MIL-I-23053/3A
20 May 1976
SUPERSEDING
MIL-I-23053/3
22 March 1968

MILITARY SPECIFICATION SHEET

INSULATION SLEEVING, ELECTRICAL HEAT SHRINKABLE, POLYVINYL CHLORIDE, SEMI-RIGID, 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°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: The sleeving shall be furnished in the color specified by the procuring activity and in clear. Colors shall conform to Class I of MIL-STD-104.

Longitudinal change: $^{+1}_{-10}$%

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

M23053/3 - 000 - 0

- Color code designator (see 1.2.2)
- Size identifier (Table 1)
- Class (When no classes are specified, the numeric "0" shall be used)
- Specification sheet

Example: Class 1, red, 0.063 inch as supplied ID sleeving shall be identified as M23053/3-102-2.

(A) denotes changes

FSC 5970

TABLE I. Construction details (inches) 1/

Military Part Number	As supplied I.D. min.	After unrestricted shrinkage I.D. max.	After unrestricted shrinkage Wall thickness 2/
Class 1			
M23053/3-101-*	.046	.023	.034 ± .003
M23053/3-102-*	.063	.031	.034 ± .003
M23053/3-103-*	.093	.046	.034 ± .003
M23053/3-104-*	.125	.062	.034 ± .003
M23053/3-105-*	.187	.093	.034 ± .003
M23053/3-106-*	.250	.125	.034 ± .003
M23053/3-107-*	.375	.187	.034 ± .003
M23053/3-108-*	.500	.250	.034 ± .003
Class 2			
M23053/3-201-*	.063	.031	.020 ± .003
M23053/3-202-*	.093	.046	.025 ± .003
M23053/3-203-*	.125	.062	.025 ± .003
M23053/3-204-*	.187	.093	.025 ± .003
M23053/3-205-*	.250	.125	.025 ± .003
M23053/3-206-*	.312	.156	.025 ± .003
M23053/3-207-*	.375	.187	.025 ± .003
M23053/3-208-*	.500	.250	.025 ± .003
M23053/3-209-*	.750	.375	.025 ± .003
M23053/3-210-*	1.000	.500	.030 ± .005
M23053/3-211-*	1.500	.750	.035 ± .005
M23053/3-212-*	2.000	1.000	.040 ± .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.

Unrestricted shrinkage: Test method 4.6.5; Class 1, 200 ± 2°C (392 ± 4°F) for 5 minutes; Class 2, 135 ± 2°C (275 ± 4°F) for 5 minutes.

TABLE II. Physical properties 1/

Property	Requirement	Test Procedure and Conditions
As Supplied		
ID, min	Table I	4.6.3
Cold impact	No cracking	4.6.7.2 ASTM D 746, -10 ± 2°C (+14 ± 4°F)
Heat shock 2/	No cracks, flowing or dripping	4.6.8 Class 1: 200 ± 2°C (392 ± 4°F) Class 2: 180 ± 2°C (356 ± 4°F)
Secant modulus, PSI, min	70,000	4.6.13.1 ASTM D 882, 2% strain
Restricted shrinkage	No cracks	4.6.6.1.3 Class 1: 175 ± 2°C (347 ± 4°F) Class 2: 135 ± 2°C (275 ± 4°F)
Voltage withstand	Pass	4.6.6.2
Color stability	Pass	4.6.16 130 ± 2°C (266 ± 4°F), 48 hours
After Unrestricted Shrinkage		
ID, max	Table I	4.6.3
Wall thickness	Table I	4.6.3
Tensile strength, PSI, min	3,000	4.6.14 ASTM D 638, Speed C
Ultimate elongation, %, min	150	4.6.14 ASTM D 638, Speed C
Dielectric strength, volts per mil, min	480	4.6.2 ASTM D 876
Volume resistivity, ohms - cm, min	10^{11}	4.6.2 ASTM D 876
Water absorption, %, max	1.0	4.6.2 ASTM D 570, Procedure A

TABLE II. Physical properties 1/ (continued)

Property	Requirement	Test Procedure and Conditions
After Unrestricted Shrinkage		
Heat Resistance, Properties After		4.6.9 130 ± 2°C (266 ± 4°F), 400 hours
Ultimate elongation, %, min	Class 1 - 75 Class 2 - 100	
Min % retention of as rec'd elongation	65	
Specific gravity, max	1.4	4.6.2 ASTM D 792
Fluid Resistance, Properties After		4.6.11
Tensile strength, PSI, min	2600	
Dielectric strength, volts per mil, min	300	
Flammability	Self-extinguishing 15 seconds and 3 inches	4.6.15.2 (see 6.1.1)
Corrosion	No corrosion	4.6.10.1 136 + 2°C (276 ± 4°F), 168 hours
Fungus resistance	Non-nutrient	4.6.2 ASTM G21

1/ Unless otherwise specified, the stated requirements and test conditions are for all classes.

2/ Mandrel size for this test shall be as follows:

Tubing ID	Mandrel ID
.046 to .187	5/16
.188 to .500	3/8
.501 to 1.000	5/8
1.001 to 2.000	7/8

Shelf life conditions: Storage at 40°C (104°F) for 1 year. Conformance to 3.6.

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

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