High abrasion resistance. Transfers flex stress away from typically weak points. Excellent chemical and solvent resistance properties. | 1.2 to 19.1 [0.046 to 0.750] | Standard: Black; Nonstandard: Clear | RT-360; AS23053/6, Cl. 1 & 2; UL 224/CSA (Black only, sizes 1/8 through 3/4) | ASTM D2671, Proc. B (Black only); UL 224/CSA All Tubing Flame Test (Black only) | Strain relief, insulation and mechanical protection of soldered or crimped connections, wire splices and terminations. | Americas Europe Asia Pacific |
| | DCPT | -55 to 135 [-67 to 275] | 120 [248] | 2:1 3:1 | Flexible, flame-retardant, dualcolor polyolefin tubing | Dual colors (yellow/green) for instant identification. Color permanence superior to conventional ink marking. | 2:1: 3.0 to 51.0 [0.118 to 2.000]; 3:1: 3.0 to 39.0 [0.118 to 1.535] | Yellow/green stripe | RW-2056; UL 224/CSA | UL 224/CSA All Tubing Flame Test | Identification of "ground" on wires and cables. | Americas Europe Asia Pacific |
| | LSTT | -40 to 125 [-40 to 257] | 110 [230] | 2:1 | Low-shrink-temperature single wall, non-flame-retardant polyolefin tubing | Low shrink temperature for fast recovery. Meets FMVSS 302 standard for flammability. Flexible. | 1.6 to 52.0 [0.063 to 2.047] | Standard: Black, red, blue, yellow; Nonstandard: Green, gray, white, clear | RW-2051 | FMVSS 302 | Electrical insulation, color-coding, covering of temperature-sensitive devices, cosmetic coverings and mechanical protection. | Europe Asia Pacific |
| | NETM 1000/ NETM 2000 | NETM1000 -55 to 135 [-67 to 275]; NETM2000 -55 to 150 [-67 to 302] | N/A | N/A | Cross-linked, non-heatshrinkable, flame-retardant | NETM1000 is more flexible allowing it to be easily routed through tight spaces. NETM2000 has greater mechanical strength and abrasion resistance. | NETM1000: 3.0 to 14.0 [0.118 to 0.551]; NETM2000: 6.0 to 12.0 [0.236 to 0.500] | Black | NETM1000 SCD NETM2000 SCD | NETM1000: ASTM D2671, Proc. C | Bundling and routing of wires in automotive applications. | Americas Europe Asia Pacific |
| | RNF-100 | -55 to 135 [-67 to 275] | 121 [250] | 2:1 | Flexible, flame-retardant, general purpose polyolefin tubing | Excellent physical, chemical and electrical properties. Abrasion and solvent resistance superior to that of many polyolefin tubings. Wide range of sizes and colors. | 1.2 to 127.0 [0.046 to 5.000] | Standard: Black (all sizes); White, blue, yellow, and clear (sizes 3/64" through 3"); Nonstandard: White, red, blue, yellow, and clear (sizes 4" and 5"); Brown, green, violet, orange and gray (all sizes) | RT-350, RK-6001; AS23053/5, Cl. 1 & 2, Def. Stan. 59-97 Type 2B (Colors only), VG 95343 Pt 5 Type B (Clear only); UL 224/CSA (Colors only) | ASTM D2671, Proc. B (Colors only); UL 224/CSA All Tubing Flame Test (Colors only) | Insulation and strain relief of wire terminations and connections. Jacketing wire bundles and harnesses where superior abrasion resistance is a plus. Color-coding and identification. Protection of wire markers (clear). | Americas Europe Asia Pacific |

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|------------------|--------------|-------------------------------|--|--------------|--|---|--|--|--|--|---|------------------------------------|
| Single Wall | RNF-3000 | -55 to 135 [-67 to 275] | 120 [248] | 3:1 | Flexible, high-shrink-ratio, flame-retardant, general purpose polyolefin tubing | 3:1 shrink ratio easily accommodates irregular shapes. Few sizes cover a wide range of diameters. Flame-retardant (Colors only). | 1.5 to 39.0 [0.060 to 1.534] | Standard: Black (All Regions); White, red, blue, yellow, and clear (non-flame-retardant) (EMEA only); Nonstandard: Green, violet, and gray (all Regions) | RW-2053; UL 224/CSA | UL 224/CSA All Tubing Flame Test (Colors only) | Insulation and strain relief of wire terminations and electrical connections. Electrical and mechanical protection of components with irregular dimensions. | Americas Europe Asia Pacific |
| | RP-4800 | -55 to 135 [-67 to 275] | 121 [250] | 4:1 | Flexible, high-shrink-ratio, flameretardant polyolefin tubing | Conforms well to highly variable substrate dimensions. Excellent physical, chemical and electrical properties. | 19.1 to 114.3 [0.750 to 4.500] | Standard: Black; Nonstandard: White, red, blue, yellow, green, brown, orange, violet, and gray | RT-1112; AS23053/5, CI.1 Overexpanded; UL 224 (Black only) | ASTM D2671, Proc. B, UL 224/CSA All Tubing Flame Test (Black only) | Repair of harness and cable jackets; will pass over large-diameter connectors or transitions then shrink tightly on harnesses and cables. Provides abrasion and fluid resistance required in many harness applications. | Americas Europe Asia Pacific |
| | RT-3 | -55 to 135 [-67 to 275] | 135 [275] | 2.5:1 | Semirigid, flame-retardant polyolefin tubing | Excellent mechanical properties; transfers flex stress away from typically weak points. Tightly controlled expanded diameters; well suited for semiautomated installation. | 6.1 to 12.3 [0.240 to 0.485] | Black | RT-360; UL 224/CSA | UL 224/CSA All Tubing Flame Test | Strain relief, insulation and mechanical protection of soldered or crimped connections, wire splices and terminations. Mechanical protection of delicate components. | Americas Europe Asia Pacific |
| | TUGA-GP | -55 to 125 [-67 to 275] | 110 [230] | 2:1 | Single wall, non-flame-retardant polyolefin tubing | Glossy finish. Semiflexible, non-flame-retardant and halogen-free. Easily hot stamped. | 1.2 to 38.0 [0.046 to 1.496] | Black | RW-2201 | FMVSS 302 | Electrical insulation, mechanical protection and beautification. | Europe Asia Pacific |
| | RW-125 | -55C to +150C (-67F to +302F) | 150C (302F) | 2:1 | Single Wall, flame-resistant, moisture protection, flexible | 2:1 shrink ratio, tough and flexible with excellent clarity and stability. High-temp performance with good chemical resistance | 12.7 to 31.8 (0.500 to 1.25) | Clear | TEC 108-120005 | ASTM D2671, Proc.C, | Agriculture LED lighting, lighting whip and antennas, interior and exterior use on everything from boats and vehicles to storage and safety area | Americas Europe Asia Pacific |
| | VERSAFIT | -55 to 135 [-67 to 275] | 90 [194] | 2:1 | Highly flame-retardant, very flexible, low-shrink-temperature polyolefin tubing | Meets AS23053/5, CI. 3 as well as UL 224 and CSA C22.2 No. 198.1 standards. UL 224/CSA VW-1 flame rating. Low shrink temperature for fast installation. | 1.2 to 101.6 [0.046 to 4.000] | Standard: Black, white, red, blue, and yellow; Nonstandard: Brown, orange, green, violet and gray | RW-3009; AS23053/5, CI. 1 & 3; UL 224/CSA VW-1 | ASTM D2671, Proc. C; UL 224/CSA VW-1 | Insulation and protection of in-line components, wire splices and terminations. Very flexible light-duty military and commercial harnessing. Use where a UL 224/CSA VW-1 flame rating is needed. Use where rapid installation is desirable. | Americas Europe Asia Pacific |
| | VERSAFIT-3X | -55 to 135 [-67 to 275] | 90 [194] | 3:1 | Highly flame-retardant, very flexible, high-shrink-ratio, lowshrink-temperature overexpanded polyolefin tubing | UL 224/CSA VW-1 flame rating. Low shrink temperature for fast installation. 3:1 shrink ratio easily accommodates irregular shapes. Few sizes cover a wide range of diameters. | 3.2 to 25.4 [0.125 to 1.00] | Standard: Black; Nonstandard: White, red, blue, yellow, green, brown, orange, violet, and gray | RW-3009 | RW-3009 UL 224/CSA VW-1 | Insulation and protection of in-line components, wire splices and terminations. Very flexible light duty harnessing. Use where larger expansion ratio and UL 224/CSA VW-1 rating are needed. | Americas Europe Asia Pacific |

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|------------------|--------------|------------------------------|--|----------------|---|--|--|--|---|--------------------------------------|--|------------------------------------|
| Single Wall | VERSAFIT V2 | -30 to 125 [-22 to 257] | 90 [194] | 2:1 | Highly flame-retardant, very flexible, low-shrink-temperature metric-sized polyolefin tubing | Many sizes to cover a wide variety of applications. UL 224/CSA VW-1 flame rating. Low shrink temperature for fast installation. | 0.8 to 30.0 [0.032 to 1.181] | Standard: Black; Nonstandard: White, red, blue, yellow, green, brown, orange, violet, and gray | RW-3023; UL 224/CSA VW-1 | UL 224/CSA VW-1 | Insulation and protection of in-line components, wire splices and terminations. Very flexible light-duty harnessing. Use where a UL 224/CSA VW-1 flame rating is needed. Use where rapid installation is desirable | Americas Europe Asia Pacific |
| | VERSAFIT V4 | -30 to 125 [-22 to 257] | 90 [194] | 2:1 | Very-thin-wall, very flexible, highly flame-retardant, low-shrinktemperature imperial and metricsized polyolefin tubing | Very thin wall and low shrink temperature for fast installation and space savings. UL 224/CSA VW-1 flame rating. | Imperial: 1.2 to 25.4 [0.046 to 1.000]; Metric: 1.0 to 10.0 [0.039 to 0.394] | Standard: Black; other colors available upon request | RW-3023; UL 224/CSA VW-1 | UL 224/CSA VW-1 | Insulation of in-line components, wire splices and terminations. Especially suited for covering temperature sensitive components and wires. Strain relief on high-density connectors. | Americas Europe Asia Pacific |
| Dual Wall | AP-2000 | -40 to 80 [-40 to 176] | 110 [230] | 1.3:1 to 2.9:1 | Flexible, adhesive-lined non-flame-retardant | Sized for use on specific standard sizes of metal pipe. Provides environmental and mechanical protection for automotive brake and fuel lines. Flexibility allows pipes to be bent after tubing has been installed. | 6.0 to 30.0 [0.236 to 1.182] | Black | RW-1001 | N/A | Protecting automotive brake and fuel lines from damage in areas exposed to mechanical abuse and moisture which can cause corrosion. Sized for use on specific standard sizes of metal pipe. | Americas Europe Asia Pacific |
| | ATUM | -55 to 110 [-67 to 230] | 110 [230] | 3:1 & 4:1 | High-shrink-ratio, adhesive-lined polyolefin tubing | 3:1 and 4:1 shrink ratios allow for connector-to-cable sealing. Medium wall provides increased mechanical protection. ATUM adhesive bonds to a wide variety of materials. | 3:1: 3.0 to 40.0 [0.118 to 1.570]; 4:1: 4.0 to 52.0 [0.158 to 2.050] | Standard: Black; Nonstandard: Clear (non-flameretardant); other colors available upon request | RW-2063 (Black), RK-6024 (Clear and colors); AS23053/4, Cl. 3 (specific 3:1 sizes in Black only); UL 224 (Black only, except sizes 3/1 and 4/1) | ASTM D2671, Proc. B (Black only) | Sealing and protection of connector backshells, breakouts and connectorto- cable transitions. High shrink ratio allows for repair of damaged cable jackets without removing connectors. | Americas Europe Asia Pacific |
| | CGAT | -30 to 80 [-22 to 176] | 115 [239] | 3:1 | Adhesive-lined, flexible polyolefin tubing | General purpose adhesive-lined tubing for the commercial marketplace. Offers good adhesive bonding to a variety of substrates to provide environmental sealing. | 3.0 to 39.0 [0.118 to 1.535] | Black, Clear (non-flameretardant) | RW-2050 | FMVSS 302 | Environmental protection of electrical components. Sealing of wire breakouts and cable jackets. | Europe Asia Pacific |
| | DSPL | -40 to 125 [-40 to 257] | 135 [275] | 4:1 | High-shrink-ratio, adhesive-lined semirigid polyolefin tubing | 4:1 shrink ratio allows a few sizes to cover a wide range of applications. Excellent environmental sealing. Mechanically tough providing protection from flexing and abrasion. Flame-retardant (except clear). | 5.7 to 17.5 [0.224 to 0.689] | Black, Clear (non-flameretardant) | RK-6755 | ASTM D2671, Procedure B (Black only) | Environmental sealing, electrical insulation and mechanical protection of wire splices, terminals and other components. | Europe |

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|------------------|--------------|------------------------------|--|--------------|---|---|---|---|----------------------------|--|--|------------------------------------|
| Dual Wall | DWFR | -40 to 110 [-40 to 230] | 110 [230] | 3:1 & 4:1 | Highly flame-retardant, highshrink-ratio, adhesive-lined polyolefin tubing | UL 224 VW-1 flame rating. 3:1 and 4:1 shrink ratios allow for connector-to-cable sealing. Medium wall provides increased mechanical protection. DWFR adhesive bonds to a wide variety of materials. | 3:1: 3.0 to 40.0 [0.118 to 1.570]; 4:1: 4.0 to 52.0 [0.158 to 2.050] | Black | DWFR SCD; UL 224 VW-1 | UL 224 VW-1 | Sealing and protection of connector backshells, breakouts and connectorto-cable transitions. High shrink ratio allows for repair of damaged cable jackets without removing connectors. | Americas Europe Asia Pacific |
| | DWP-125 | -40 to 110 [-40 to 230] | 125 [257] | 3:1 | Flexible, high-shrink-ratio, adhesive-lined polyolefin tubing | 3:1 shrink ratio allows for insulation and sealing of irregular shapes. Medium wall provides increased mechanical protection while maintaining flexibility when installed. Adhesive bonds to a wide variety of materials. | 3.2 to 50.8 [0.125 to 2.000] | Standard: Black; Nonstandard: White, red, blue, yellow, green and clear (non-flame-retardant); other colors available upon request | DWP-125 SCD; UL 224/CSA | UL 224/CSA All Tubing Flame Test (Colors only) | Sealing and protection of wire splices, break-outs and connector-to-cable transitions. Ideal for applications where a UL recognized/CSA certified adhesive-lined tubing is required. | Americas Asia Pacific |
| | DWTC | -55 to 75 [-67 to 167] | 100 [212] | 4:1 | Clear adhesive-lined polyolefin tubing | Limited number of sizes cover a full range of irregular shapes and widely varying dimensions. Clear tubing offers excellent clarity for protection of substrates needing inspection during service. | 4.0 to 16.0 [0.157 to 0.630] | Clear | RK-6204 | N/A | Environmental sealing of components where mechanical toughness or split resistance are needed. | Americas Europe Asia Pacific |
| | ES1000 | -40 to 130 [-40 to 266] | 135 [275] | 4:1 | Clear, high-shrink-ratio, adhesive-lined semirigid polyolefin tubing | 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters. Mechanically tough providing strain relief and abrasion protection. | 5.72 to 17.78 [0.225 to 0.700] | Clear | RT-1113; UL 224 | N/A | Specially designed for environmental sealing and electrical insulation of wire splices, terminations and components where see through inspection is required. | Americas Asia Pacific |
| | ES2000 | -40 to 130 [-40 to 266] | 135 [275] | 4:1 | Flame-retardant, high-shrinkratio, adhesive-lined semirigid polyolefin tubing | 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters. Flame-retardant and mechanically tough providing strain relief and abrasion protection. | 5.72 to 17.78 [0.225 to 0.700] | Black | RT-1112; UL 224 | ASTM D2671, Procedure B | Specially designed for environmental sealing and electrical insulation of wire splices, terminations and components. | Americas Asia Pacific |
| | FL2500 | -40 to 135 [-40 to 275] | 135 [275] | 4:1 | Fully flame-retardant, highshrink-ratio, adhesive-lined semirigid polyolefin tubing | 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters. Flame-retardant jacket and adhesive. | 7.62 to 17.79 [0.300 to 0.700] | Black | FL2500 SCD | SAE J1128, Note 5 | Fully flame-retardant and mechanically tough to provide strain relief and abrasion protection of wire splices, terminals, fuse links and in-line components. | Americas Europe Asia Pacific |
| | HTAT | -55 to 125 [-67 to 275] | 110 [230] | 4:1 | Semiflexible, high-shrink-ratio, adhesive-lined polyolefin tubing | 4:1 shrink ratio allows for connector-to-cable sealing. Medium wall provides increased mechanical protection. High-temperature adhesive forms a strong bond to a variety of materials. | 4.0 to 48.0 [0.158 to 1.890] | Blackq | RW-2052 | ASTM D2671, Procedure B | Sealing and protection of connector backshells, breakouts and connector-to-cable transitions at elevated temperatures. High shrink ratio allows HTAT to provide superior environmental protection to a wide range of shapes with irregular dimensions. | Americas Europe Asia Pacific |

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|------------------|--------------|------------------------------|--|--------------|---|---|--|--|---|-------------------------|--|------------------------------------|
| Dual Wall | QSZH | -40 to 125 [-40 to 257] | 135 [275] | 4:1 | High-shrink-ratio, adhesivelined semirigid polyolefin tubing | 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters. Mechanically tough providing strain relief and abrasion protection. Seals quick for efficient installation. No added halogens. | 5.75 to 18.3 [0.226 to 0.720] | Clear jacket, Black adhesive | RK-6771 | N/A | Specially designed for environmental sealing and electrical insulation of wire splices, terminations and components. | Americas Europe Asia Pacific |
| | RBK-ILS | -40 to 125 [-40 to 257] | 135 [275] | 4:1 | Flame-retardant, high-shrinkratio, adhesive-lined semirigid polyolefin tubing | 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters. Mechanically tough providing strain relief and abrasion protection. Flame retardant. | 5.75 to 18.3 [0.226 to 0.720] | Black | RK-6638 | ISO6722, Clause 4.5 | Specially designed for environmental sealing and electrical insulation of wire splices, terminations and components. | Americas Europe Asia Pacific |
| | RBK-VWS | -40 to 125 [-40 to 257] | 135 [275] | 4:1 | Clear, high-shrink-ratio, adhesive-lined semirigid polyolefin tubing | 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters. Mechanically tough providing strain relief and abrasion protection. Permits inspection of substrate after application. | 5.70 to 17.78 [0.224 to 0.700] | Clear | RK-6640 (sizes 1-3) RT-1113 (size 4) | N/A | Specially designed for environmental sealing and electrical insulation of wire splices, terminations and components where seethrough inspection is required. | Americas Europe Asia Pacific |
| | RPPM | -40 to 85 [-40 to 185] | 80 [176] | 4:1 | Flexible, low-shrinktemperature, adhesive-lined polyolefin tubin | Tough outer jacket offers excellent mechanical strength. High shrink ratio allows use on a range of substrate diameters. Black has a high gloss finish. Clear has excellent optical clarity allowing inspection of substrates after installation. | 4.0 to 16.0 [0.157 to 0.630] | Black and Clear | RK-6214 | N/A | Use the black for cosmetic applications where a high gloss finish is desired. Use the clear where optical clarity is desired for later inspection. | Americas Europe Asia Pacific |
| | SCL | -55 to 110 [-67 to 230] | 135 [275] | 3:1 | Semirigid, encapsulant-lined polyolefin tubing | Splash-resistant, moisture-resistant covering. Provides rugged protection against abrasion, vibration and flexing. | 3.2 to 25.4 [0.125 to 1.000] | Black plus one additional color per size (except 1") | RT-1301; AS23053/4, Cl. 1; UL 224 | N/A | Encapsulation of components, splices and terminations where splash resistance and mechanical protection are required. | Americas Europe Asia Pacific |
| | SCT | -40 to 150 [-40 to 302] | 135 [275] | 4:1 | Flame-retardant, adhesivelined semirigid polyolefin tubing (extended temperature range) | 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters. Flame-retardant and mechanically tough. Adhesive wall forms a barrier against fluids and moisture at an extended temperature range. | 7.6 to 17.8 [0.300 to 0.700] | Black | SCT SCD | ASTM D2671, Procedure B | Specially designed for insulation, strain relief and sealing of automotive wire splices and components in an underhood automotive environment. | Americas Europe Asia Pacific |

| Product Category | Product Name | Operating Temperature °C[°F] | Minimum Full Recovery Temperature °C[°F] | Shrink Ratio | Product Description | Features/Benefits | Standard Size Range (Inside Diameter as supplied) mm [In.] | Colors | Applicable Specifications | Flammability Rating | Typical Applications | Available in |
|------------------|------------------------|------------------------------|--|----------------|---|---|--|--|---|--|---|------------------------------------|
| Dual Wall | TAT-125 | -55 to 110 [-67 to 230] | 121 [250] | 2:1 | Flexible, adhesive-lined polyolefin tubing | Flexible adhesive lining and tubing jacket. Thin adhesive lining to seal simple constructions. Good mechanical strength and cut-through resistance. Adhesive bonds to a wide variety of materials. | 3.2 to 101.6 [0.125 to 4.000] | Standard: Black; Nonstandard: White, red, blue, yellow, green, brown, orange, violet, gray, and clear (non-flame-retardant). | TAT-125 SCD; RW-3032; AS23053/4, Cl. 2; UL 224 | ASTM D2671, Procedure B | Sealing and protection of simple in-line splices, bimetallic joints, and components from fluids, moisture, and corrosion. Repair damaged wire insulation, especially where flexibility is required. | Americas Asia Pacific |
| | TECT | -40 to 80 [-40 to +176] | 135 [275] | 3:1 | Semiconductive, adhesivelined polyolefin tubing | Semi-conductive polyolefin jacket lined with semiconductive adhesive. | 13.5 [0.531] One size only | Black | RW-2080 | N/A | Electrical grounding of coated automotive fuel lines. | Europe |
| Heavy Duty | BSTS/ BSTS-FR | -55 to 90 [-67 to 194] | 121 [250] | 3:1 | Rugged, thick wall, general purpose polyolefin tubing | Excellent thick wall insulation and abrasion protection. BSTS-FR is flame-retardant. | 7.62 to 114.30 [0.300 to 4.500] | Standard: Black; Nonstandard: Red, white, and clear (non-flame-retardant) | RW-2017; ABS | ASTM D2671, Proc.C (Flame-retardant version only); ASTM D635 | Used in demanding applications where insulation, abrasion resistance and strain relief are required. Resists moisture, fungus and weathering. | Americas Europe Asia Pacific |
| | HF | -55 to 90 [-67 to 194] | 121 [250] | 3:1 | High-flex, heavy wall polyolefin tubing | Offers high flexibility. Provides excellent insulation and abrasion protection. Flame-retardant. | 10.16 to 68.58 [0.400 to 2.700] | Black | RW-2023; ABS | ASTM D2671, Procedure C | Ideal for jacketing cables where sharp bends or turns are required. Also ideal for applications where the cable is subject to motion. | Americas Europe Asia Pacific |
| | HRHF/ HRNF/ HRSR | -55 to 90 [-67 to 194] | 121 [250] | 5.6:1 | High-ratio, durable heavy wall polyolefin tubing | Excellent insulation and abrasion protection. Available in flame-retardant material. Available with factory-applied sealants. | 15.24 to 101.60 [0.600 to 4.000] | Standard: Black; Nonstandard: Clear (nonflame-retardant; HRHF only) | RW-2013; ABS | ASTM D2671, Procedure C (Flame-retardant version only) | Designed to accommodate large size differences between cable diameters and cable connectors and backshells to simplify cable repair and protection. | Americas Europe Asia Pacific |
| | HRHT | -55 to 135 [-67 to 275] | 150 [302] | As high as 6:1 | High-ratio, high-temperature polyolefin tubing | Shrink ratios as high as 6:1. Specially formulated for thick wall insulation, strain relief, and abrasion protection. Designed to conform to odd shapes and shrink over large transitions. Available with optional adhesive lining. | 19.05 to 114.30 [0.750 to 4.500] | Black | HRHT SCD | ASTM D635 | Recovery over odd shapes and large cable transitions. Sealing the back end of a connector or repairing the damaged outer insulation of a cable. | Americas Europe Asia Pacific |
| | RHW | -40 to 110 [-40 to 230] | 125 [257] | 4:1 | Rugged, heavy wall, adhesive-lined polyolefin tubing | Highly resistant to impact, flexing and abrasion for increased product reliability. Resistant to chemicals, moisture and oils. Provides a moisture-proof seal to prevent corrosion. Halogen-free and UV resistant jacket. | 12.0 to 390.0 [0.472 to 15.354] | Black | RHW SCD; UL 224 (sizes 12/3 through 70/20 only) | N/A | Insulation, protection and sealing of electrical connections and joints in low voltage cables. Combines maximum reliability and product performance with simplified installation. | Americas Europe Asia Pacific |
| | RMW | -40 to 110 [-40 to 230] | 125 [257] | 3:1 | Medium wall, general purpose polyolefin tubing | Withstands mechanical abuse for increased product reliability. Highly resistant to impact and abrasion. Resistant to chemicals and moisture. Adhesive-lined version provides a moisture-proof seal to prevent corrosion. | 10.0 to 180.0 [0.394 to 7.087] | Black | RMW SCD | N/A | Insulation and protection of cable joints as well as cable repair. Uncoated RMW provides insulation and strain relief. Adhesive-lined RMW also provides an environmental seal. | Americas Europe Asia Pacific |

| Product Category | Product Name | Operating Temperature °C[°F] | Minimum Full Recovery Temperature °C[°F] | Shrink Ratio | Product Description | Features/Benefits | Standard Size Range (Inside Diameter as supplied) mm [In.] | Colors | Applicable Specifications | Flammability Rating | Typical Applications | Available in |
|------------------|----------------|---|--|----------------|---|---|--|---|--|--|---|------------------------------------|
| Heavy Duty | SST/ SST-FR | -55 to 90 [-67 to 194] | 121 [250] | 3:1 | Thick wall, adhesive-lined polyolefin tubing | Thick wall insulation, strain relief and abrasion protection. Thick adhesive liner forms a barrier against fluids and moisture. SST-FR is flame-retardant. | 7.62 to 114.30 [0.300 to 4.500] | Standard: Black; Nonstandard: Red, white, and clear (non-flameretardant) | RW-2011; AS23503/15, Cl. 1 and 2 (flame-retardant version with /97 coating only); | ASTM D2671, Proc. C (Flame-retardant version only) | Insulation, strain relief and sealing of splices in wire harnesses. Environmental protection in wet or underground applications. | Americas Europe Asia Pacific |
| | URHT | -55 to 135 [-67 to 275] | 150 [302] | As high as 8:1 | Ultra-high-ratio, flameretardant polyolefin tubing | Shrink ratios as high as 8:1. Specially formulated for thick wall insulation, strain relief, and abrasion protection. Designed to conform to odd shapes and shrink over large transitions. Optional adhesive lining provides environmental sealing. | 50.8 to 76.2 [2.000 to 3.000] | Black | URHT SCD | ASTM D635 | Recovery over odd shapes and large cable transitions. Sealing the back end of a connector or repairing the damaged outer insulation of a cable. | Americas Europe Asia Pacific |
| Special Purpose | DR-25 | -75 to 150 [-103 to 302] | 175 [347] | 2:1 | Flexible, chemical and abrasion resistant tubing | Long-term fluid and heat resistance. Resistance to aviation and diesel fuels, and hydraulic fluids. Flexible, flame-retardant. | 3.2 to 76.0 [0.125 to 3.000] | Black | RT-1116, RK-6008/1; AS 23053/16, VG95343 Part 5 Type D, VDE 0341/ Pt 9005, Def. Stan. 59-97 Issue 3 type 6B,BS 4G-198 Part 3 10A | ASTM D2671, Procedure B | Particularly suitable as a jacketing material for cables and harnesses on military ground vehicles and race cars. | Americas Europe Asia Pacific |
| | ES Caps | -40 to 105 [-40 to 221] | 135 [275] | 4:1 | High-shrink-ratio, adhesivelined semirigid polyolefin caps | 4:1 shrink ratio allows a few sizes to cover a wide range of splice diameters. Mechanically tough jacket provides strain relief and abrasion protection. Flame-retardant jacket (black only). | 5.72 to 10.85 [0.225 to 0.427] | Black and Clear (non-flame-retardant) | RW-3006; UL 224 | ASTM D2671, Procedure B (Black only) | Specially designed to provide mechanical and environmental protection of stub splices in electrical harnesses. Clear caps allow see-through inspection. | Americas Europe Asia Pacific |
| | HCTE | -55 to 200 [-67 to 392] | N/A | N/A | Irradiated, modified ETFE helical convolex conduit | Helical construction with excellent flexibility and high crush resistance. Highly flame-retardant. Highly fluid resistant. | 4.6 to 49.2 [0.181 to 1.937] | | RT-1162; VG 96936 Part 6 | ASTM D876 | Mechanical protection for electrical wiring systems in applications requiring flexibility, high temperature performance, and good solvent resistance. | Americas Europe Asia Pacific |
| | HFT5000 | -40 to 125 [-40 to 257] for 3,000 hours; -40 to 150 [-40 to 302] for 1,000 hours | 110 [230] | 2:1 | Heat-shrinkable fabric tubing | Highly flexible for easy installation on a variety of substrates. Outstanding abrasion resistance over a wide temperature range. Heat-shrinkable to grip tightly. Resistant to harsh environments. Halogen-free. | 12.0 to 100.0 [0.472 to 3.937] | Black | RW-2060; UL 224 | FMVSS 302 | Abrasion protection for rubber hoses, plastic pipes, and harness wire bundles. Provides outstanding abrasion, chafing and cut-through resistance even at high temperatures. | Americas Europe Asia Pacific |
| | HT-200 | -70 to 200 [-94 to 392] | 130 [266] | 2:1 | High-clarity, high flameresistant, very flexible fluoropolymer tubing | Very flexible, very thin wall insulation. Highly flame resistant. High temperature performance. Resistant to most solvents, fuels and chemicals. Clarity allows visual inspection of covered components such as downhole sensors. | 1.2 to 25.4 [0.046 to 1.000] | Clear | RW-1200; AS 23053/18, Class 3 | ATSM D2671, Procedure C | Insulation of delicate electrical connections and terminations. Allows visual inspection of terminations, connections and covered components such as sensors. Offers high temperature performance and superior chemical and solvent resistance. | Americas Europe Asia Pacific |

| Product Category | Product Name | Operating Temperature °C[°F] | Minimum Full Recovery Temperature °C[°F] | Shrink Ratio | Product Description | Features/Benefits | Standard Size Range (Inside Diameter as supplied) mm [In.] | Colors | Applicable Specifications | Flammability Rating | Typical Applications | Available in |
|------------------|--------------|---------------------------------|--|--------------|--|---|--|-------------------------------------|--|--------------------------------------|---|------------------------------------|
| Special Purpose | NT-MIL | -70 to 121 [-94 to 250] | 135 [275] | 1.8:1 | Flexible, rugged, modified elastomeric tubing | Remains flexible at temperatures as low as -70°C [-94°F]. Excellent resistance to abrasion and physical abuse. Resistant to most fluids and solvents, including fuels and oils. | 3.2 to 101.6 [0.125 to 4.000] | Black | RW-3030; AS23053/1, Cl. 1 & 2 | ASTM D2671, Procedure A | Insulation, strain relief and abrasion protection on cable harnesses and wire bundles in the military and aerospace industries. Applications requiring exposure to fluids and solvents. | Americas Europe Asia Pacific |
| | PD Caps | -55 to 110 [-67 to 230] | 135 [275] | 3:1 | Semirigid, encapsulant-lined polyolefin caps | End cap with meltable encapsulant inner wall for splash resistance. Permanent or temporary method to terminate wires. | 3.2 to 12.7 [0.125 to 0.500] | Black | PD Caps SCD; UL 224 | ASTM D635 | Insulation and encapsulation of crimped electrical connections, especially stub splices, providing rugged protection against abrasion, vibration and flexing. | Americas Europe Asia Pacific |
| | RayBlock 85 | -40 to 85 [-40 to 185] | 110 [230] | 4:1 | Heat-shrinkable water blocking system | Environmentally seals and provides strain relief to wire bundles of up to 20 wires. Withstands excursions to 105°C [221°F]. | 12.0 to 32.0 [0.472 to 1.260] | Black | RayBlock 85 SCD; RW-2101 | N/A | Sealing of cable bundles and the back of connectors. | Americas Europe Asia Pacific |
| | RayBlock 105 | -40 to 105 [-40 to 221] | 110 [230] | 4:1 | High-temperature heat-shrinkable water blocking system | Environmentally seals and provides strain relief to wire bundles of up to 20 wires. Withstands excursions to 120°C [248°F]. | 12.0 to 32.0 [0.472 to 1.260] | Black | RayBlock 105 SCD; RW-2102 | N/A | Sealing of cable bundles and the back of connectors. | Americas Europe Asia Pacific |
| | Rayrim | -67 to 80 [-40 to 176] | 150 [302] | N/A | Commercial protective self adhering, Vshaped polyolefin edging material | Flexible and self-adhering to allow for protection of curved and straight edges. Rapid installation to both internal and external radii. Operating temperature range offers protection in demanding environments. | 5 sizes to cover thicknesses 0.31 to 5.38 [0.012 to 0.212] | Black | RK-6182 | N/A | Protection of metal, wood and glass edges. | Americas Europe Asia Pacific |
| | RaySpool | See individual product families | See individual product families | 2:1 & 3:1 | CGPT (2:1 & 3:1), LSTT and CGAT | Selected heat-shrinkable tubings supplied in a convenient dispensing system. | See individual product families | See individual product families | See individual product families | See individual product families | See individual product families. | Europe Asia Pacific |
| | RNF-150 | -55 to 150 [-67 to 302] | 150 [302] | 2:1 | High-performance, flame-resistant, flexible fluoropolymer tubing | Thinner wall than most general purpose polyolefin tubings. Highly flameresistant. Excellent physical and electrical properties after exposure to many chemicals and solvents at 50°C [122°F]. | 1.2 to 25.4 [0.046 to 1.000] | Standard: Black; Nonstandard: White | RT-370; AS23053/18, Cl. 2; UL 224 VW-1 | ASTM D2671, Proc. C; UL 224 VW-1 | Jacketing and bundling wires to form light-duty harnesses, especially where a low profile, abrasion resistance, and flexibility are needed. Insulation and strain relief of electrical connections and wire terminations. | Americas Europe Asia Pacific |
| | RT-375 | -55 to 150 [-67 to 302] | 150 [302] | 2:1 | Clear, flame-resistant, flexible fluoropolymer tubing | Exceptional clarity and clarity stability. Highly flame-resistant. Toughness, chemical resistance, and high temperature performance. | 1.2 to 50.8 [0.046 to 2.000] | Clear | RT-375; AS23053/18, Cl. 2; UL 224/CSA VW-1 | ASTM D2671, Proc. C; UL 224/CSA VW-1 | Protection of components and wire markers subject to extreme abuse while permitting full identification and inspection. | Americas Europe Asia Pacific |
| | RT555 | -65 to 200 [-85 to 392] | 220 [428] | 2:1 | Fluid-resistant, chemicalresistant, fluoropolymer tubing with extended temperature range | Resistant to high temperatures, solvents, corrosive chemicals, hydrocarbons, and radiation. Highly flame-retardant. Low outgassing | 3.2 to 50.8 [0.125 to 2.000] | Black | RT-555; AR70-75; UL 224 | ASTM D2671, Procedure C | Applications requiring resistance to high temperatures and resistance to a variety of chemicals and fluids. Insulation and strain relief on appliances. Protection of delicate electronic instruments. | Americas Europe Asia Pacific |

| Product Category | Product Name | Operating Temperature °C[°F] | Minimum Full Recovery Temperature °C[°F] | Shrink Ratio | Product Description | Features/Benefits | Standard Size Range (Inside Diameter as supplied) mm [In.] | Colors | Applicable Specifications | Flammability Rating | Typical Applications | Available in |
|------------------|-----------------|--|--|--------------|--|--|--|---|---|--------------------------------------|---|------------------------------------|
| Special Purpose | RW-175 | -55 to 175 [-67 to 347] | 175 [347] | 2:1 | High-temperature, chemicalresistant polyvinylidene fluoride tubing | Tough, semirigid, very thin wall insulation. Highly flame-resistant. High temperature performance. Resistant to most solvents, fuels, and chemicals. | 1.2 to 50.8 [0.046 to 2.000] | Standard: Translucent; Nonstandard: Black | RW-3029/2; AS23053/8 (Translucent only); UL 224/CSA VW-1 | ASTM D2671, Proc. C; UL 224/CSA VW-1 | Insulation and strain relief of delicate electrical connections and terminations. Offers high temperature performance, outstanding abrasion and cut-through resistance, and superior chemical and solvent resistance. | Americas Europe Asia Pacific |
| | RW-175-E | -55 to 175 [-67 to 347] | 175 [347] | 2:1 | High-temperature, chemicalresistant polyvinylidene fluoride tubing | Tough, semirigid, very thin wall insulation. Highly flame-resistant. High temperature performance. Resistant to most solvents, fuels, and chemicals. | 1.2 to 38.1 [0.046 to 1.500] | Standard: Translucent; Nonstandard: Black | RW-3029/1; VG95343 Part 5 Type F, VDE 0341/Pt 9005; UL 224/CSA VW-1 | ASTM D2671, Proc. C; UL 224/CSA VW-1 | Insulation and strain relief of delicate electrical connections and terminations. Offers high temperature performance, outstanding abrasion and cut-through resistance, and superior chemical and solvent resistance. | Europe Asia Pacific |
| | RW-200 | -40 to 200 [-40 to 392] | 175 [347] | 2:1 | Chemical-resistant, high-temperature fluoroelastomer tubing | Outstanding performance in severe chemical and thermal environments. High resistance to impact and abrasion. | 3.2 to 50.8 [0.125 to 2.000] | Black | RW-3037; AS23053/13 | ASTM D2671, Proc. A; ASTM D876 | Insulation and protection of cables and components exposed to high temperatures and/or solvents, fuels, hydraulic fluids, lubricants, and acids. Suitable for use in engine compartments. | Americas Europe Asia Pacific |
| | RW-200-E | -40 to 200 [-40 to 392] | 175 [347] | 2:1 | Heavy wall, chemicalresistant, high-temperature fluoroelastomer tubing | Outstanding performance in severe chemical and thermal environments. Heavy wall provides increased protection against mechanical abuse. | 3.2 to 50.8 [0.125 to 2.000] | Black | RW-3037; MIL-PRF-46846 Type III Cl. 1, Def. Stan. 59-97 Issue 3 Type 4A, VG95343 Part 5 Type E, VDE 0341/Pt9005, BS 4G-198 Part 3 12A | ASTM D876 | Especially suitable for the most demanding harnessing requirements in aircraft, missiles, satellite systems and chemical plants. | Americas Europe Asia Pacific |
| | SAS/ SASR/ TSAS | -80 to 125 [-112 to 257] (See individual product families) | Minimum sealing temperature will depend on the adhesive type and application | N/A | Slit adhesive sleeves made of selected adhesives | N/A For use with single and dual wall tubings to provide additional adhesive in applications where it is needed. | 1.4 to 9.5 [0.055 to 0.375] | Amber, Black or Gray | See individual product families | N/A | Use under single wall tubing to create a seal around a wire or splice. Use under dual wall tubing where additional adhesive is needed for consistent sealing. Use several on individual wires to create a water block at the back of a connector. | Americas Europe Asia Pacific |
| | SFR | -75 to 180 [-103 to 356] | 175 [347] | 1.75:1 | Very flexible, flame-retardant, silicone elastomer tubing | Outstanding low-temperature flexibility. Resistance to hydraulic fluids, fuel, and lubricating oil. Very good ablative characteristics. | 6.4 to 50.8 [0.250 to 2.000] | Black | RT-1140; AS23053/10; MIL-PRF-46846 Type II Cl. 1 | ASTM D2671, Procedure B | Cable harness protection where maximum flexibility in temperature extremes is required. Strain relief for electronic components, semiconductor leads, and wire splices. | Americas Europe Asia Pacific |

| Product Category | Product Name | Operating Temperature °C[°F] | Minimum Full Recovery Temperature °C[°F] | Shrink Ratio | Product Description | Features/Benefits | Standard Size Range (Inside Diameter as supplied) mm [In.] | Colors | Applicable Specifications | Flammability Rating | Typical Applications | Available in |
|------------------|----------------------------|---------------------------------|--|----------------|---|---|--|--|---------------------------------|---|---|------------------------------------|
| Special Purpose | SRFR | -75 to 200 [-102 to 392] | 175 [392] | 1.5:1 | Highly flexible silicone rubber tubing | Highly flexible. Resistant to high and low temperatures and medical sterilization. SRFR is non-burning with outstanding ablative properties. | 2.9 to 51.0 [0.114 to 2.008] | Gray | RT-1142, RW-2057; UL 224 VW-1 | ASTM 2671, Procedure B; UL 224 VW-1 | Used in medical equipment where flexibility and the ability to withstand sterilization are needed. Thyristor power cable insulation, heating element and bus bar insulation, fiber optic bundle sheathing, and rocketry support cable protection. | Americas Europe Asia Pacific |
| | SWFR X2 | -30 to 125 [-22 to 257] | 90 [194] | 2:1 | Very flexible, low-shrink temperature, highly flameretardant, polyolefin tubing with no added halogens | Low shrink temperature for fast installation. Environmentally friendly tubing with no added halogens emits minimal amounts of toxic or acid gasses during combustion. 600V rating. UL 224/CSA VW-1 flame rating. | 1.0 to 30.0 [0.039 to 1.181] | Black | SWFR X2 SCD; UL 224/CSA VW-1 | UL 224/CSA VW-1 | Insulation and protection of inline components, wire splices and terminations. Very flexible light-duty harnessing. Use where a nonhalogenated product with a UL 224/CSA VW-1 rating is needed. Use where rapid installation is desirable. | Americas Europe Asia Pacific |
| | SWFR X4 | -30 to 125 [-22 to 257] | 90 [194] | 2:1 | Very-thin-wall, very flexible, low-shrink-temperature, highly flame-retardant, polyolefin tubing with no added halogens | Very thin wall and low shrink temperature for fast installation and space savings. Environmentally friendly material with no added halogens emits minimal amounts of toxic or acid gasses during combustion. 300V rating. UL 224/CSA VW-1 flame rating. | 0.8 to 25.0 [0.032 to 0.984] | Black | SWFR X4 SCD; UL 224/CSA VW-1 | UL 224/CSA VW-1 | Insulation and protection of inline components, wire splices and terminations. Especially suited for covering temperature-sensitive components where a non-halogenated product is needed. Strain relief on highdensity connectors. | Americas Europe Asia Pacific |
| | TC Caps | -55 to 135 [-67 to 275] | 135 [275] | 2:1 | Semirigid, flame-retardant polyolefin end caps | Single wall caps provide permanent or temporary insulation and termination. Vibration and abrasion resistant. | 1.6 to 6.4 [0.063 to 0.250] | White, red and gray (One standard color per size) | TC Caps SCD; UL 224 | UL 224 All Tubing Flame Test (Material) | Widely used for wire terminations because of light weight, small size and durability. | Americas Europe Asia Pacific |
| | TFE/TFER | -67 to 250 [-89 to 482] | 340 [644] | 1.8:1 to 3.2:1 | High-temperature, chemically inert modified PTFE tubing | Provides insulation and mechanical protection in severe chemical and thermal environments. High mechanical strength and an extremely low coefficient of friction. | 0.8 to 32.0 [0.031 to 1.260] | Clear | RK-2055 and RK-2054 | ASTM D876 15 sec max. | Covering hydraulic hose and couplings to prevent contamination and corrosion. The high mechanical strength and extremely low coefficient of friction make it good for reducing damage to bearing shafts and similar applications. | Europe Asia Pacific |
| | Tubing Kits & MiniSpools | See individual product families | See individual product families | 2:1 to 4:1 | VERSAFIT, RNF-100, DWP-125 and ES1000 | Smaller packaging options for our most popular sizes of select single wall and adhesive-lined products. | See individual product families | See individual product families | See individual product families | See individual product families | See individual product families | Americas Europe Asia Pacific |
| | Versaflex/ Versaflex-FR | -50 to 150 [-58 to 302] | N/A | N/A | Expandable, Braided Polyester Tubing | Suitable for mechanical protection of wire harnesses where exceptional flexibility combined with superior abrasion and cut-through resistance is required. Will not trap heat or moisture. Expands easily over irregular shapes. Available in non-flameretardant or flame-retardant versions. | 3.0 to 50.0 [0.118 to 2.000] Nominal | Black & Gray. Flameretardant version has white tracer. | RK-6772 | N/A | Mechanical protection of wire harnesses, hoses, and other substrates where exceptional flexibility is needed Wire bundling without trapping heat and moisture. Provides additional abrasion and cut-through resistance where required. | Americas Europe Asia Pacific |

| Product Category | Product Name | Operating Temperature °C[°F] | Minimum Full Recovery Temperature °C[°F] | Shrink Ratio | Product Description | Features/Benefits | Standard Size Range (Inside Diameter as supplied) mm [In.] | Colors | Applicable Specifications | Flammability Rating | Typical Applications | Available in |
|------------------|--------------|------------------------------|--|--------------|--|---|--|--------|--|---|---|------------------------------------|
| Special Purpose | XFFR | -55 to 105 [-67 to 221] | 121 [250] | 3:1 | No added halogens, flameretardant tubing | Tubing with no added halogens emits minimal amounts of toxic or acid gases during combustion. | 7.62 to 76.20 [0.300 to 3.000] | Black | RW-2016; MIL-C-24643 (Cable jacket flame performance); NES 713; NES 711; ABS | MIL-C-24643 | Harnessing, re-jacketing and repair of cable in enclosed areas requiring a halogen-free, flame-retardant environment. | Americas Europe Asia Pacific |
| | ZH-100 | -30 to 105 [-22 to 221] | 120 [248] | 2:1 | Flexible, thin-wall, low-firehazard tubing | Low smoke emissions. Flexible, flameretardant. No added halogens. | 3.2 to 51.0 [0.125 to 2.000] | Black | RW-2031 | ASTM D876 | Jacketing wire bundles and light-duty harnesses for use in areas where lowfire-hazard materials are required. | Americas Europe Asia Pacific |
| | ZHTM | -30 to 105 [-22 to 221] | 121 [250] | 2:1 | Flexible, thick-wall tubing with low toxicity for fire safety applications | Low smoke emissions. Flexible, flame-retardant. | 3.0 to 50.0 [0.118 to 1.969] | Black | RW-2058 | ASTM D2671, Procedure B (Sizes 12/6 & below); ASTM D876 (Sizes 18/9 and larger) | Insulation and protection of cables, harnesses, and electrical and electronic components in enclosed spaces, such as in ships, mass transit systems and offshore installations. | Americas Europe Asia Pacific |

| Product Type | UL file | CSA file | AS23053* | | MIL-PRF-46846 | | Raychem Specification |
|--------------------|-------------|----------|----------|-------|---------------|-------|---|
| | | | Sheet | Class | Type | Class | |
| AP-2000 | | | | | | | RW-1001 |
| ATUM | E85381** | | /4 | 3 | | | RW-2063 (Black) RK-6024 (Colors & Clear) |
| BSTS | | | | | | | RW-2017 |
| BSTS-FR | | | | | | | RW-2017 |
| CGPE-105 | | | | | | | CGPE-105 SCD |
| CGAT | E85381 | | | | | | RW-2050 |
| CGPT | E35586 | LR31929 | | | | | RW-2059 |
| CRN Type 1 (Black) | E35586† | LR31929† | /6 | 1 | | | RT-360, Type 1 |
| CRN Type 2 (Clear) | | | /6 | 2 | | | RT-360, Type 2 |
| DCPT | E35586 | LR31929 | | | | | RW-2056 |
| DR-25 | | | /16 | | | | RT-1116, RK-6008/1 |
| DSPL | | | | | | | RK-6755 |
| DWFR | E35586 VW-1 | | | | | | DWFR SCD |
| DWP-125 | E35586 | LR31929 | | | | | DWP-125 SCD |
| DWTC | | | | | | | RK-6204 |
| ES1000 | E85381 | | | | | | RT-1113 |
| ES2000 | E85381 | | | | | | RT-1112 |
| ES Caps | E85381 | | | | | | RW-3006 |
| FL2500 | | | | | | | FL2500 SCD |
| HCTE | | | | | | | RT-1162 |
| HF | | | | | | | RW-2023 |
| HFT5000 | E199379 | | | | | | RW-2060 |
| HRHF | | | | | | | RW-2013 |
| HRHT | | | | | | | HRHT SCD |
| HRNF | | | | | | | RW-2013 |
| HRSR | | | | | | | RW-2013 |
| HT-200 | | | /18 | 3 | | | RW-1200 |
| HTAT | | | | | | | RW-2052 |
| LSTT | | | | | | | RW-2051 |
| NETM1000 | | | | | | | NETM1000 SCD |
| NETM2000 | | | | | | | NETM2000 SCD |
| NT-MIL | | | /1 | 1 & 2 | | | RW-3030 |
| PD Caps | E85381 | | | | | | PD Caps SCD |

| Product Type | UL file | CSA file | AS23053* | | MIL-PRF-46846 | | Raychem Specification |
|-------------------------|-------------|--------------|----------|-------|---------------|-------|---------------------------------------|
| | | | Sheet | Class | Type | Class | |
| QSZH | | | | | | | RK-6771 |
| RayBlock 85 | | | | | | | RW-2101 |
| RayBlock 105 | | | | | | | RW-2102 |
| Rayrim | | | | | | | RK-6182 |
| RaySpool | | | | | | | Various |
| RBK-ILS | | | | | | | RK-6638 |
| RBK-VWS | | | | | | | RK-6640 (sizes 1-3), RT-1113 (size 4) |
| RHW | E91151+++ | | | | | | RHW SCD |
| RMW | | | | | | | RMW SCD |
| RNF-100 Type 1 (Colors) | E35586 | LR31929 | /5 | 1 | | | RT-350, Type 1 |
| RNF-100 Type 2 (Clear) | | | /5 | 2 | | | RT-350, Type 2 |
| RNF-150 | E35586 VW-1 | | /18 | 2 | | | RT-370 |
| RNF-3000 | E35586 | LR31929 | | | | | RW-2053 |
| RP-4800 | E35586 | | /5 | 1†† | | | RT-1122 |
| RPPM | | | | | | | RK-6214 |
| RT-3 | E35586 | LR31929† | | | | | RT-360†††† |
| RT-375 | E35586 VW-1 | LR31929 VW-1 | /18 | 2 | | | RT-375 |
| RT555 | E85381 | | | | | | RT-555 |
| RW-175/RW-175-E | E35586 VW-1 | LR31929 VW-1 | /8 | | | | RW-3029/1 & 2 |
| RW-200/RW-200-E | | | /13 | | III | 1 | RW-3037 |
| SAS | | | | | | | Various |
| SASR | | | | | | | SASR SCD |
| SCL | E85381 | | /4 | 1 | | | RT-1301 |
| SCT | | | | | | | SCT SCD |
| SFR | | | /10 | | II | 1 | RT-1140 |
| SRFR | E85381 VW-1 | | | | | | RT-1142/RW-2057 |
| SST | | | | | | | RW-2011 |
| SST-FR | | | /15 | 1 & 2 | | | RW-2011 |
| SWFR X2 | E35586 VW-1 | LR31929 VW-1 | | | | | SWFR X2 SCD |
| SWFR X4 | E35586 VW-1 | LR31929 VW-1 | | | | | SWFR X4 SCD |
| TAT-125 Type 1 (Colors) | E85381 | | /4 | 2 | | | RW-3032 |
| TAT-125 Type 2 (Clear) | | | | | | | RW-3032 |

| Product Type | UL file | CSA file | AS23053* | | MIL-PRF-46846 | | Raychem Specification |
|--------------------------------|-------------|--------------|----------|-------|---------------|-------|-----------------------|
| | | | Sheet | Class | Type | Class | |
| TC Caps | E85381 | | | | | | TC Caps SCD |
| TECT | | | | | | | TECT SCD |
| TFE/TFER | | | | | | | RW-2054, RW-2055 |
| TSAS | | | | | | | TSAS SCD |
| Tubing Kits/ MiniSpools | | | | | | | Various |
| TUGA-GP | | | | | | | RW-2201 |
| URHT | | | | | | | URHT SCD |
| VERSAFIT | E35586 VW-1 | LR31929 VW-1 | /5 | 1 & 3 | | | RW-3009 |
| VERSAFIT-3X | E35586 VW-1 | LR31929 VW-1 | | | | | RW-3009 |
| VERSAFIT V2 | E35586 VW-1 | LR31929 VW-1 | | | | | RW-3023 |
| VERSAFIT V4 | E85381 VW-1 | LR31929 VW-1 | | | | | RW-3023 |
| VERSAFLEX/ VERSAFLEX- FR | | | | | | | RK-6772 |
| XFFR | | | | | | | RW-2016 |
| ZH-100 | | | | | | | RW-2031 |
| ZHTM | | | | | | | RW-2058 |

* Formerly MIL-I-23053 and MIL-DTL-23053 and AMS-DTL-23053

** Black only, except sizes 3/1 and 4/1

† Black only, sizes 1/8 through 3/4

** Overexpanded

+++ Sizes 12/3 through 70/20 only.

++++ With exception to dimensions and longitudinal change.

TECHNICAL SUPPORT

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| | | | | | |
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