

# 3M™ Heat Shrink Tubing MW

## Adhesive-Lined, 2.5:1, Semi-Rigid, Polyolefin

Data Sheet

September 2011

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### Description

3M™ Heat Shrink Tubing MW is a semi-rigid, 110°C heat-shrinkable polyolefin tubing that is co-extruded and selectively cross-linked to provide an integral, meltable inner wall.

When heated in excess of 135°C (275°F), the inner meltable wall of the tubing is simultaneously softened and forced by the shrink action into intimate contact with all underlying surfaces, interstices and small voids. Upon cooling, the MW tubing provides a tough protective and insulating barrier, highly resistant to penetration by moisture and the introduction of chemicals and solvents. Adhesive reflow will occur at temperatures above 80°C (176°F).

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### Agency Approvals & Self Certifications

Meets requirements of:

- SAE-AMS-DTL-23053/4, Class 1\*
- AMS-3634
- UL Listed, UL File E-157227

**\*Formerly MIL-DTL-23053/4, Class 1**

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### Applications

Applications for MW tubing include braided-shield pigtails, electrical wiring, mechanical assemblies, electronic components, electrical wire splices, breakouts, connections, solder joints, delicate wire terminations, end-sealing of electrical cables and rigid tubings.

For installation that may require rework, retrofit or repair in the field, MW tubing offers the extra advantage of easy removability. For circuit and component identification purposes, the tubings readily accept marking by means of print-wheel or hot-stamp techniques.

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### Shrink Ratio

MW tubing has a 2.5:1 shrink ratio. When fully recovered, the tubing will shrink 40% of its original diameter. The recovered wall thickness of the tubing is proportional to the degree of recovery.

The operating temperature range is from -55°C (-67°F) to 110°C (230°F), with a shrink temperature minimum of 135°C (275°F), and will withstand higher operating temperatures for brief periods.

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## Standard Sizes and Dimensions

| Ordering Size<br>(Nominal) | Expanded I.D.<br>(Minimum) |         | Recovered I.D.<br>(Maximum) |         | Total Recovered Wall Thickness<br>(Nominal) |        | Meltable Recovered Wall Thickness |        |
|----------------------------|----------------------------|---------|-----------------------------|---------|---------------------------------------------|--------|-----------------------------------|--------|
|                            | In.                        | (mm)    | In.                         | (mm)    | In.                                         | (mm)   | In.                               | (mm)   |
| 1/8                        | .125                       | (3,18)  | .023                        | (0,58)  | .038                                        | (0,97) | .020                              | (0,51) |
| 3/16                       | .187                       | (4,75)  | .060                        | (1,52)  | .043                                        | (1,09) | .025                              | (0,64) |
| 1/4                        | .250                       | (6,35)  | .080                        | (2,03)  | .047                                        | (1,19) | .027                              | (0,69) |
| 3/8                        | .375                       | (9,53)  | .13                         | (3,43)  | .050                                        | (1,27) | .030                              | (0,76) |
| 1/2                        | .500                       | (12,70) | .195                        | (4,95)  | .055                                        | (1,40) | .035                              | (0,89) |
| 3/4                        | .750                       | (19,05) | .313                        | (7,95)  | .065                                        | (1,65) | .040                              | (1,02) |
| 1                          | 1.000                      | (25,40) | .400                        | (10,16) | .075                                        | (1,91) | .040                              | (1,02) |

## Typical Properties

Not for specifications. Values are typical, not to be considered minimum or maximum. Properties measured at room temperature 73°F (23°C) unless otherwise stated.

| Physical Property                                               | Typical Value<br>US units (metric) |
|-----------------------------------------------------------------|------------------------------------|
| Tensile Strength                                                | 2200 PSI                           |
| Ultimate Elongation                                             | 400%                               |
| Longitudinal Change                                             | +1, -10%                           |
| Secant Modulus (2%)                                             | 27,000 PSI                         |
| Heat Aging (outer wall only)<br>168 hrs @ 175°C                 | Elongation 175%                    |
| Heat shock (outer wall only)<br>4 hrs @ 250 °C                  | No dripping, flowing, cracking     |
| Low Temperature Flexibility (outer wall only)<br>4 hrs @ -55 °C | No cracking                        |

| Electrical Property | Typical Value<br>US units (metric) |
|---------------------|------------------------------------|
| Dielectric Strength | 900 V/mil                          |
| Volume Resistivity  | 10 <sup>15</sup> ohm/cm            |

| Chemical Property                                                        | Typical Value<br>US units (metric) |
|--------------------------------------------------------------------------|------------------------------------|
| Corrosion Resistance                                                     | Non-corrosive                      |
| Fungus Resistance                                                        | Non-nutrient                       |
| Water Absorption                                                         | 0.1%                               |
| Fluid Resistance<br>JR4 Skydrol 600 Solution Gasoline<br>Hydraulic Fluid | >1500 PSI @ V/mil<br>@ 600 V/mil   |

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## Standard Colors

Black

Also available in Blue, Clear, Red, White and Yellow. Price, MOQ and Lead Time will vary for these colors. Please contact Local Sales Representative or Customer Service Representative for more information.

NOTE: The clear tubing is not flame retardant or UL listed.

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## Shelf Life & Storage

3M™ Heat Shrink Tubing MW has a 10-year shelf life from date of manufacture when stored in a humidity controlled storage (10°C/50°F to 27°C/80°F and <75% relative humidity).

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## Availability

### Standard Packaging

Four-foot lengths. Cut pieces and other lengths (including spooled) are available subject to factory quotation.

Please contact your local distributor; available from 3M.com/oem [Where to Buy] or call 1-800-676-8381.

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