



AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AMS 3532

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Revised

ETHYLENE TETRAFLUOROETHYLENE SHEET, MOLDED Stress-Relieved

1. SCOPE:

- 1.1 Form: This specification covers a melt-processible, copolymer resin of ethylene and tetrafluoroethylene (ETFE) in the form of molded sheet.
- 1.2 Application: Primarily for parts such as seals, insulators, back-up rings, valve liners, and bearings requiring good mechanical, chemical, electrical, environmental (including radiation resistance), and elevated-temperature properties. ETFE offers improved mechanical properties compared to both polytetrafluoroethylene and polyfluoroethylene propylene, while offering essentially the same outstanding chemical, electrical, and environmental performance of these other materials. It is capable of continuous operations up to 150°C (300°F) and, depending on exposure time, load, and environment can be used intermittently up to 200°C (390°F).

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

- 2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

- 2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D149 - Dielectric Breakdown Voltage and Dielectric Strength of Electrical Insulating Materials at Commercial Power Frequencies

ASTM D638 - Tensile Properties of Plastics

ASTM D792 - Specific Gravity and Density of Plastics by Displacement

ASTM D1708 - Tensile Properties of Plastics by Use of Microtensile Specimens

- 2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

- 3.1 Material: Shall be molded from ethylene tetrafluoroethylene copolymer resin pellets without admixture of fillers, pigments, or adulterants.

SAE Technical Board rules provide that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade or their use by governmental agencies is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

3.1.1 Sheet shall be stress-relief annealed after molding for dimensional stability.

3.2 Color: Shall be translucent white, unless otherwise specified by purchaser. Minor discoloration will be acceptable.

3.3 Properties: Sheet shall conform to the following requirements; tests shall be performed on the sheet supplied and in accordance with specific test methods, insofar as practicable:

- | | | |
|---|---------------------------------|---|
| 3.3.1 Tensile Strength at 23°C ± 1
(73°F ± 2), min | 5500 psi
(38 MPa) | 4.5.1 |
| 3.3.2 Elongation at 23°C ± 1 (73°F ± 2), min | 225% | 4.5.1 |
| 3.3.3 Specific Gravity at 23°/23°C
(73°/73°F) | 1.68 - 1.73 | ASTM D792;
add 2 drops
of wetting agent
to the water |
| 3.3.4 Dielectric Strength, Short Time Test, min | 1200 V per mil
(47,250 V/mm) | 4.5.2 |
- 3.3.5 Dimensional Stability: Sheet 2.000 in. (50.80 mm) and under in nominal thickness shall not change in length, width, or thickness by more than 0.5%, determined as in 4.5.3. Dimensional stability of sheet over 2.000 in. (50.80 mm) in nominal thickness shall be as agreed upon by vendor and purchaser.
- 3.4 Quality: Sheet shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from internal and external imperfections detrimental to fabrication, appearance, or performance of parts.
- 3.5 Tolerances: Unless otherwise specified, the following tolerances apply at 23° - 30°C (73° - 86°F):

3.5.1 Thickness:

TABLE I

Nominal Thickness (T) Inches	Tolerance, Inch	
	plus	minus
0.0312 to 0.0625, incl	0.015	0.005
Over 0.0625 to 0.0938, incl	0.020	0.005
Over 0.0938 to 0.125, incl	0.016	0.008
Over 0.125 to 0.1563, incl	0.018	0.009
Over 0.1563 to 0.1875, incl	0.022	0.011
Over 0.1875 to 0.250, incl	0.030	0.015
Over 0.250 to 0.375, incl	0.038	0.019
Over 0.375 to 0.500, incl	0.046	0.022
Over 0.500 to 0.625, incl	0.054	0.027
Over 0.625 to 0.750, incl	0.070	0.035
Over 0.750 to 1.000, incl	0.087	0.043
Over 1.000 to 1.250, incl	0.102	0.051
Over 1.250 to 1.500, incl	0.118	0.059
Over 1.500 to 1.750, incl	0.134	0.067
Over 1.750 to 2.000, incl	0.150	0.075
Over 2.000	0.10T	0.10T