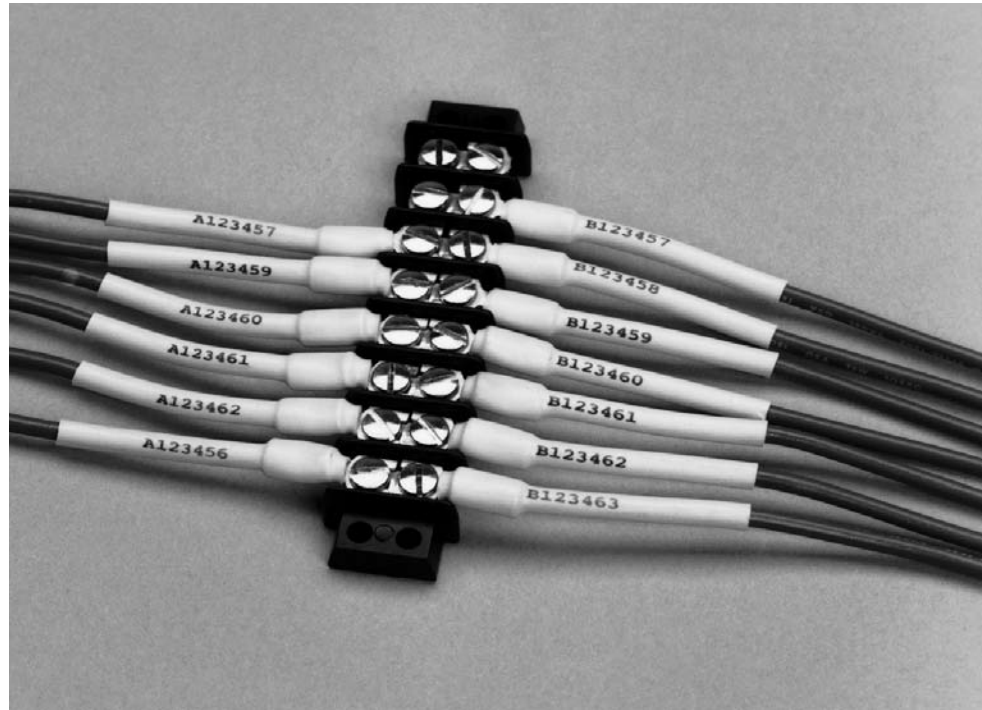


RNF-100

Flexible, Flame-Retardant, General Purpose, Polyolefin Tubing

Product Facts

- 2:1 shrink ratio
- Superior abrasion and solvent resistance when compared with that of many flexible, general purpose polyolefin tubings
- Excellent physical, chemical, and electrical properties that meet or exceed industrial and military standards for highly reliable, general purpose tubing
- Flexible; conforms to irregular shapes
- Flame-retardant (colors only)
- Wide range of sizes and colors
- RoHS compliant



Applications

Designed to provide superior mechanical (abrasion, cut-through, and strain relief), thermal, and fluid-resistance performance in demanding environments. Widely used to provide insulation and strain relief of wire terminations and connections. Used for jacketing wire bundles and light-duty harnesses where superior abrasion resistance is a plus. Also used to identify and color-code electrical connections and wire bundles.

Installation

Minimum shrink temperature: 95°C [203°F]
Minimum full recovery temperature: 121°C [250°F]

Operating Temperature Range

-55°C to 135°C
[-67°F to 275°F]

Specifications/Approvals

Series	UL	CSA	Military	Industry	Raychem
RNF-100 Type 1 (colors)	E35586 600 V, 125°C	LR31929 600 V, 125°C	AMS-DTL-23053/5*, Class 1 Def. Stan. 59-97 Type 2B	VDE 0341 Pt 9005 Type A and B	RT-350, Type 1 RK-6001
RNF-100 Type 2 (clear)	—	—	AMS-DTL-23053/5*, Class 2 VG 95343 Pt 5 Type B	—	RT-350, Type 2 RK-6001

*Formerly MIL-I-23053/5 and MIL-DTL-23053/5.

Available in:	Americas	Europe	Asia Pacific
	■	■	■

RNF-100 (Continued)

Product Dimensions

Size	Inside Diameter		Recovered Wall Thickness**
	Minimum Expanded as Supplied	Maximum Recovered After Heating	After Heating
3/64	1.2 [0.046]	0.6 [0.023]	0.40 ± 0.08 [0.016 ± 0.003]
1/16	1.6 [0.063]	0.8 [0.031]	0.43 ± 0.08 [0.017 ± 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]	0.51 ± 0.08 [0.020 ± 0.003]
1/4	6.4 [0.250]	3.2 [0.125]	0.64 ± 0.08 [0.025 ± 0.003]
3/8	9.5 [0.375]	4.8 [0.187]	0.64 ± 0.08 [0.025 ± 0.003]
1/2	12.7 [0.500]	6.4 [0.250]	0.64 ± 0.08 [0.025 ± 0.003]
3/4	19.1 [0.750]	9.5 [0.375]	0.76 ± 0.08 [0.030 ± 0.003]
1	25.4 [1.000]	12.7 [0.500]	0.89 ± 0.12 [0.035 ± 0.005]
1 1/4	31.8 [1.250]	15.9 [0.625]	1.02 ± 0.15 [0.040 ± 0.006]
1 1/2	38.1 [1.500]	19.1 [0.750]	1.02 ± 0.15 [0.040 ± 0.006]
2	50.8 [2.000]	25.4 [1.000]	1.14 ± 0.16 [0.045 ± 0.007]
3	76.2 [3.000]	38.1 [1.500]	1.27 ± 0.20 [0.050 ± 0.008]
4	101.6 [4.000]	50.8 [2.000]	1.40 ± 0.23 [0.055 ± 0.009]
5	127.0 [5.000]	63.5 [2.500]	1.52 ± 0.23 [0.060 ± 0.009]

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

Ordering Information

Color	Standard***	Black (-0, BK), white (-9, WH), red (-2, RD), blue (-6, BU), yellow (-4, YO), green (-5, GN), clear (-X, CL)
	Nonstandard	Brown (-1, BN), orange (-3, OR), violet (-7, VT), gray (-8, GY)
Size selection	Always order the largest size that will shrink snugly over the component to be covered. Special order sizes are available upon request	
Standard packaging****	On spools or in 1.2-meter [4-foot] lengths.	
Ordering description*****	Specify product name, size and color (for example, RNF-100 1/4-0 [Europe] or RNF-100 1/4-BK [Americas]).	

***Green (-5, GN) is nonstandard in all sizes in Europe, and nonstandard in sizes 1-1/4 through 5-inches in Americas.

****Available in the convenient Mini-Spool packaging/dispensing system, for sizes 3/64" up to 1".

*****Europe only. For supply to MIL, Def Stan and BS add -MS, -DS or -BS to ordering description.

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)



Size	Inside diameter		Wall thickness		Size	Inside diameter		Wall thickness					
	D (min.) Expanded as supplied	d (max.) Recovered after heating	W Recovered after heating*	d (max.) Recovered after heating		D (min.) Expanded as supplied	d (max.) Recovered after heating	W Recovered after heating**					
3/64	1.2	0.046	0.6	0.023	0.40 ± 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	Standard	Black (all sizes); clear, white, red, blue, green, and yellow (3/64" through 3")
	Nonstandard	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

			Requirement		
	Property	Unit	Type 1 (colors)	Type 2 (clear)	Method of test
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 (<i>10.3</i>) minimum	1500 (<i>10.3</i>) 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 ⁴ (<i>172</i>) maximum	2.5 X 10 ⁴ (<i>172</i>) maximum	ASTM D 2671
	Specific gravity		1.35 maximum	1.0 maximum	ASTM D 2671
	Low temperature flexibility (4 hours at -55°C/-67°F)		No cracking	No cracking	AMS-DTL-23053
	Heat shock (4 hours at 250°C/482°F)		No dripping, flowing, or cracking	No dripping, flowing, or cracking	AMS-DTL-23053
	Heat resistance (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 (48 hours at 175°C/347°F)		MIL-STD-104		ASTM D 2671
	Electrical	Dielectric strength	volts/mil (<i>volts/mm</i>)	500 (<i>19,680</i>) minimum	500 (<i>19,680</i>) minimum
Volume resistivity		ohm-cm	10 ¹⁴ minimum	10 ¹⁶ minimum	ASTM D 2671
Chemical	Copper mirror corrosion (16 hours at 175°C/347°F)		No removal of copper	No removal of copper	ASTM D 2671 Procedure A
	Copper contact corrosion (168 hours at 160°C/320°F)		No pitting or blackening of copper	No pitting or blackening of copper	ASTM D 2671 Procedure B
	Copper stability (16 hours at 160°C/320°F)		No brittleness, glazing, cracking, or severe discoloration of tubing	No brittleness, glazing, cracking, or severe discoloration of tubing	ASTM D 2671 Procedure B
	Followed by test for:				
	Ultimate Elongation	percent	200 minimum	200 minimum	ASTM D 2671
	Flammability		Self-extinguishing within 1 minute, 25% maximum flag burn		ASTM D 2671 Procedure B
	Fungus resistance		Rating of 1 or less	Rating of 1 or less	ASTM G 21
	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 100/300 (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>)	1000 (<i>6.9</i>) minimum	1000 (<i>6.9</i>) 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.

Tyco Electronics Corporation

300 Constitution Drive
Menlo Park, CA 94025-1164
USA
Tel: (800) 926-2425 (US & Canada)
Tel: +1 (650) 361-3860 (All other countries)

Faraday Road
Dorcan, Swindon, SN3 5HH
United Kingdom
Tel: +44 1793 528171

3816 Noborito, Tama-ku
Kawasaki, Kanagawa 214-8533
Japan
Tel: +81 44 900 5102

Asia Pacific Headquarters
26 Ang Mo Kio, Industrial Park 2
Singapore 569507
Tel: +65 4866 151

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