

MIL-I-23053/2C
 20 May 1976
~~SUPERSEDING~~
 MIL-I-23053/2B
 4 August 1972

MILITARY SPECIFICATION SHEET

INSULATION SLEEVING, ELECTRICAL, HEAT SHRINKABLE,
 POLYVINYL CHLORIDE, FLEXIBLE, CROSSLINKED AND NON-CROSSLINKED

This specification is approved for use by all Departments
 and Agencies of the Department of Defense.

The complete requirements for procuring the sleeving described
 herein shall consist of this document and the issue in effect
 of MIL-I-23053.

REQUIREMENTS:

Continuous operating temperature range: -20°C (-4°F) to $+105^{\circ}\text{C}$ (221°F).

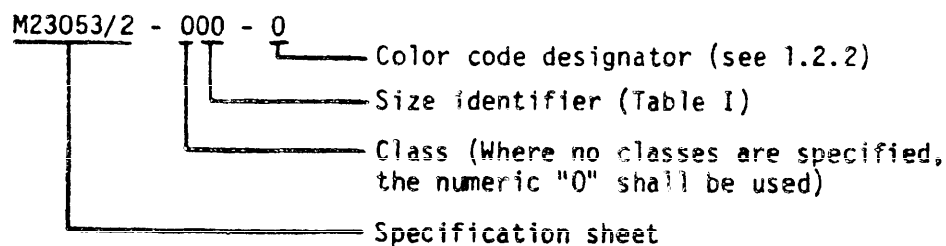
Classification: The heat shrinkable sleeving shall be furnished in the
 following classes, as specified:

Class 1 - Crosslinked
 Class 2 - Non-crosslinked

Color: Class 1 shall be furnished in colors conforming to Class II of
 MIL-STD-104. Class 2 shall be furnished in clear or colors conforming
 to Class II of MIL-STD-104 (see 1.2.2 and 3.5.1.5).

Longitudinal change: Class 1, +1%; Class 2, -25%
 -10

- (C) Military part number: The Military Part Number shall consist of the basic
 number of this specification sheet and dash numbers as shown below:



Example: Class 2, standard wall, clear, 0.750 inch as supplied ID
 sleeving shall be identified as M23053/2-209-C.

- (C) Denotes changes

FSC 5970

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TABLE I. Construction details (inches) 1/

Military Part Number	As supplied	After unrestricted shrinkage	
	I.D. min.	I.D. max.	Wall thickness 2/
<u>Class 1</u>			
M23053/2-101-*	.046	.023	.020 + .003
M23053/2-102-*	.063	.031	.020 + .003
M23053/2-103-*	.093	.046	.020 + .003
M23053/2-104-*	.125	.062	.025 + .003
M23053/2-105-*	.187	.093	.025 + .003
M23053/2-106-*	.250	.125	.025 + .003
M23053/2-107-*	.375	.187	.030 + .005
M23053/2-108-*	.500	.250	.030 + .005
M23053/2-109-*	.750	.375	.035 + .005
M23053/2-110-*	1.000	.500	.040 + .005
M23053/2-111-*	1.500	.750	.045 + .006
M23053/2-112-*	2.000	1.000	.050 + .007
<u>Class 2</u>			
<u>Standard Wall</u>			
M23053/2-201-*	.046	.023	.020 + .003
M23053/2-202-*	.063	.031	.020 + .003
M23053/2-203-*	.093	.046	.020 + .003
M23053/2-204-*	.125	.062	.025 + .003
M23053/2-205-*	.187	.093	.025 + .003
M23053/2-206-*	.250	.125	.025 + .003
M23053/2-207-*	.375	.187	.030 + .005
M23053/2-208-*	.500	.250	.030 + .005
M23053/2-209-*	.750	.375	.035 + .005
M23053/2-210-*	1.000	.500	.040 + .005
M23053/2-211-*	1.500	.750	.045 + .006
M23053/2-212-*	2.000	1.000	.050 + .007
<u>Thin Wall</u>			
M23053/2-213-*	.063	.037	.014 + .003
M23053/2-214-*	.093	.055	.014 + .003
M23053/2-215-*	.125	.075	.014 + .003
M23053/2-216-*	.187	.110	.018 + .003
M23053/2-217-*	.250	.150	.022 + .004
M23053/2-218-*	.375	.225	.022 + .004

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TABLE I. Construction details (inches) 1/ (continued)

Military Part Number	As supplied I.D. min.	After unrestricted shrinkage	
		I.D. max.	Wall thickness 2/
<u>Class 2</u>			
<u>Thin Wall</u>			
M23053/2-219-*	.500	.300	.022 + .004
M23053/2-220-*	.750	.450	.022 + .004
M23053/2-221-*	1.000	.600	.022 + .004
M23053/2-222-*	1.500	.900	.034 + .005
M23053/2-223-*	2.000	1.200	.034 + .005
M23053/2-224-*	3.000	1.800	.034 + .005
M23053/2-225-*	4.000	2.400	.034 + .005
M23053/2-226-*	5.000	3.000	.034 + .005
M23053/2-227-*	6.000	3.600	.034 + .005

1/ Diameter limits for object to be enclosed shall be as recommended in technical data

2/ Wall thickness dimensions are less when shrinkage is restricted.

* - The asterisk in the part number shall be replaced by color code designations (see page 1 for available colors).

Unrestricted shrinkage: Test method 4.6.5; Class 1, $200 \pm 2^{\circ}\text{C}$ ($392 \pm 4^{\circ}\text{F}$) for 5 minutes. Class 2, $150 \pm 2^{\circ}\text{C}$ ($302 \pm 4^{\circ}\text{F}$) for 5 minutes.

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TABLE II. Physical properties 1/

Property	Requirement	Test Procedure and Conditions
<u>As Supplied</u>		
ID, min	Table I	4.6.3
Cold impact	No cracking	4.6.7.2 ASTM D 746, $-10 \pm 2^{\circ}\text{C}$ ($+14 \pm 4^{\circ}\text{F}$)
Heat shock	No cracks, flowing or dripping	4.6.8 Class 1: $200 \pm 2^{\circ}\text{C}$ ($392 \pm 4^{\circ}\text{F}$), Class 2: $180 \pm 2^{\circ}\text{C}$ ($356 \pm 4^{\circ}\text{F}$)
Secant modulus, PSI, max	25,000	4.6.13.1 ASTM D 882, 2% strain
Restricted shrinkage	No cracks	4.6.6.1.3 Class 1: $175 \pm 2^{\circ}\text{C}$ ($347 \pm 4^{\circ}\text{F}$), Class 2: $135 \pm 2^{\circ}\text{C}$ ($275 \pm 4^{\circ}\text{F}$)
Voltage withstand	Pass	4.6.6.2
Color stability	Pass	4.6.16 $130 \pm 2^{\circ}\text{C}$ ($260 \pm 4^{\circ}\text{F}$), 48 hours
<u>After Unrestricted Shrinkage</u>		
ID, max	Table I	4.6.3
Wall thickness	Table I	4.6.3
Tensile strength, PSI, min	2,000	4.6.14 ASTM D 638, Speed D
Ultimate elongation, %, min	200	4.6.14 ASTM D 638, Speed D
Dielectric strength, volts per mil, min	400	4.6.2 ASTM D 876
Volume resistivity, ohms - cm, min	10^{11}	4.6.2 ASTM D 876

TABLE II. Physical properties 1/ (continued)

Property	Requirement	Test Procedure and Conditions
<u>After Unrestricted Shrinkage</u>		
Water absorption, %, max	1.0	4.6.2 ASTM D 570 (Procedure A)
Heat Resistance, Properties After		4.6.9 $136 \pm 2^{\circ}\text{C}$ ($277 \pm 4^{\circ}\text{F}$), 168 hours
Ultimate elongation		
% min	130	
Min % retention of as rec'd	65	
Fluid Resistance, Properties After		4.6.11
Tensile strength, PSI, min	1800	
Dielectric strength, volts per mil, min	280	
Flammability	Self-extinguishing 15 seconds and 3 inches	4.6.15.2 (see 6.1.1)
Corrosion	No corrosion	4.6.10.1 $136 \pm 2^{\circ}\text{C}$ ($276 \pm 4^{\circ}\text{F}$) 168 hours
Fungus resistance	Non-nutrient	4.6.2 ASTM G21

1/ Unless otherwise specified all requirement values and test conditions are for all classes.

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Shelf life conditions: Manufacturer shall certify to conformance to 3.6 after storage as follows:

<u>Class of Sleeving</u>	<u>Storage Temperature °F</u>	<u>Time, Months</u>
1	95	12
2	70	10
	80	6
	90	3
	95	1

Intended use: Heat shrinkable PVC sleeving is intended for light duty harnessing or wire bundling.

Custodians

Army - EI
Navy - AS
Air Force - 85

Preparing activity:

Navy - AS
(Project No. 5970-0478-2)

Review Activities

Army - EA, MI
Navy - EC
Air Force - 80
DSA - GS

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