

# Heat Shrink Tubes

## 3M™ MDT-A – Medium Wall Polyolefin with Hot Melt Adhesive

### 1. Product description

3M™ MDT-A is a medium wall Heat Shrink Tubing range, designed to provide reliable performance for electrical splices, connections and terminations up to 1.0 kV as well as mechanical and environmental protection. 3M™ MDT-A Heat Shrink Tubes have a RoHS Halogen Free Polyolefin crosslinked outer wall and have a factory-applied adhesive inner layer.



### 2. Typical properties

#### 2.1 Technical information

Physical properties	Value	Requirement	Test method
Colour	Black		
Shrink ratio	up to 4.5:1		
Tensile strength	22 N/mm <sup>2</sup>	>13	IEC 60684-2-19.1
Elongation at break	650%	>350	IEC 60684-2-19.2
Longitudinal change	-10-0%	-15<>+5	IEC 60684-2-9
Concentricity supplied (total wall)	50%	>50	IEC 60684-2-3
Concentricity fully recovered (outer wall)	85%	>85	IEC 60684-2-3
Secant Modulus	85 N/mm <sup>2</sup>	80<>160	IEC 60684-2-19.4
Relative Density	1.01 g/cm <sup>3</sup>	-	IEC 60684-2-4

Thermal tests			
Continuous Operating Temperature	-55<>130°C		
Shrink Temperature	135<>280°C		
Heat Shock		4 hrs @ 200°C	IEC 60684-2-6
Tensile strength	20 N/mm <sup>2</sup>	>10	IEC 60684-2-19
Elongation at break	650%	>200	IEC 60684-2-19
Low Temperature Flexibility	Pass	4 hrs at -40°C No cracking after bending	IEC 60684-2-14
Copper Corrosion	Pass	No corrosion	IEC 60684-2-33
Flammability	Not self-extinguishing		IEC 60684-2-26

Electrical tests	Value	Requirement	Test method
Volume resistivity	10 <sup>13</sup> Ωm	>10 <sup>12</sup> room temp.	IEC 60684-2-23
Dielectric strength	16 kV/mm	exp ID 10-25 >12 6-50 >10 51-120 >8 >=121 >6	IEC 60684-2-21

Chemical tests			
Chemical resistance			
Insulating oil (mineral based) at 23°C Cleaning fluid (Isopropyl alcohol) at 23°C Water (de-ionised) at 85°C	Pass N/mm <sup>2</sup> / %	Tensile/Elongation >10 / >20	IEC 60684-2-36

<sup>1</sup> Outer wall only

### 3. User information

#### 3.1 Selection guide

ID		Tube wall thickness	Adhesive wall thickness
Supplied min. (mm)	Recovered max. (mm)	Recovered (restricted) min. (mm)	Recovered min. (mm)
12.0	3.0	2.3	0.7
19.0	6.0	3.2	0.8
27.0	7.5	3.3	0.8
32.0	7.5	3.3	0.8
38.0	12.0	3.3	0.8
50.0	18.0	3.3	0.8
70.0	26.0	3.3	0.8
90.0	36.0	3.3	0.8
120.0	40.0	3.3	0.8

#### 3.2 Agency Approvals and Self Certifications

- ▶ Lloyd's Register Certificate 95/30032
- ▶ Halogen free

#### 3.3 Shelf Life and Storage

This product has a 5-year shelf life from date of manufacture when stored in a humidity controlled area (10°C to 27°C and <75% relative humidity).

### 4. Additional Information

To request additional product information, see address below.

#### Important notice

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluates the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method or application.

Values presented have been determined by standard test methods and are average values not meant to be used for specification purposes.

All questions of warranty and liability relating to 3M products are governed by the terms of the respective sale subject, where applicable, to the prevailing law.

#### Electrical Markets Division

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