AEROSPACE
MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York, N.Y. 10017

AMS 3612

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Revised

POLYESTER FILM
Electrical Grade, General Purpose

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. FORM: Film and film tape.

3. APPLICATION: Primarily for parts requiring electrical insulating properties from -60 to +150 C (-76 to +302 F).

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Composition: The film shall be made from saturated linear polyester resins.

4.1.2 Color: Unless otherwise specified, the film shall be natural in color, ranging from transparent to translucent.

4.1.3 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable.

4.2 Properties: The product shall conform to the requirements of 4.2.1, 4.2.2, 4.2.3, and 4.2.5 and shall be capable of meeting the requirements of 4.2.4; tests shall be performed on the product supplied and in accordance with the issue of specified ASTM methods listed in the latest issue of AMS 2350, insofar as practicable. Linear property requirements apply in the machine direction, and in the transverse direction when width permits testing. Material shall be conditioned in accordance with ASTM D618, Procedure A.

4.2.1 Tensile Strength, psi, min Nominal Thickness, In.		ASTM D882, Method A See Note 1
0.0005 to 0.0140, incl	15,000	

4.2.2 Elongation, %, min Nominal Thickness, In.		ASTM D882, Method A
0.0005	50	
0.0010	50	
0.0015	50	
0.0020	50	
0.0030	50	
0.0050	50	
0.0075	50	
0.0100	50	
0.0140	100	

Printed in U. S. A.

4.2.3 Shrinkage at 200 C (392 F), %, max — See Note 2

Nominal Thickness, In.	
0.0005	9.0
0.0010	7.5
0.0015	7.0
0.0020	7.0
0.0030	7.0
0.0050	7.0
0.0075	7.0
0.0100	7.0
0.0140	10.0

4.2.4 High Temperature Durability — Pass 20 out of 30 samples — See Note 3

4.2.5 Dielectric Breakdown Voltage, Kv — ASTM D149

Nominal Thickness, In.	See Note 4
0.0005	2.0
0.0010	4.0
0.0015	5.5
0.0020	7.7
0.0030	10.0
0.0050	13.5
0.0075	17.5
0.0100	19.0
0.0140	20.0

Note 1. Measure thickness in accordance with ASTM D374, Method C.

Note 2. Suspend freely 5 specimens, 10.0 in. long by width of material, but not over 10.0 in. measured to the nearest 0.01 in., in an oven maintained at 200 C ± 2 (392 F ± 3.6) for 1/2 hour. Average 15 measurements for each direction by taking 3 in each direction on each specimen at room temperature before and after heating. The 3 measurements shall be made at the center and midway between the center and the edge along each side, respectively. Bench mark or pinpoint marking may be used for location of measurements.

Note 3. Suspend 30 specimens, 5 in. long by width of material, but not over 1 in. wide, in an oven maintained at 125 C ± 2 (257 F ± 3.6) for 1/2 hour. Samples shall support, at one end, a weight of 200 g per 0.0010 in. thickness per 1.00 in. width. Raise the temperature to 220 C ± 2 (428 F ± 3.6) and maintain for 1/2 hour. Cool to room temperature under load. Fold the sample 180 deg in the machine direction. Crease under moderate finger pressure and unfold. Repeat test with fold and crease in the transverse direction. Film shall not crack. Film samples shall be taken from one mill roll lot number and shall be taken at random across the roll.

Note 4. Short time test in air using 2 in. diameter electrodes. As an exception, 1/4 in. diameter electrodes may be used when narrow tape is supplied. In tests of 40 specimens, there shall be not more than 3 failures in material 0.0030 in. and under in thickness and not more than 4 failures in thicker material.

5. QUALITY: The product shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from imperfections detrimental to fabrication, appearance, or performance of parts.

6. TOLERANCES: Unless otherwise specified, the following tolerances shall apply at 20 - 30 C (68 - 86 F).

6.1 Thickness: Shall be measured using ASTM D374, Method C, and averaging not less than 10 measurements over a sample at least 12 sq in. in area.

Nominal Thickness Inch	Actual Thickness, Inch	
	min	max
0.0005	0.00040	0.00060
0.0010	0.00080	0.00105
0.0015	0.00125	0.00160
0.0020	0.00175	0.00220
0.0030	0.00260	0.00330
0.0050	0.00435	0.00545
0.0075	0.00670	0.00825
0.0100	0.00890	0.01090
0.0140	0.01260	0.01540

6.2 Width:

Nominal Thickness Inch	Width Tolerance, Inch For Width Ranges Shown, Inches		
	Up to 6, incl	Over 6 to 18, incl	Over 18
Up to 0.0050, incl	± 1/64	± 1/32	± 1/16
Over 0.0050 to 0.0140, incl	± 1/64	± 1/32	± 1/32

7. REPORTS:

7.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the requirements of this specification. The report shall include the purchase order number, material specification number, vendor's material designation, batch number, size, and number of rolls.

7.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, supplier's material designation, batch number, size, and number of rolls. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

8. PACKAGING: Packaging shall be accomplished in such a manner as to ensure that the product, during shipment and storage, will not be permanently distorted and will be protected against damage from exposure to weather or any normal hazard. Unless otherwise specified, film shall be wound on cores meeting the following requirements:

8.1 Cores: Shall have sufficient strength to prevent collapsing during handling and shall have 3 in. or 6 in. ID, as ordered.

8.2 Rolls: The OD of the slit roll and core width shall be as follows:

Core ID Inches	OD of Roll Inches
3	9-1/2 ± 1/4
6	11 ± 1/4
6	14 ± 1/4