

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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## AMS 3650

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Revised

### POLYTRIFLUOROCHLOROETHYLENE

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 parts requiring chemical inertness, high impact strength or high frequency electrical insulation at temperatures up to 390 F.
4. TECHNICAL REQUIREMENTS:
  - 4.1 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
4.1.1 Tensile Strength at 77 F $\pm$ 2, psi, min	5000	ASTM D412-51T
4.1.2 Elongation at 77 F $\pm$ 2, %, min	25	ASTM D412-51T
4.1.3 Impact Value (notched) at 77 F $\pm$ 2, Izod, ft-lb/in., min	3.0	ASTM D256-47T
4.1.4 Water Absorption, %, max	0.0	ASTM D570-42
4.1.5 Volume Resistivity at 50% R.H. and 77 F $\pm$ 2, ohm-cm, min	$1.1 \times 10^{18}$	ASTM D257-49T
4.1.6 Dielectric Strength (short time test-0.125 in. thick specimen), v/mil, min	2200	ASTM D149-44
4.1.7 NST (No Strength Temperature), deg Fahr, min	446	4.1.7.1
4.1.7.1 <u>Procedure</u> : A 2 x 1/8 x 1/16 in. strip shall be cut from a 1/16 in. sheet and symmetrically center-notched with a sharp punch so as to give a point of minimum cross-section of 1/16 x 3/64 inch. The sample shall be suspended vertically, as illustrated in Figure 1, with a small weight suspended from the lower end of the test strip on a fine wire approximately 4 in. long. The weight shall be adjusted so that the total load from the notch down is 0.5 gram. Starting at 410 F, the temperature shall be raised at a rate of 2.7 F per min. until the sample pulls apart at the notch. The NST value shall be the temperature at which the test strip breaks. This determination is not highly sensitive to small variations in test strip thickness ( $\pm$ 0.003 in.) but care shall be taken to cut a sharp clean notch. Differences of 10 F are normally considered significant.		

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

5.1 The product shall not be degraded by overheating during processing.

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	0.001
Over 0.005 to 0.010, incl	0.002

6.2 Sheet and Sheet Tape:

Nominal Thickness Inch	Tolerance, Inch Plus and Minus
Over 0.010 to 0.020, incl	0.003
Over 0.020 to 0.040, incl	0.004
Over 0.040 to 0.060, incl	0.005
Over 0.060 to 0.125, incl	0.006
Over 0.125 to 0.250, incl	0.010
Over 0.250 to 0.500, incl	0.015

6.3 Extruded Tubing:

6.3.1	Nominal ID Inches	Tolerance, Inch Plus and Minus
	0.060 and under	0.004
	Over 0.060 to 0.125, incl	0.006
	Over 0.125 to 0.250, incl	0.008
	Over 0.250 to 0.500, incl	0.010
	Over 0.500 to 1.000, incl	0.015
	Over 1.000 to 2.000, incl	0.020

6.3.2	Nominal Wall Thickness Inch	Tolerance, Inch Plus and Minus
	0.02 and under	0.003
	Over 0.020 to 0.040, incl	0.004
	Over 0.040 to 0.060, incl	0.005

6.4 Rod:

Nominal Diameter Inch	Tolerance, Inch Plus and Minus
0.060 and under	0.005
Over 0.060 to 0.125, incl	0.008
Over 0.125 to 0.250, incl	0.010
Over 0.250 to 0.500, incl	0.015
Over 0.500 to 1.000, incl	0.020
Over 1.000 to 2.000, incl	0.025

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 meets the requirements of this specification. This report shall include the purchase order number, material specification number, form or part number, and quantity.
- 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, part number, and quantity. 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.
9. IDENTIFICATION: Material shall be identified as specified on purchase order.
10. APPROVAL:
  - 10.1 To assure adequate performance characteristics, compound shall be approved by purchaser before material for production use is supplied, unless such approval be waived. Results of tests on production material shall be essentially equivalent to those on the approved sample.
  - 10.2 Vendor shall use the same compound and manufacturing processes for production material as for approved sample material. If necessary to make any change, vendor shall obtain written permission from purchaser prior to incorporating such change.
11. REJECTIONS: Material not conforming to this specification or to authorized modifications will be subject to rejection.