



AEROSPACE MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

485 Lexington Ave., New York, N. Y. 10017

AMS 3661

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Revised

POLYTETRAFLUOROETHYLENE FILM Premium Grade

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **FORM:** Film and film tape, normally produced by skiving.
3. **APPLICATION:** Primarily for gaskets and other parts for use up to 260 C (500 F) requiring exacting performance in mechanical, electrical, or chemical service.
4. **MATERIAL:** Shall, unless otherwise permitted by purchaser, be produced by skiving billets molded or extruded from polytetrafluoroethylene powder without admixture of fillers, pigments, or adulterants.
5. **TECHNICAL REQUIREMENTS:**
 - 5.1 **General:**
 - 5.1.1 **Color:** May vary from white to light gray. Small gray, brown, or black spots shall not in themselves be cause for rejection.
 - 5.2 **Properties:** The product shall conform to the following requirements; 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.
 - 5.2.1 **Tensile Strength at 23 C $\pm$ 1**
(73.4 F $\pm$ 1.8), psi, min
Nominal Thickness, Inch
Up to 0.005, excl 3600
0.005 and over 4000
See Note 1
 - 5.2.2 **Elongation at 23 C $\pm$ 1**
(73.4 F $\pm$ 1.8), %, min
Nominal Thickness, Inch
Up to 0.005, excl 270
0.005 and over 300
See Notes 1 and 2
 - 5.2.3 **Specific Gravity at 23 C/23 C**
(73.4 F/ 73.4 F) 2.14 - 2.21
ASTM D792
Add 2 drops of a wetting agent to the water
 - 5.2.4 **Dielectric Strength (Short time test),**
v per mil, min
Specimen Thickness, Inch
0.003 2580
0.005 2000
0.010 1410
ASTM D149
(See Note 2)

- Note 1. Tensile strength and elongation shall be determined in accordance with ASTM D638, using the microtensile specimen of ASTM D1708. The initial jaw separation shall be 0.875 in. $\pm$ 0.005 and the speed of testing shall be 2 in. per minute. Specimens shall be cut with the long axis parallel to the skive marks. Material over 0.062 in. thick shall be machined to 0.062 in. $\pm$ 0.016 before cutting specimens.
- Note 2. Elongation requirements apply only to material 0.375 in. and over in width.
- Note 3. Specimens shall be sufficiently large to prevent flashover. Using 1/4 in. diameter corrosion resistant steel electrodes having 1/32 in. radius at edges, test in air for thicknesses up to 0.010 in., incl, and under oil for thicknesses over 0.010 inch. For thicknesses other than those shown, the dielectric strength requirement shall be calculated from the formula:

$$S = 1000 \sqrt{\frac{20}{t}}$$

where: S = dielectric strength in volts per mil, and
t = film thickness in mils.

- 5.2.5 **Electrical Flaws:** Material 0.003 to 0.010 in., incl, thick and 2 in. and over wide shall be capable of meeting the following requirement; when this test is required, it shall be the responsibility of the manufacturer of the material to perform the test.
- 5.2.5.1 Material shall show not more than 50 electrical flaws per 100 ft of length, determined in accordance with "Recommended Commercial Standard for TFE-Fluorocarbon (Polytetrafluoroethylene) Resin Skived Tape" published by the U. S. Department of Commerce, Office of Commodity Standards, National Bureau of Standards, TS-5664B, June 2, 1965. Other methods of test may be used when agreed upon by purchaser and vendor.
6. **QUALITY:** The product shall be uniform in quality and condition, clean, smooth, as free from foreign materials as commercially practicable, and free from imperfections detrimental to fabrication, appearance, or performance of parts.
7. **TOLERANCES:** Unless otherwise specified, the following tolerances apply at 23 - 30 C (73.4 - 86 F):

Nominal Thickness Inch	Nominal Width Inches	Thickness Tolerance Inch	
		plus	minus
0.002 to 0.003, incl	Up to 2, incl	0.0005	0.0003
Over 0.003 to 0.005, incl	2 to 12, incl	0.0005	0.0005
Over 0.005 to 0.015, incl	2 to 12, incl	0.0010	0.0010
Over 0.015 to 0.040, incl	2 to 12, incl	0.0015	0.0015
Over 0.040 to 0.061, incl	2 to 12, incl	0.0020	0.0020
Over 0.061 to 0.125, incl	2 to 12, incl	0.005	0.005

8. **REPORTS:**

- 8.1 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. This report shall include the purchase order number, material specification number, vendor's compound number, form or part number, and quantity.