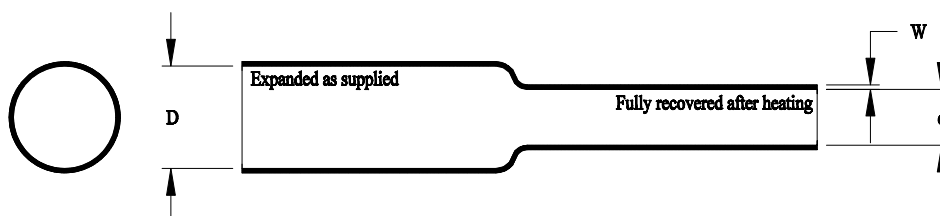


Altera™
MT1000
Semi-Rigid, Modified Polyvinylidene Fluoride,
Heat Shrinkable Tubing



This specification covers the requirements for one type of single wall, electrical insulating, extruded tubing whose diameter will reduce to a predetermined size upon application of heat in excess of 175° C (347° F).

The tubing is fabricated from modified polyvinylidene fluoride crosslinked by irradiation. It shall be homogenous and essentially free from flaws, defects, pinholes, seams, cracks or inclusions.

The tubing is fabricated from materials which meet the requirements of U.S. Pharmacopeia Class VI Plastics. Color shall be translucent unless otherwise specified.

Table 1: Dimensions

Size	As Supplied		Recovered							
	Inside Diameter Minimum (D)		Inside Diameter Maximum (d)		Wall Thickness(Inches, <i>Millimeters</i>) (W)					
	in.	mm.	in.	mm.	Minimum	Maximum	Nominal			
3/64	.046	1.17	.023	0.58	.008	0.20	0.12	0.31	.010	0.25
1/16	.063	1.60	.031	0.79	.008	0.20	0.12	0.31	.010	0.25
3/32	.093	2.36	.046	1.17	.009	0.20	0.12	0.31	.010	0.25
1/8	.125	3.18	.062	1.58	.009	0.20	0.12	0.31	.010	0.25
3/16	.187	4.75	.093	2.36	.009	0.20	0.12	0.31	.010	0.25
1/4	.250	6.35	.125	3.18	.011	0.28	0.15	0.38	.013	0.33
3/8	.375	9.53	.187	4.75	.011	0.28	0.15	0.38	.013	0.33
1/2	.500	12.70	.250	6.35	.011	0.28	0.15	0.38	.013	0.33
3/4	.750	19.05	.375	9.53	.014	0.36	0.20	0.51	.017	0.43
1	1.000	25.40	.500	12.70	.016	0.41	0.22	0.56	.019	0.48
1-1/2	1.500	38.10	.750	19.05	.017	0.43	0.23	0.58	.020	0.51
2	2.000	50.80	1.000	25.40	.017	0.43	0.23	0.58	.020	0.51

Table 2: Properties

Property	Unit	Requirement	Test Method
PHYSICAL			
* Dimensions	Inches (<i>mm</i>)	In accordance with Table 1	
* Longitudinal Change	Percent	+0, -10 maximum	ASTM D 2671
* Concentricity as supplied	Percent	70 minimum	ASTM D 2671
* Tensile Strength	PSI (<i>MPa</i>)	5000 minimum (<i>34.5</i>)	ASTM D 2671,
* Ultimate Elongation	Percent	150 minimum	2"/minute
* Secant Modulus (expanded)	PSI (<i>MPa</i>)	1 x 10 ⁵ minimum (<i>690</i>)	ASTM D 2671
Heat Resistance 168 hours at 250 ± 5°C (482 °F) Followed by test for: Ultimate Elongation			ASTM D 2671, 2"/minute
	Percent	50 minimum	
ELECTRICAL			
Dielectric Strength Sizes 3/64 through 1/2 Sizes 3/4 through 2	Volts/mil (<i>volts/mm</i>)	800 minimum (<i>31,500</i>) 600 minimum (<i>23,600</i>)	ASTM D 2671
Dielectric Withstand 3000V, 60 Hz	sec	60 minimum	ASTM D 2671
CHEMICAL			
Fluid Resistance 24 hours at 23 ± 3°C (<i>73 ± 5°F</i>) Isopropyl Alcohol 5% Saline Solution Cidex** Followed by tests for: Dielectric Strength Sizes 3/64 through 1/2 Sizes 3/4 through 2 Tensile Strength			ASTM D 2671
	Volts/mil (<i>volts/mm</i>)	700 minimum (<i>27,6000</i>) 500 minimum (<i>19,700</i>)	
	PSI (<i>MPa</i>)	5000 minimum (<i>34.5</i>)	ASTM D 2671, 2"/minute
Heavy Metals Analysis Cadmium Mercury Lead Bismuth Antimony	ppm	1 maximum (total of all metals)	USP XXII Physicochemical Tests-Plastics (Note 1)

* Denotes lot acceptance test

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Note 1: Sample preparation and extraction is per USP XXII. Metals analysis may be colorimetric as described in USP XXII or by equivalent quantitative analytical method.

Raychem reserves the right to amend this specification at any time. Users should evaluate the suitability of the product for their application.

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