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SUPERSEDING
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MILITARY SPECIFICATION

PLASTIC SHEET AND STRIP, POLYIMIDE

1. SCOPE

1.1 Scope. This specification covers polyimide sheet and strip with or without heat sealable FEP-fluorocarbon coatings.

1.2 Classification. The polyimide sheet and strip shall be of the following types and grades, as specified (see 6.2).

Type I - General purpose
Type II - Heat sealable
Grade A - One side coated
Grade B - Two sides coated

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL
L-P-389 - Plastic Molding Material, FEP-Fluorocarbon, Molding and Extrusion
PPP-B-585 - Box, Wood, Wirebound
PPP-B-601 - Box, Wood, Cleated Plywood
PPP-B-636 - Box, Shipping, Fiberboard

MILITARY
MIL-P-116 - Preservation, Packaging, Method of
MIL-L-10547 - Liners, Case, and Sheet, Overwrap, Water Vaporproof or Waterproof, Flexible

A copy of the material safety data sheet

STANDARDS

MILITARY
MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standards

D 149 - Dielectric Breakdown Voltage and Dielectric Strength of Electrical Insulating Materials at Commercial Power Frequencies.
D 150 - A-C Loss Characteristics and Dielectric Constant (Permittivity) of Solid Electrical Insulating Materials.
D 257 - Electrical Resistance of Insulating Materials.
D 374 - Thickness of Solid Electrical Insulation.
D 570 - Water Absorption of Plastics.
D 618 - Conditioning of Plastics and Electrical Insulating Materials for Testing.
D 882 - Tensile Properties of Thin Plastic Sheeting.
D 883 - Nomenclature Relating to Plastics.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

National Motor Freight Traffic Association, Inc., Agent:

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations Inc., Traffic Department, 1616 P Street, N.W., Washington, DC 20036.

Uniform Classification Committee, Agent:

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

3. REQUIREMENTS

3.1 Material. The material shall be a flexible, unsupported sheet or strip made from polyimide polymer. Type II sheet or strip shall contain a heat sealable coating of FEP-fluorocarbon resin on one or both sides. The FEP-fluorocarbon shall conform to type I material of L-P-389. Reclaimed polyimide is permitted when it meets all requirements specified herein and the molecular weight is essentially the same as that of the unused polymer for the type and grade of material specified.

3.2 Property values. When tested as specified in 4.4, the sheet or strip shall conform to the property values shown in tables I and II, as applicable.

Table I. Property values for type I sheet and strip

	Test paragraph	Average property value, Nominal thickness, mm[1/] (inch)					
		.075 (.0003)	.013 (.0005)	.025 (.001)	.05 (.002)	.075 (.003)	.13 (.005)
Tensile strength, MPa (psi), machine direction and transverse direction, min.	4.4.3	69 (10,000)	97 (14,000)	138 (20,000)	138 (20,000)	138 (20,000)	138 (20,000)
Elongation, percent, machine and transverse direction, min.	4.4.3	10	20	35	40	45	45
Elongation, percent, After 2 hours at 400°C (752°F), machine direction and transverse direction, min.	4.4.5	-	-	10	10	10	10
Shrinkage, percent at 400°C (752°F), machine direction and transverse direction, max.	4.4.4	4.0	4.0	3.0	3.0	3.0	3.0
Moisture absorption, percent, max.	4.4.6	4.0	4.0	4.0	4.0	4.0	4.0
Dielectric strength, volts/mil, 60 hertz, min.	4.4.7	3,000	3,000	4,500	3,800	3,600	2,500
Volume resistivity, ohm-cm, at 200°C (392°F), min.	4.4.8	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}	10^{12}
Dielectric constant at 1 kilohertz, max.	4.4.9	4.0	4.0	4.0	4.0	4.0	4.0
Dissipation factor at 1 kilohertz, max.	4.4.9	.007	.005	.004	.004	.004	.004

1/ mm = millimetre

Table II Property values for type II sheet and strip

Grade	Total nominal thickness mm (inch)[1/]	Dielectric strength Volts/mil, minimum	Minimum heat seal strength, grams per 2.5mm (1 inch width)	
			Coated side sealed to uncoated side	Coated side sealed to coated side
A	.025 (.001)	3000	450	450
A	.038 (.0015)	3500	450	800
A	.05 (.002)	3000	450	800
A	.06 (.0025)	2500	450	800
A	.075 (.003)	2500	450	800
A	.1 (.004)[2/]	2000	450	800
A	.1 (.004)[3/]	2700	450	800
A	1.5 (.006)	2100	450	800
B	.038 (.0015)	3000	—	800
B	.05 (.002)	3000	—	800
B	.075 (.003)	2500	—	800
B	.13 (.005)	2200	—	800

1/ See table IX for nominal thickness of polyimide and FEP-fluorocarbon layers; mm = millimetre.

2/ FEP - Fluorocarbon coating is .05mm (.002) inches nominal thickness.

3/ FEP - Fluorocarbon coating is .025mm (.001) inch nominal thickness.

3.3 Form. The sheet and strip shall be furnished in rolls.

3.4 Dimensions and tolerances. The range of lengths, number of splices, width and roll diameters, thickness, and tolerances shall be as specified herein. Sheet material shall be over 76mm (3 inches) in width, and strip material shall be 76mm (3 inches) or less in width (see table VII for available widths.)

3.4.1 Roll length. Standard roll length of sheet and strip shall be as shown in tables III and IV.

3.4.2 Roll splices. The tolerance on splices in standard rolls shall be as shown in tables V and VI.

Table III. Roll length of type I sheet and strip[1/]

Roll diameter mm (inches)		Nominal roll length, meters (feet) Nominal thickness, mm (inch)					
I.D.	O.D.	.075 (.0003)	.013 (.0005)	.025 (.001)	.05 (.002)	.075 (.003)	.13 (.005)
76 (3)	124 (4-7/8)	910 (3000)	-	-	-	-	-
76 (3)	152 (6)	"	910 (3000)	460 (1500)	230 (750)	150 (500)	-
76 (3)	241 (9-1/2)	"	-	1500 (5100)	760 (2550)	510 (1700)	300 (1000)
152 (6)	241 (9-1/2)	3000 (10000)	1800 (6000)	910 (3000)	460 (1500)	300 (1000)	180 (600)

1/ The roll length tolerances from the nominal lengths shown in tables III and IV shall be ± 10%.

Table IV. Roll length of type II sheet and strip[1/]

Roll diameter mm (inches)		Nominal roll length available, meters (feet) Grade A Nominal thickness mm (inches)							Grade B Nominal thickness mm (inches)			
I.D.	O.D.	.025 (.001)	.038 (.0015)	.050 (.002)	.063 (.0025)	.075 (.003)	.10 (.004)	.15 (.006)	.038 (.0015)	.05 (.002)	.075 (.003)	.125 (.005)
76 (3)	152 (6)	450 (1500)	300 (1000)	230 (750)	190 (625)	150 (500)	110 (375)	78 (260)	320 (1060)	230 (750)	150 (500)	90 (300)
76 (3)	241 (9-1/2)	-	1020 (3400)	750 (2500)	640 (2125)	510 (1700)	380 (1250)	260 (850)	-	750 (2500)	510 (1700)	300 (1000)
152 (6)	241 (9-1/2)	910 (3000)	620 (2060)	460 (1540)	380 (1250)	310 (1040)	230 (770)	160 (520)	640 (2120)	462 (1540)	310 (1040)	180 (600)

1/ The roll length tolerances from the nominal lengths shown in tables III and IV shall be ± 10%.

Table V. Splice tolerance per standard roll of type I sheet or strip

Roll diameter, mm (inches)		Splices per standard roll, maximum					
		Nominal thickness, mm (inches)					
I.D.	O.D.	.0075 (.0003)	.013 (.0005)	.025 (.001)	.05 (.002)	.075 (.003)	.13 (.005)
76 (3)	124 (4-7/8)	9	-	-	-	-	-
76 (3)	152 (6)	-	5	2	1	1	1
76 (3)	241 (9-1/2)	-	-	7	5	4	4
152 (6)	241 (9-1/2)	40	10	5	3	3	2
		Length between splices or from end of standard roll, meters (feet), minimum					
76 (3)	152 (6)	-	30 (100)	30 (100)	30 (100)	30 (100)	22 (75)
76 (3)	241 (9-1/2)	-	-	30 (100)	30 (100)	30 (100)	22 (75)
152 (6)	241 (9-1/2)	22 (75)	30 (100)	30 (100)	30 (100)	30 (100)	22 (75)
		Average splice-free length per standard roll, meters (feet), minimum 1/					
76 (3)	152 (6)	-	150 (500)	151 (505)	110 (380)	75 (250)	45 (150)
76 (3)	241 (9-1/2)	-	-	190 (640)	128 (425)	100 (340)	60 (200)
152 (6)	241 (9-1/2)	90 (300)	160 (550)	150 (500)	112 (375)	75 (250)	60 (200)

1/ Divide length of standard roll (see table IV) by total number of splice-free increments (total splices + 1).

Table VI. Splice tolerance per standard roll of type II sheet and strip

Roll diameter mm (inches)		Grade A Nominal thickness mm (inches)							Grade B Nominal thickness mm (inches)			
I.D.	O.D.	.025 (.001)	.038 (.0015)	.05 (.002)	.063 (.0025)	.075 (.003)	.10 (.004)	.15 (.006)	.038 (.0015)	.05 (.002)	.075 (.003)	.13 (.005)
		Splices per standard roll, maximum 1/										
76 (3)	152 (6)	5	3	2	2	2	1	-	5	2	2	1
76 (3)	241 (9-1/2)	-	8	7	5	5	5	4	-	7	6	5
152 (6)	241 (9-1/2)	9	5	5	4	4	4	3	9	5	4	4
		Length between splices or from end of standard roll, meters (feet), minimum 1/										
76 (3)	152 (6)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	-	30 (100)	30 (100)	30 (100)	22 (75)
76 (3)	241 (9-1/2)	-	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	22 (75)	-	30 (100)	30 (100)	22 (75)
152 (6)	241 (9-1/2)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	22 (75)	30 (100)	30 (100)	30 (100)	22 (75)
		Average splice-free length per standard roll, meters (feet), minimum 1/ 2/										
76 (3)	152 (6)	75 (250)	75 (250)	75 (250)	60 (200)	50 (165)	56 (185)	-	50 (165)	75 (250)	50 (165)	45 (150)
76 (3)	241 (9-1/2)	-	110 (375)	93 (310)	100 (335)	84 (280)	62 (205)	51 (170)	-	93 (310)	74 (245)	48 (160)
152 (6)	241 (9-1/2)	90 (300)	110 (375)	75 (250)	60 (200)	63 (210)	45 (150)	38 (125)	42 (140)	75 (250)	63 (210)	36 (120)

1/ Based on nominal roll length in meters (feet), as specified in table IV. The longer the length of roll, the greater the number of splices allowed.

2/ See table V footnote for explanation of average splice-free length.

3.4.3 Roll width and diameter. The maximum variation in roll width and diameter shall be as shown in table VII.

Table VII. Roll diameter and width tolerances

Roll diameter mm (inches)		O.D. Tolerance mm (inches)	Nominal thickness, mm (inches)	Width range 1/ mm (inches)	
I.D.	O.D.			Minimum	Maximim
				Type I material	
76 (3)	124 (4-7/8)	± 6.4 (± 1/4)	.0075 (.0003)	25 (1)	100 (4)
32 (1-1/8)	89 (3-1/2)	± 6.4 (± 1/4)	.0075 (.0003)	25 (1)	100 (4)
76 (3)	152 (6)	± 6.4 (± 1/4)	.013 (.0005)	4.8 (3/16)	1220 (48)
76 (3)	152 (6)	± 6.4 (± 1/4)	.025 thru .13 (.001 thru .005)	4.8 (3/16)	1530 (60)
76 (3)	241 (9-1/2)	± 6.4 (± 1/4)	.025 thru .075 (.001 thru .003)	27 (1-1/16)	1530 (60)
76 (3)	241 (9-1/2	± 6.4 (± 1/4)	.013 (.005)	13 (1/2)	1530 (60)
152 (6)	280 (11)	± 6.4 (± 1/4)	.025 thru .13 (.001 thru .005)	27 (1-1/16)	1530 (60)
152 (6)	241 (9-1/2)	± 6.4 (± 1/4)	.0075 (.0003)	25 (1)	1220 (48)
152 (6)	241 (9-1/2)	± 6.4 (± 1/4)	.013 (.0005)	27 (1-1/16)	1220 (48)
152 (6)	241 (9-1/2)	± 6.4 (± 1/4)	.025 thru .13 (.001 thru .005)	27 (1-1/16)	1530 (60)
				Type II material	
76 (3)	152 (6)	± 6.4 (± 1/4)	All	4.8 (3/16)	152 (6)
76 (3)	241 (9-1/2)	± 6.4 (± 1/4)	All 2/	13 (1/2)	460 (18) 3/
152 (6)	241 (9-1/2)	± 6.4 (± 1/4)	All	27 (1-1/16)	152 (6)
152 (6)	280 (11)	± 6.4 (± 1/4)	All 2/	27 (1-1/16)	460 (18) 3/

1/ Width tolerance on all put-ups is as follows:

25mm (1 inch or less). . . . . tolerance ± .4mm (± 1/64 inch)
27 to 100mm (1-1/16 to 4 inch) . . . . . tolerance ± .8mm (± 1/32 inch)
102mm and over (4-1/16 inch and over). . . . . tolerance ± 1.6mm (± 1/16 inch)

2/ .025mm (.001 inch) thick type I, grade A and .038mm (.0015) inch thick type II, grade B, not available in this put-up.

3/ Wider widths to 910mm (36 inches) are available as non-standard items.

3.4.4 Thickness of sheet and strip. Tables VIII and IX specify allowable nominal thickness and tolerances.

Table VIII. Thickness and tolerances for type I sheet and strip

Thickness tolerance, mm (inches)	Nominal thickness, mm (inches)					
	.0075 (.0003)	.013 (.0005)	.025 (.001)	.05 (.002)	.075 (.003)	.13 (.005)
Maximum	.009 (.00036)	.016 (.00065)	.03 (.0012)	.058 (.0023)	.085 (.0033)	.14 (.0055)
Minimum	.006 (.00024)	.0088 (.00035)	.02 (.0008)	.0425 (.0017)	.068 (.0027)	.11 (.0045)

Table IX. Thickness and tolerances for type II sheet or strip

Grade	Total nominal thickness mm (inches)	First FEP layer	Polyimide layer mm (inches)	Second FEP layer mm (inches)	Thickness tolerance, mm (inches) minimum	maximum
A	.025 (.001)	None	.013 (.0005)	.013 (.0005)	.019 (.00075)	.031 (.00125)
A	.038 (.0015)	None	.025 (.001)	.013 (.0005)	.031 (.00125)	.044 (.00175)
A	.050 (.002)	None	.025 (.001)	.025 (.001)	.042 (.0017)	.058 (.0023)
A	.062 (.0025)	None	.05 (.002)	.013 (.0005)	.060 (.00238)	.066 (.00263)
A	.075 (.003)	None	.05 (.002)	.025 (.001)	.065 (.0026)	.085 (.0034)
A	.10 (.004)	None	.05 (.002)	.050 (.002)	.09 (.0036)	.11 (.0044)
A	.10 (.004)	None	.075 (.003)	.025 (.001)	.09 (.0036)	.11 (.0044)
A	.15 (.006)	None	.13 (.005)	.025 (.001)	.14 (.0054)	.16 (.0066)
B	.038 (.0015)	.013 (.0005)	.013 (.0005)	.013 (.0005)	.030 (.00120)	.045 (.00180)
B	.050 (.002)	.013 (.0005)	.025 (.001)	.013 (.0005)	.042 (.0017)	.058 (.0023)
B	.075 (.003)	.013 (.0005)	.05 (.002)	.013 (.0005)	.065 (.0026)	.085 (.0034)
B	.13 (.005)	.025 (.001)	.075 (.003)	.025 (.001)	.11 (.0045)	.14 (.0055)

3.5 Color. The color of the sheet or strip shall vary from pale yellow to dark amber.

3.6 Workmanship. The sheet and strip shall be uniform in color and appearance as determined by visual examination. The sheet and strip shall be clean and free from contamination, wrinkles, holes, scratches and other defects that may affect appearance or which may affect serviceability. (These defects may be defined in accordance with ASTM D 883, as applicable.) The heat sealable coating of FEP-fluorocarbon for type II material shall be uniform in appearance.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor, may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

C-501 Standard Practice for Determining Chemical Resistance of

4.2 Sampling for inspection and acceptance. Sampling for inspection and acceptance shall be performed in accordance with the provisions set forth in MIL-STD-105, except where otherwise indicated. For purposes of sampling, an inspection lot for examination and tests shall consist of all material of the same type, grade, and nominal thickness submitted for delivery at one time.

4.2.1 Inspection of materials and components. In accordance with 4.1, the contractor is responsible for insuring that materials and components used were manufactured, tested, and inspected in accordance with the requirements of this specification and to the extent specified of referenced subsidiary specifications and standards. In the event of conflict, this specification shall govern. For type II material, a supplier's certificate of compliance with 3.1 shall be furnished. The certificate shall certify, also, that the polyimide polymer in type II sheet or strip complies with the property values specified for the type I material.

4.2.2 Inspection of sheets and strips.

4.2.2.1 Examination of sheets and strips. Examination of sheets and strips shall be made in accordance with the classification of defects, inspection levels and acceptable quality levels (AQL's) set forth below. The lot size, for purpose of determining the sample size in accordance with MIL-STD-105, shall be expressed in units of rolls of plastic sheets or strips for examination in 4.2.2.1.1, 4.2.2.1.2, and in units of shipping containers for examination in 4.2.2.1.3.

4.2.2.1.1 Examination of sheets and strips for defects in form, appearance and workmanship. The sample unit for the examination specified in table X shall be one plastic sheet or strip, as applicable.

Table X. Examination of sheets and strips for defects in form, appearance and workmanship

Examine	Defect
Appearance and workmanship	Not uniform coating for type II material Not in rolls Not uniform texture, or color Not clean Not free of contamination, wrinkles, holes, scratches and other defects (see 3.6).

4.2.2.1.2 Examination of sheets for defects in dimensions. The sample unit for the examination specified in table XI shall be one plastic sheet.

Table XI. Examination of sheets for defects in dimensions

Examine	Defect
Length	Not as specified, not within ± 10 percent tolerances.
Width	Not as specified, not within tolerances.
Roll diameters	Not as specified, not within tolerances.
Splices	Maximum number not as specified.

4.2.2.1.3 Examination of packaging. An examination in accordance with table XII shall be made to determine that preservation, packing, and marking comply with section 5 requirements. The sample unit for this examination shall be one shipping container fully packed, selected just prior to the closing operation. Shipping containers fully prepared for delivery shall be examined for closure defects.

Table XII. Examination of packaging

Examine	Defect
Preservation	Not preserved as specified. Not level specified.
Packing	Any nonconforming component, component missing, damaged, or otherwise defective affecting serviceability. Not level specified. Materials and construction not as specified.
Count	Less than specified or indicated quantity.
Marking	Interior or exterior markings omitted, illegible, incorrect, of improper size, location, sequence, or method of application. Not in accordance with contract requirements.

4.2.2.1.4 Inspection levels and AQLs for examinations. The inspection levels for determining the sample size and the AQL, expressed in defects per 100 units, shall be as follows:

Examination paragraph	Inspection level	AQL
4.2.2.1.1	I	1.5
4.2.2.1.2	S-3	2.5
4.2.2.1.3	S-2	2.5

4.2.3 Testing. The sheet shall be tested for the applicable characteristics listed in tables I and II in accordance with the test methods specified herein for each lot. The lot size, for the purpose of determining sample size for testing (see MIL-STD-105) shall be expressed in units of one roll of material. The sample unit shall consist of sufficient material to prepare all required specimens. The inspection level shall be S-1, with an acceptance number of 0. The results for each test shall be the averaged results of the specimens.

4.3 Classification of testing.

4.3.1 Acceptance testing. Each lot of type I material excluding those subjected to periodic lot check tests, shall be tested for the properties specified in table I except for moisture absorption, volume resistivity, dielectric constant, and dissipation factor. Each lot of type II material shall be tested for the properties specified in table II. Except when periodic lot check tests are required, acceptance testing in conjunction with the above examination shall be the basis of acceptance or rejection of the lot.

4.3.2 Periodic lot check testing. Periodic lot check tests shall be made on the first lot of material furnished under this specification, and on one lot selected at random from every twenty subsequent lots or once at random every two years, whichever is the more frequent. Periodic lot check tests shall consist of all tests specified in table I for type I material. There shall be no periodic lot check tests for type II material. When periodic lot check tests are required for type I material, they shall be the basis for acceptance or rejection of the lot, along with the examinations specified in 4.2.2.

assembly prepared for testing. shall be one completely fabricated upper a

4.4 Test procedures.

4.4.1 Preparation of specimens. Test specimens shall be prepared by cutting specimens across the width of sheet to the size specified in the applicable test. When strip is furnished, specimens shall be taken from mill rolls prior to slitting to the required width.

4.4.2 Conditioning. Test specimens shall be conditioned in accordance with procedure A of ASTM D 618. Testing shall be 23° ± 2°C (73.4° ± 3.6°F) and 50 ± 5 percent relative humidity.

4.4.3 Tensile strength and elongation. Five specimens, each 25 by 125mm (1 by 5 inches), shall be tested in accordance with ASTM D 882, method A. Initial jaw separation shall be at least 50mm (2 inches) and the rate of jaw separation shall be 5 to 6mm (0.20 to 0.25 inches) per minute.

4.4.4 Shrinkage. The initial length of three specimens, each approximately 200 by 280mm (8-1/2 by 11 inches), shall be measured using a metal scale calibrated to .25mm (0.01 inch). The specimens shall be freely suspended in an oven at 400° ± 2°C (752° ± 3.6°F). Specimens shall be removed after 2 ± 0.1 hours[1/] and conditioned in accordance with 4.4.2. After conditioning, final measurements shall be made and the percent shrinkage calculated as follows:

$$\frac{\text{Initial measurement - final measurement}}{\text{Initial measurement}} \times 100$$

4.4.5 Elongation after aging at 400°C (752°F). Five specimens, each approximately 200 by 280mm (8-1/2 by 11 inches), shall be freely suspended in an oven at 400° ± 2°C (752° ± 3.6°F). The specimens shall be removed after 2 ± 0.1[1/] hours and conditioned in accordance with 4.4.2. After conditioning, the specimens shall be tested for elongation in accordance with 4.4.3.

4.4.6 Moisture absorption. Three test specimens shall be tested in accordance woth ASTM D 570 at 23° ± 1°C (73.4° ± 1.8°F) immersion. Specimen size shall be in accordance with ASTM D 570.

4.4.7 Dielectric strength. Ten specimens shall be tested in accordance with ASTM D 149 using the size specified for sheet materials. Air shall be used as the test medium, and the specimen shall be placed between 6.4mm (1/4 inch diameter) brass electrodes with a .80mm (1/32 inch) edge radius. The A.C. voltage, at 60 hertz shall be subjected to a rate increase of 500 volts per second until breakdown occurs.

4.4.8 Volume resistivity. Five specimens shall be tested in accordance with ASTM D 257 using test specimens and electrodes, as specified.

1/ One hour for .0075 and .013mm (.0003 and .0005 inch) thickness film.

4.4.9 Dielectric constant and dissipation factor. Five specimens shall be tested in accordance with ASTM D 150 using a two terminal system of measurement. Electrodes shall be painted on specimens using silver paint.

4.4.10 Heat seal strength. Seals shall be made for each of 5 specimens in a jaw sealer at 350° ± 2°C (662° ± 3.6°F) at 138 ± 7 kilopascals (20 ± 0.1 psi) pressure, and a 20 ± 0.1 second dwell time using a jaw 25mm (1 inch) wide. The seals shall be cooled to 23° ± 1°C (73.4° ± 1.8°F) and each specimen cut to 25mm (1 inch) width and pulled in a pendulum tensile tester at a rate of 305 ± 2mm (12 ± 0.1 inches) per minute.

4.4.11 Thickness of sheet or strip. The thickness shall be determined in accordance with ASTM D 374, method A or C. Ten readings shall be made on an area selected at random and not less than 93000 square mm (12 square inches).

5. PACKAGING

Application. The requirements of section 5 apply only to purchase by or direct shipment to the Government.

5.1 Preservation. Preservation shall be level A. or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Unit packing. Unless otherwise specified in the contract or purchase order (see 6.2), sheet or strip shall be unit packed in quantities specified by the procuring activity in accordance with method III of MIL-P-116. Sheet or strip of only one set of nominal dimensions shall be placed in one unit pack.

5.1.1.2 Intermediate packing. When required, specified quantities of unit packings shall be intermediately packed as specified in the contract or purchase order (see 6.2).

5.1.2 Level B. Preservation shall be the same as for level A (see 5.1.1).

5.1.3 Level C. Sheet or strip shall be unit packed in accordance with commercial practice to provide adequate protection against deterioration and physical damage during shipment from the supply source to the first receiving activity.

5.2 Packing. Packing shall be A, B, or C, as specified (see 6.2).

5.2.1 Level A. Sheet or strip unit packed as specified in 5.1.1 shall be separated by thickness and shall be packed in containers conforming to PPP-B-585, PPP-B-601 (overseas type) or PPP-B-636, class 2. Unless otherwise specified containers shall be provided with a case liner conforming to MIL-L-10 Closure and strapping shall be in accordance with the appendix to the applicable container specifications.

5.2.2 Level B. Sheet or strip unit packed as specified in 5.1.1 shall be separated by thickness and shall be packed in containers conforming to PPP-B-585, PPP-B-601, or PPP-B-636, class 1. Closure shall be in accordance with the appendix to the applicable container specification.

5.2.3 Level C. Packing shall be in accordance with commercial practice adequate to ensure acceptance and delivery by the carrier for the mode of transportation employed. Containers shall comply with the requirements of the Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable to the mode of transportation.

5.3 Marking. In addition to any special marking specified in the contract or order, containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The sheet or strip covered by this specification is to be used in applications requiring a wide temperature range, both high and low, with good physical, electric and chemical properties essentially flat over a wide temperature range.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, and date of this specification.
b. Type and grade of material, as applicable, required (see 1.2).
c. Whether heat sealable coating for type II material shall be on one or both sides.
d. Length, width, and roll diameter required (see 3.4).
e. Thickness required (see 3.4).
f. Selection of applicable levels of preservation, and packing required (see 5.1 and 5.2).
g. Quantities of sheet or strip required in the unit packs and quantities of unit packs required (see 5.1.1.1 and 5.1.1.2).

Custodian:
Army - MR

Preparing activity:
Army - MR

Review activities:
Army - EL
DLA - GS

Project No. 9330-A759

User Activities:
Army - AV

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5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	DATE OF SUBMISSION *(YYMMDD)*

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