

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 3651

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Revised

POLYTETRAFLUOROETHYLENE

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. FORM: Extrusions, rod, sheet, sheet tape, film, film tape, tubing, molded shapes, or as ordered.
3. APPLICATION: Primarily for mechanical seals, chemical gaskets and high frequency electrical insulation at temperatures up to 500 F.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Color: Shall be white, unless otherwise specified.

4.2 Properties: The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with listed ASTM methods, insofar as practicable.

Property	Value	Test Method
4.2.1 Tensile Strength at 77 F $\pm$ 2, psi, min	1500	ASTM D412-51T
4.2.2 Elongation at 77 F $\pm$ 2, %, min	100	ASTM D412-51T
4.2.3 Stiffness at 77 F $\pm$ 2, psi, min	60,000	ASTM D747-50
4.2.4 Impact Value (notched), Izod, ft-lb/in., min		ASTM D256-47T
at -70 F $\pm$ 2	2.0	
at 77 F $\pm$ 2	4.0	
at 170 F $\pm$ 2	6.0	
4.2.5 Water Absorption, %, max	0.0	ASTM D570-42
4.2.6 Deformation Under Load at 122 F $\pm$ 2 (1200 psi for 85 hr), %, max	8	ASTM D621-51
4.2.7 Volume Resistivity at 50% R.H. and 77 F $\pm$ 2, ohm-cm, min	1.0 x 10 ¹⁵	ASTM D257-49T
4.2.8 Dielectric Strength (short time test - 0.080 in. thick specimen), v/mil, min	400	ASTM D149-44
4.2.9 <u>Dimensional Stability</u> : When specified, molded parts and machined parts, after aging in air at 350 F $\pm$ 2 for at least 1 hr per $\frac{1}{4}$ in. of thickness, shall not change dimension by more than 0.003 in. per inch of any dimension specified on the drawing.		

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

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6. TOLERANCES: Unless otherwise specified, the following tolerances apply.6.1 Film and Film Tape:

Nominal Thickness Inch	Tolerance, Inch Plus and Minus
0.002 to 0.005, incl	0.0005
Over 0.005 to 0.010, incl	0.001

6.2 Sheet and Sheet Tape:

Nominal Thickness Inch	Tolerance, Inch Plus and Minus
Over 0.010 to 0.016, incl	0.004
Over 0.016 to 0.031, incl	0.008
Over 0.031 to 0.062, incl	0.010
Over 0.062 to 0.093, incl	0.012
Over 0.093 to 0.125, incl	0.014
Over 0.125 to 0.157, incl	0.016
Over 0.157 to 0.188, incl	0.018
Over 0.188 to 0.250, incl	0.022
Over 0.250 to 0.375, incl	0.030
Over 0.375 to 0.500, incl	0.038
Over 0.500 to 0.625, incl	0.046
Over 0.625 to 0.750, incl	0.054
Over 0.750	0.070

6.3 Molded Tubing:

Nominal OD or ID Inches	ID Tolerance Inch Minus Only	OD Tolerance Inch Plus Only	Wall Thickness Inch Plus Only
1 to 5, incl	0.031	0.031	0.031
Over 5 to 10, incl	0.062	0.062	0.062
Over 10 to 20, incl	0.125	0.125	0.125

6.4 Molded Rod:

Nominal Diameter Inches.	Tolerance, Inch Plus Only
0.250 to 0.500, incl	0.010
Over 0.500 to 0.750, incl	0.015
Over 0.750 to 1.500, incl	0.020
Over 1.500 to 2.000, incl	0.025