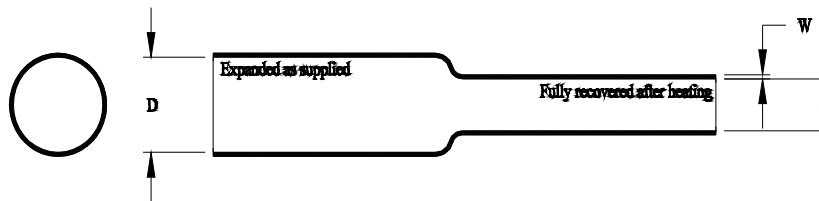


**Altera™  
MT5000**  
**Flexible, Modified Polyolefin,  
Heat - Shrinkable Tubing**



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 110°C (230°F).


The tubing is fabricated from modified polyolefin 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 black or clear unless otherwise specified.

**Table 1: Dimensions**

| Size  | As Supplied                 |       | Recovered                   |       |   |      |         |      |         |      |
|-------|-----------------------------|-------|-----------------------------|-------|---|------|---------|------|---------|------|
|       | Inside Diameter Minimum (D) |       | Inside Diameter Maximum (d) |       | Wall Thickness(Inches, Millimetres) (W) |      |         |      |         |      |
|       | in.                         | mm.   | in.                         | mm.   | Minimum                                 |      | Maximum |      | Nominal |      |
| 3/64  | .046                        | 1.17  | .023                        | 0.58  | .013                                    | 0.33 | .019    | 0.48 | .016    | 0.40 |
| 1/16  | .063                        | 1.60  | .031                        | 0.79  | .014                                    | 0.35 | .020    | 0.50 | .017    | 0.43 |
| 3/32  | .093                        | 2.36  | .046                        | 1.17  | .017                                    | 0.43 | .023    | 0.58 | .020    | 0.50 |
| 1/8   | .125                        | 3.18  | .062                        | 1.58  | .017                                    | 0.43 | .023    | 0.58 | .020    | 0.50 |
| 3/16  | .187                        | 4.75  | .093                        | 2.36  | .017                                    | 0.43 | .023    | 0.58 | .020    | 0.50 |
| 1/4   | .250                        | 6.35  | .125                        | 3.18  | .022                                    | 0.56 | .028    | 0.71 | .025    | 0.64 |
| 3/8   | .375                        | 9.53  | .187                        | 4.75  | .022                                    | 0.56 | .028    | 0.71 | .025    | 0.64 |
| 1/2   | .500                        | 12.70 | .250                        | 6.35  | .022                                    | 0.56 | .028    | 0.71 | .025    | 0.64 |
| 3/4   | .750                        | 19.05 | .375                        | 9.53  | .027                                    | 0.69 | .033    | 0.84 | .030    | 0.76 |
| 1     | 1.000                       | 25.40 | .500                        | 12.70 | .030                                    | 0.76 | .040    | 1.01 | .035    | 0.88 |
| 1-1/2 | 1.500                       | 38.10 | .750                        | 19.05 | .034                                    | 0.86 | .046    | 1.17 | .040    | 1.01 |
| 2     | 2.000                       | 50.80 | 1.000                       | 25.40 | .038                                    | 0.96 | .052    | 1.32 | .045    | 1.14 |

**Specification Control Drawing**

|  |                |                |  |             |                  |
|--|----------------|----------------|--|-------------|------------------|
|  <div>TE Connectivity<br/>300 Constitutional Drive<br/>Menlo Park, CA 94025 USA</div> |                | <b>Raychem</b> | Title: <b>Altera™ MT5000</b><br><b>Flexible, Modified Polyolefin,<br/>Heat - Shrinkable Tubing</b> |             |                  |
| TE Connectivity reserves the right to amend this drawing at any time. Users should evaluate the suitability of the product for their application                         |                | Document No :  | <b>MT5000</b>  |             |                  |
| Cage Code:<br>06090  | Scale:<br>None | Size:<br>A     | Rev. Date:<br>15-Apr-11  | Rev.:<br>B1 | Sheet:<br>1 of 2 |

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**Table 2: Properties**

| Property   | Unit                             | Requirement                                  | Test Method   |
|--|----------------------------------|--|---|
| <b>Physical</b>  |                                  |  |   |
| * 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> )               | 1800 minimum ( <i>12.4</i> )                 | ASTM D 2671,  |
| * Ultimate Elongation  | Percent                          | 200 minimum                                  | 20"/minute  |
| Secant Modulus   | PSI ( <i>MPa</i> )               | 2.5 x 10 <sup>4</sup> maximum ( <i>172</i> ) | ASTM D 2671   |
| Heat Resistance<br>168 hours at 125°C (257°F)<br>Followed by test for:<br>Ultimate Elongation  |                                  |  | ASTM D 2671,  |
|  | Percent                          | 100 minimum                                  | 20"/minute  |
| <b>Electrical</b>  |                                  |  |   |
| Dielectric Strength  | Volts/mil<br>( <i>volts/mm</i> ) | 500 minimum ( <i>19.680</i> )                | ASTM D 2671   |
| Dielectric Withstand<br>3000V, 60 Hz   | sec                              | 60 minimum                                   | ASTM D 2671   |
| <b>Chemical</b>  |                                  |  |   |
| Fluid Resistance<br>24 hours at 23 ± 3°C (77 ± 5°F)<br>Isopropyl Alcohol<br>5% Saline Solution<br>Cidex**<br>Followed by tests for:<br>Dielectric Strength |                                  |  | ASTM D 2671   |
|  | Volts/mil<br>( <i>volts/mm</i> ) | 500 minimum ( <i>19,680</i> )                | ASTM D 2671   |
| Tensile Strength   | PSI ( <i>MPa</i> )               | 1800 minimum ( <i>12.4</i> )                 | ASTM D 2671   |
| Heavy Metals Analysis<br>Cadmium<br>Mercury<br>Lead<br>Bismuth<br>Antimony   | ppm                              | 1 maximum<br>(total of all metals)           | USP XXII<br>Physicochemical<br>Tests-Plastics<br>(Note 1) |

\* Denotes lot acceptance test

\*\*Trademark of Johnson & Johnson Company

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

|                         |             |                               |                  |
|-------------------------|-------------|-------------------------------|------------------|
| Rev. Date:<br>15-Apr-11 | Rev.:<br>B1 | Document No.<br><b>MT5000</b> | Sheet:<br>2 of 2 |
|-------------------------|-------------|-------------------------------|------------------|

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