

# 3M™ Portable Labeler Refill Cartridge PLHS

Heat Shrinkable Tubing for use in 3M Portable Labelers PL100, PL150, PL200, and PL300

Data Sheet

August 2012

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**Description** The 3M™ Portable Labeler Refill Cartridge PLHS series is white or yellow (3:1 shrink ratio) polyolefin tubing used for wire identification. The identification marks remain legible even when exposed to typical solvents fuels and oils. The printed tubing meets the mark permanence requirements of MIL-M81531 and MIL-STD-202 both before and after shrinking. It is available in 1/4, 3/8, 1/2, 3/4 and 1 inch.

**Tubing Diameters:**

Size (Lay Flat Width)	As Received Dia. (Max.)	Recovered Dia. (Min.)
1/4 inch	.12 inch	.05 inch
3/8 inch	.20 inch	.08 inch
1/2 inch	.27 inch	.12 inch
3/4 inch	.47 inch	.20 inch

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**Applications** The tubing may be used to provide strain relief and insulation in addition to identification.

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**Agency Approvals & Self Certifications** The tubing meets the performance requirements of:  
MIL-DTL-23053/5 classes 1 & 3

UL Recognized 3M File# E157227 Standard 224  
600 Volt Maximum  
125 Deg C Maximum Temperature Rating

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## 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.

Property	Value	Test Method
<b>General</b>		
Total thickness	Max. .5 mm	Micrometer
Shrink Ratio	3:1	
<b>Physical Properties</b>		
Tensile Strength	10.3 MPa (1500 psi) min.	MIL-DTL-23053, Section 4.6.13
Ultimate Elongation	200% min.	MIL-DTL-23053, Section 4.6.13
Heat Aging 168 hours @ 175 °C (347°F)	Min. 100% ultimate elongation	MIL-DTL-23053, Section 4.6.9
Heat Shock 4 hours @ 250 °C (482°F)	No cracking, dripping or flowing	MIL-DTL-23053, Section 4.6.8

Property	Value	Test Method
<b>Chemical Resistance of Text</b> 24 hours immersion in specific fluids, followed by 20 rubs with a pencil erasure		MIL-M81531
Isopropyl alcohol	<b>Flat Samples</b> No smearing. Print easily legible.	<b>Shrunk Samples</b> Little smearing, but print easily legible.
Gasoline	Little smearing, but print easily legible.	Severe smearing, but print legible
Water	No smearing. Print easily legible.	Little smearing, but print easily legible.
Fuel	Severe smearing, but print legible	Little smearing, but print easily legible.
Ethanol	No smearing. Print easily legible.	No smearing. Print easily legible.
Ethylacetate	Smearing, but print easily legible.	No smearing. Print easily legible.

Property	Value	
<b>Temperature Stability</b>		
Operating temperature range	-55 °C (-67°F) to 135 °C (275°F)	
Minimum recovery temperature	85 °C (185°F)	
Maximum storage temperature	40 °C (104°F)	
<b>Humidity Resistance</b> 30 days at 45 °C (113°F), 85% R.H.	<b>Flat Samples</b> No visible effect	<b>Shrunk Samples</b> No visible effect

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**Typical Properties,  
continued**

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Property	Value	Test Method
<b>Electrical Properties</b> Dielectric Strength	19.7 kV/mm (500 V/mil min.)	ASTM D-2671
<b>Chemical Properties</b> Flammability	No flaming or glowing after 1 minute	ASTM D-2671, Procedure B
	No burning of cotton; no dripping	ASTM D-2671, Procedure C
Corrosive Effect 16 hours @ 175 °C (347°F)	Non-Corrosive (copper mirror)	MIL-DTL-23053, Section 4.6.10.1
	No pitting or blackening (copper mirror)	MIL-DTL-23053, Section 4.6.10.2
<b>Chemical Resistance of Text</b> 3 cycles of 3-minute immersions in specified fluids, followed by 10 rubs with a toothbrush after each Immersion		MIL-Std-202F Method 215J
Isopropyl alcohol	<b>Flat Samples</b> No smearing. Print easily legible.	<b>Shrunk Samples</b> Little smearing, but print easily legible.
Gasoline	Little smearing, but print easily legible.	Severe smearing, but print legible
Water	No smearing. Print easily legible.	Little smearing, but print easily legible.
Fuel	Smearing, but print easily legible.	Little smearing, but print easily legible.
Ethanol	Little smearing, but print easily legible.	No smearing. Print easily legible.
Ethylacetate	Smearing, but print easily legible.	No smearing. Print easily legible.
<b>UV Light Stability – UV Filter</b> 30 days in Suntester (simulates 1 year outdoor exposure)	<b>Flat Samples</b> Moderate discoloration of the tube (yellowing). No visible effect on text.	<b>Shrunk Samples</b> Moderate discoloration of the tube (yellowing). No visible effect on text.
<b>UV Light Stability – Glass Filter</b> 30 days in Suntester (simulates 1 year exposure behind window glass)	<b>Flat Samples</b> Moderate discoloration of the tube (yellowing). No visible effect on text.	<b>Shrunk Samples</b> Moderate discoloration of the tube (yellowing). No visible effect on text.

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<b>Shelf Life &amp; Storage</b>	This product has an 18-month 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).
<b>Availability</b>	Please contact your local distributor; available from 3M.com/electrical [Where to Buy] or call 1-800-245-3573.

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Dymo is manufacture of labelers

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<b>Important Notice</b>	Before utilizing any of 3M's products, you should determine the suitability of the product for your intended use. You assume all risks and liability associated with such use.
<b>Warranty; Limited Remedy; Limited Liability</b>	This product will be free from defects in material and for a period of 30 days from the time of purchase. If this product is defective, your exclusive remedy shall be, at 3M's option, to replace the 3M product or refund the purchase price. Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.

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