

Small diameter, high shrink ratio, heat-shrinkable tubing

MicroFit tubing is micro-sized, heat-shrinkable tubing that offers a high shrink ratio (up to 3:1) and fits a range of diameters from .007" to .045". It is offered in a variety of materials including two medical-grade formulations from our Altera line of medical-grade, heat-shrinkable tubing products.

MicroFit tubing provides electrical insulation, mechanical protection, and strain relief in the smaller, more compact medical devices and commercial electronics products manufactured today. MicroFit tubing's high shrink ratio eases installation since the tubing's diameter is large enough to slide easily over the micro-sized substrate.

Yet, upon heating, the same tubing shrinks to fit tightly on a wide range of substrate diameters.

MicroFit tubing is offered in three materials: RW-175, MT1000, and MT2000. MT1000 and MT2000 meet the requirements of U.S. Pharmacopeia (USP) Class VI.

RW-175 and MT1000 tubings utilize a tough semirigid fluoropolymer. They are especially suitable for applications requiring high-temperature performance, outstanding resistance to abrasion and cut-through, and excellent resistance to a variety of fluids. RW-175 meets NASA requirements for

low-outgassing materials. MT1000 tubing may be sterilized by radiation, ethylene oxide, steam, and dry heat with no significant change in physical properties.

MT2000 tubing is made from a tough, modified polyolefin that offers flexibility, lubricity, and good electrical insulation performance. MT2000's low shrink temperature enables the tubing to shrink faster than other materials with similar attributes, thereby reducing the risk of damage to temperature-sensitive substrates. MT2000 tubing may be sterilized by gamma radiation or ethylene oxide with no significant change in physical properties.

**Temperature rating**

**RW-175, MT1000**

Full recovery temperature:	175°C
Continuous operating temperature:	-55°C to 175°C
Recommended maximum temperature for use as a primary insulator:	135°C

**MT2000**

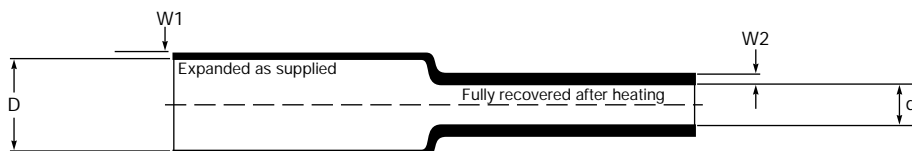
Full recovery temperature:	140°C
Continuous operating temperature:	-40°C to 105°C

**Specifications\***

Type	Raychem	Material	Master File Number
RW-175	RW-175 MicroFit SCD		
MT1000, MT2000	Altera MicroFit SCD	USP Class VI	MAF-444 (MT1000), MAF-727 (MT2000)

\*When ordering, always specify latest issue.

**Dimensions (millimeters/inches)**



Part number	Inside diameter		Wall thickness	
	D (min.) Expanded as supplied	d (max.) Recovered after heating	W1 As supplied (nominal)	W2 (max.) Recovered after heating****
MFT**-No. 1-***	0.356 0.014	0.178 0.007	0.076 0.003	0.127 0.005
MFT**-No. 2-***	0.610 0.024	0.305 0.012	0.064 0.0025	0.152 0.006
MFT**-No. 33-***	1.143 0.045	0.432 0.017	0.064 0.0025	0.118 0.007
MFT**-No. 65-***	0.635 0.025	0.254 0.010	0.127 0.005	0.330 0.013

\*\*Replace double asterisk with material number: RW-175, MT1000 or MT2000 \*\*\*Replace triple asterisk with color-code number. \*\*\*\*Wall thickness will be less if tubing recovery is restricted during shrinkage.

**Ordering information**

Colors	RW-175, MT1000	MT2000
Standard	Clear	Black, clear
Nonstandard	Black	White, red, yellow, blue, orange
Size selection	Always order the largest size that will shrink snugly over the component being covered. A variety of special order sizes may be made available upon request.	
Standard packaging	In 4-foot lengths (RW-175); on plastic spools, double-bagged (MT1000, MT2000)	
Ordering description	Specify product name, material type, size, and color; for example, MFT-MT2000-No.1-0 (0=Black).	

**RW-175 MicroFit specification values**

	Property	Unit	Requirement	Method of test
<b>Physical</b>	Dimensions	mm ( <i>inches</i> )	See reverse	ASTM D 2671
	Tensile strength	psi ( <i>MPa</i> )	5000 ( <i>34.5</i> ) minimum	ASTM D 2671 2" per minute
	Ultimate elongation	percent	150 minimum	ASTM D 2671 2" per minute
	Secant modulus (expanded)	psi ( <i>MPa</i> )	1 x 10 <sup>5</sup> ( <i>690</i> ) minimum	ASTM D 2671
	Heat shock (4 hours at 300°C/572°F)		No dripping, flowing or cracking	AMS-DTL-23053, 5/16" mandrel
	Low temperature flexibility (4 hours at -55°C/-67°F)		No cracking after wrapping on mandrel	ASTM D 2671 Procedure C 5/16" mandrel
<b>Electrical</b>	Dielectric strength	volts/mil ( <i>volts/mm</i> )	800 ( <i>31,500</i> ) minimum	ASTM D 2671

**Altera MicroFit specification values**

	Property	Unit	Requirement	Method of test	
<b>Physical</b>	Dimensions	mm ( <i>inches</i> )	See reverse	ASTM D 2671	
	Tensile strength MT1000 MT2000	psi ( <i>MPa</i> )	5000 ( <i>34.5</i> ) minimum 3000 ( <i>20.7</i> ) minimum	ASTM D 2671 2" per minute	
	Ultimate elongation MT1000 MT2000	percent	150 minimum 200 minimum	ASTM D 2671 2" per minute	
	Secant modulus (expanded) MT1000 MT2000	psi ( <i>MPa</i> )	1.0 X 10 <sup>5</sup> ( <i>690</i> ) minimum 5.0 X 10 <sup>4</sup> ( <i>344</i> ) minimum	ASTM D 2671	
	<b>Electrical</b>	Dielectric strength MT1000 MT2000	volts/mil ( <i>volts/mm</i> )	800 ( <i>31,500</i> ) minimum 1000 ( <i>39,360</i> ) minimum	ASTM D 2671
		Dielectric withstand 3000 V, 60 Hz	seconds	60 minimum	ASTM D 2671
<b>Chemical</b>	Heavy metals analysis Cadmium Mercury Lead Bismuth Antimony	ppm	1 maximum (total of all metals)	USP XXII Physiochemical Tests - Plastics (See note below)	

Note: Sample preparation and extraction is per USP XXII. Metals analysis may be colorimetric as described in USP XXII or by equivalent quantitative analytical method.

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

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