

## 3M™ HDT-A Heat Shrink Tubing, Polyolefin with hot melt adhesive

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### Product Description

3M™ HDT-A is a heavy wall, Halogen Free, Heat Shrink Tubing range, designed to provide reliable performance for electrical splices, connections, and terminations up to 1kV as well as mechanical and environmental protection. HDT-A Heat Shrink Tubes have a flame retardant polyolefin crosslinked outer wall and have a factory-applied adhesive inner layer. The product is RoHS Compliant.

### Product Selection

ID		Tube Wall Thickness	Adhesive Wall Thickness
(mm)		(mm)	(mm)
Supplied Min.	Recovered Max.	Recovered (Average)	Recovered (Average)
12.0	3.0	2.0	0.50
19.0	6.0	2.5	0.85
30.0	8.0	4.0	0.85
38.0	12.0	4.0	0.85
48.0	15.0	4.0	0.85
55.0	15.0	4.0	0.85
65.0	16.0	4.0	0.85
85.0	26.0	4.0	0.85
95.0	26.0	4.0	0.85
115.0	37.0	4.5	0.90
128.0	37.0	4.5	0.90
135.0	37.0	4.5	0.90

### Typical Properties

Physical Properties	Value	Requirement	Test Method
Colour	Black		
Shrink ratio	up to 4.5:1		
Tensile strength	10-13 N/mm <sup>2</sup>	>10	IEC 60684-2-19.1
Elongation at break	300-500%	>250	IEC 60684-2-19.2
Longitudinal change	-10<>+0%	-15<>+5	IEC 60684-2-9
Concentricity supplied (total wall)	75%	>50	IEC 60684-2-3

Concentricity fully recovered (outer wall)	85%	>85	IEC 60684-2-3
Secant Modulus	90 N/mm <sup>2</sup>	80<>160	IEC 60684-2-19.4
Relative Density <sup>(1)</sup>	1.24-1.34 g/cm <sup>3</sup>	-	IEC 60684-2-4
<b>Thermal Tests</b>			
Continuous Operating Temperature <sup>(1)</sup>	-40<>110°C		
Shrink Temperature	135<>280°C		
Heat Shock		4 hrs @ 200°C	IEC 60684-2-6
Tensile strength Elongation at break	10-13 N/mm <sup>2</sup> 300-500%	>10 >200	IEC 60684-2-19 IEC 60684-2-19
Low Temperature Flexibility	Pass	4 hrs @ -40°C No cracking after bending	IEC 60684-2-14
Copper Corrosion	Pass	No Corrosion	IEC 60684-2-33
Flammability <sup>(1)</sup>	Pass	C (30s, 75 mm)	IEC 60684-2-26
<b>Electrical Tests</b>			
Volume resistivity	10 <sup>14</sup> Ωm	>10 <sup>12</sup>	IEC 60684-2-23
Breakdown voltage	11 kV/mm	explD 10-25 >12 26-50 >10 51-120 >8 >=121 >6	IEC 60684-2-21
<b>Chemical Tests</b>			
Chemical Resistance		-	
Insulating oil (mineral based) @ 23°C Cleaning fluid (Isopropyl alcohol) @ 23°C Water (de-ionized) @ 85°C	Pass	Tensile Strength >10N/mm <sup>2</sup> Elongation >200%	IEC 60684-2-36

<sup>1)</sup> Outer wall only

### Agency Approvals & Self Certifications

- Halogen Free
- RoHS Compliant

### Shelf Life & Storage

This product has a 5 year shelf life from date of manufacture when stored in a humidity controlled storage (-5°C to +25°C and <75% relative humidity).

### Safety and Handling

3M provides its customers a separate MSDS for the Heat Shrink tubing to cover potential health effects, safe handling, storage, use and disposal information. 3M strongly encourages its customers to review the MSDS on its products prior to their use. Avoid skin contact with hot material.

## Product Stewardship

3M has a fundamental concern for all who make, distribute and use its products, and for the environment in which we live. This concern is the basis of our philosophy and policies by which we assess the health and environmental information on our products and then take the appropriate steps to protect employee, the public health and the environment.

## Customer Notice

3M encourages its customers and potential users of 3M products to review their applications for such products from the standpoint of human health and environmental quality. To help ensure that 3M products are not used in ways for which they were not intended or tested. 3M personnel are available to assist customers in dealing with ecological and product safety considerations. Your 3M sales representative can arrange for the proper contacts.

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