The Engineering Society For Advancing Mobility Land Sea Air and Space

400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 3842C

Issued 7-15-61
Revised 1-1-88

Superseding AMS 3842B

POLYTETRAFLUOROETHYLENE SHEET
Asbestos Fiber Reinforced

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of March 30, 1987. It is recommended that this specification not be specified for new designs.

This cover sheet should be attached to the "C" Revision of the subject specification.

Noncurrent refers to those materials which have previously been widely used and which may be required on some existing designs in the future. The Aerospace Materials Division does not recommend these as standard materials for future use in new designs. Each of these "Noncurrent" specifications is available on request.

This specification is under the jurisdiction of the AMS Committee "CP".

AN AMERICAN NATIONAL STANDARD

SAE The Engineering Resource For Advancing Mobility®

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POLYTETRAFLUOROETHYLENE SHEET
Asbestos Fiber Reinforced

1. SCOPE:

1.1 Form: This specification covers polytetrafluoroethylene resin in the form of asbestos-fiber-reinforced sheet.

1.2 Application: Primarily for gaskets requiring a minimum of thickness variation and compatibility with liquid oxygen.

1.3 WARNING: Numerous scientific studies have determined that asbestos presents a health hazard to those who are exposed to asbestos-containing products.

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

2.1 SAE Publications: Available from SAE, 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 D792 - Specific Gravity and Density of Plastics by Displacement
ASTM F36 - Compressibility and Recovery of Gasket Materials
ASTM F104 - Classification System for Nonmetallic Gasket Materials
ASTM F152 - Tension Testing of Nonmetallic Gasket Materials

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 and Fabrication: Sheet shall be made from selected short-fiber chrysotile asbestos fibers impregnated with approximately twice its own weight of polytetrafluoroethylene, felted, and thermally sintered.

3.1.1 Color: Shall be light grey to dark brown.

3.2 Properties: Sheet shall conform to the following requirements; tests shall be performed on the sheet supplied and in accordance with specified methods:

3.2.1	Weight loss at 315°C (600°F) based on original dry weight, max	5%	4.5.1
3.2.2	Weight loss at 480°C (900°F) based on original dry weight	65 - 70%	4.5.1
3.2.3	Density	110 - 120 lb per cu ft (1.76 - 1.92 Mg/m^3)	ASTM D792, Method B
3.2.4	Tensile Strength, min	2500 psi (17.0 MPa)	ASTM F152
3.2.5	Compressibility using 5000 psi (35 MPa) load	5 - 15%	ASTM F36
3.2.5.1	Recovery, min	50%	ASTM F36
3.2.6	Liquid Oxygen Compatibility	No Reaction	4.5.2

3.2.7 Weather Resistance: When specified, sheet shall have weather resistance acceptable to purchaser, determined by a procedure agreed upon by purchaser and vendor.

3.2.8 Corrosion: Sheet shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metals shall not be considered objectionable. Method of test and acceptance standards shall be as agreed upon by purchaser and vendor.

3.3 Quality: Sheet, as received by purchaser, shall be uniform in quality and condition, clean, sound, and free from foreign materials and from imperfections detrimental to fabrication, appearance, or usage of the sheet.

3.4 Tolerances: Shall be as follows, based on the average of five determinations in accordance with ASTM F104:

3.4.1 Thickness:

TABLE I

Nominal Thickness Inches	Tolerance, Inch plus and minus	Variation From Reading to Reading In Any One Sheet Inch, max
0.016 to 0.030, incl	0.004	0.002
Over 0.030 to 0.060, incl	0.004	0.003
Over 0.060 to 0.090, incl	0.005	0.003
Over 0.090 to 0.120, incl	0.010	0.004
Over 0.120	0.015	0.004

TABLE I (SI)

Nominal Thickness Millimetres	Tolerance, Millimetre plus and minus	Variation From Reading to Reading In Any One Sheet Millimetre, max
0.40 to 0.75, incl	0.10	0.05
Over 0.75 to 1.50, incl	0.10	0.08
Over 1.50 to 2.25, incl	0.12	0.08
Over 2.25 to 3.00, incl	0.25	0.10
Over 3.00	0.38	0.10

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of sheet shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.6. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the sheet conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for weight loss (3.2.1 and 3.2.2), density (3.2.3), tensile strength (3.2.4), compressibility (3.2.5), recovery (3.2.5.1), liquid oxygen compatibility (3.2.6), and tolerances (3.4) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of sheet to a purchaser, when a change in material, processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows:

4.3.1 For Acceptance Tests: Sufficient sheet shall be taken at random from each lot to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.1.1 A lot shall be all sheet produced in a single production run from the same batches of raw materials under the same fixed conditions and presented for vendor's inspection at one time.

4.3.1.2 An inspection lot shall be not more than 200 lb (90 kg) of sheet. A lot may be packaged or delivered in small quantities under the basic lot approval provided lot identification is maintained.

4.3.1.3 When a statistical sampling plan and acceptance quality level (AQL) have been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.6.1 shall state that such plan was used.

4.3.2 For Preproduction Tests: As agreed upon by purchaser and vendor.

4.4 Approval:

4.4.1 Sample sheet shall be approved by purchaser before sheet for production use is supplied, unless such approval be waived by purchaser. Results of tests on production sheet shall be essentially equivalent to those on the approved sample sheet.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production sheet which are essentially the same as those used on the approved sample sheet. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material, processing, or both and, when requested, sample sheet. Production sheet made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

4.5.1 Weight Loss: Place a 2-g ± 0.1 sample in a tared crucible and heat at 105°C ± 1 (220°F ± 2) to constant weight (original dry weight) at room temperature. Heat the crucible and contents to 315°C ± 5 (600°F ± 10), hold at heat for 24 hr ± 0.3, cool in a desiccator, and reweigh. Reheat the crucible and contents to 480°C ± 15 (900°F ± 25), hold at heat for 3 hr ± 0.3, cool, weigh, and calculate the weight losses occuring during the 315°C (600°F) and the 480°C (900°F) heatings.