



AEROSPACE MATERIAL SPECIFICATION

AMS3255™**REV. B**

Issued 1995-12
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Revised 2017-07

Superseding AMS3255A

(R) Sealing Tape, Sheet, or Gasket, Polytetrafluoroethylene, Expanded (EPTFE)
Oil and Water Resistant

RATIONALE

AMS3255B incorporates changes to specific technical requirements which better represent in-service requirements for the various Classes. Changes include limiting fluid sealability and repairability testing with fluids to Class 5 (continuous fuel exposure), changing fluid and thermal resistance testing to evaluation of bulk tensile strength and setting requirement values at original bulk strength values, and modify corrosion test panels to incorporate a representative stack-up for evaluating sealing materials with no corrosion inhibitors. Added 'High Strength' gasket Type to Class 4. Other editorial changes made, as necessary.

1. SCOPE

1.1 Form

This specification establishes the requirements for an expanded polytetrafluoroethylene (EPTFE) in the form of sealing tape, gaskets, or sheets requiring no mixing or curing.

1.2 Application

Classes 1, 2, 3, and 4 sealing tapes have been used typically for sealing aircraft access panels, pressure barriers, and mold line surface close-out panels where gaskets are required. Class 5 sealants have been used for sealing aircraft fuel access panels, fuel pressure barriers, and mold line surface close-out panels where sealants with resistance to continuous exposure to fuel is required. For all classes, usage is not limited to applications identified. These sealant tapes are resistant to aircraft fuels, fluids and lubricants, and are capable of withstanding exposures to the following temperatures:

Class	Temperature Capability
Classes 1, 2, 3, and 4	Long-term exposure from -100 to 500 °F (-73 to 260 °C) with short-term exposures up to 600 °F (315 °C)
Class 5 Type 1	Long-term exposure from -85 to 194 °F (-65 to 90 °C) with short-term exposure to 250 °F (121 °C)
Class 5 Type 2	Long-term exposure from -85 to 356 °F (-65 to 180 °C) with short-term exposure to 390 °F (199 °C)

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1.3 Classification

Sealing tapes are classified as follows:

Class 1: Continuous, Ribbed

Type 1: Standard Sealant Tape

- Form 1: 0.012 inch (0.3 mm) thick with large bulb 0.091 inch (2.3 mm) thick and small bulbs 0.035 inch (0.9 mm) thick
- Form 2: 0.020 inch (0.5 mm) thick with large bulb 0.098 inch (2.5 mm) thick and small bulbs 0.047 inch (1.2 mm) thick
- Form 3: 0.051 inch (1.3 mm) thick with large bulb 0.126 inch (3.2 mm) thick and small bulbs 0.067 inch (1.7 mm) thick
- Form 4: 0.059 inch (1.5 mm) thick with large bulb 0.138 inch (3.5 mm) thick and small bulbs 0.087 inch (2.2 mm) thick
- Form 5: 0.012 inch (0.3 mm) thick with large bulb 0.091 inch (2.3 mm) thick and no small bulbs
- Form 6: 0.020 inch (0.5 mm) thick with large bulb 0.098 inch (2.5 mm) thick and no small bulbs
- Form 7: 0.051 inch (1.3 mm) thick with large bulb 0.126 inch (3.2 mm) thick and no small bulbs
- Form 8: 0.059 inch (1.5 mm) thick with large bulb 0.138 inch (3.5 mm) thick and no small bulbs
- Form 9: 0.012 inch (0.3 mm) thick with no large bulb and small bulbs 0.035 inch (0.9 mm) thick
- Form 10: 0.020 inch (0.5 mm) thick with no large bulb and small bulbs 0.047 inch (1.2 mm) thick
- Form 11: 0.051 inch (1.3 mm) thick with no large bulb and small bulbs 0.067 inch (1.7 mm) thick
- Form 12: 0.059 inch (1.5 mm) thick with no large bulb and small bulbs 0.087 inch (2.2 mm) thick

Class 2: Continuous, Non-Ribbed

Type 1: Standard Strength Sealant Tape

- Form 1: 0.012 inch (0.3 mm) thick
- Form 2: 0.020 inch (0.5 mm) thick
- Form 3: 0.039 inch (1.0 mm) thick
- Form 4: 0.065 inch (1.65 mm) thick
- Form 5: 0.079 inch (2.0 mm) thick
- Form 6: 0.126 inch (3.2 mm) thick

Type 2: High Strength Sealant Tape

- Form 1: 0.012 inch (0.3 mm) thick
- Form 2: 0.020 inch (0.5 mm) thick
- Form 3: 0.031 inch (0.8 mm) thick
- Form 4: 0.039 inch (1.0 mm) thick
- Form 5: 0.059 inch (1.5 mm) thick
- Form 6: 0.024 inch (0.6 mm) thick

Class 3: Continuous, Non-Ribbed Moldable

Type 1: Standard Sealant Tape

- Form 1: 0.05 inch (1.3 mm) thick x 0.15 inch (3.8 mm) wide
- Form 2: 0.07 inch (1.8 mm) thick x 0.25 inch (6.4 mm) wide
- Form 3: 0.09 inch (2.3 mm) thick x 0.32 inch (8.1 mm) wide
- Form 4: 0.12 inch (3.0 mm) thick x 0.46 inch (11.7 mm) wide
- Form 5: 0.21 inch (5.3 mm) thick x 0.59 inch (15 mm) wide
- Form 6: 0.24 inch (6.1 mm) thick x 0.72 inch (18.3 mm) wide
- Form 7: 0.30 inch (7.6 mm) thick x 0.81 inch (20.6 mm) wide
- Form 8: 0.37 inch (9.4 mm) thick x 1.03 inches (26.2 mm) wide

Class 4: Gasket Material

Type 1: Standard Strength Gasket Material

Form 1: 0.020 inch (0.5 mm) thick

Form 2: 0.039 inch (1.0 mm) thick

Form 3: 0.062 inch (1.6 mm) thick

Form 4: 0.079 inch (2.0 mm) thick

Form 5: 0.126 inch (3.2 mm) thick

Grade 1: Sheet Material up to 80 x 80 inches (2032 x 2032 mm)

Grade 2: Die Cut Gasket up to 80 x 80 inches (2032 x 2032 mm)

Type 2: High Strength Gasket Material

Form 1: 0.012 inch (0.3 mm) thick

Form 2: 0.020 inch (0.5 mm) thick

Form 3: 0.031 inch (0.8 mm) thick

Form 4: 0.039 inch (1.0 mm) thick

Form 5: 0.059 inch (1.5 mm) thick

Form 6: 0.024 inch (0.6 mm) thick

Grade 1: Sheet Material up to 18 x 80 inches (457 x 2032 mm)

Grade 2: Die Cut Gasket up to 18 x 80 inches (457 x 2032 mm)

Class 5: Fuel Resistant Sealant

Type 1: Standard Temperature, 194 °F (90 °C), Fuel Resistant Sealant

Form 1: 0.020 inch (0.5 mm) thick

Form 2: 0.031 inch (0.8 mm) thick

Form 3: 0.039 inch (1.0 mm) thick

Form 4: 0.059 inch (1.5 mm) thick

Grade 1: Sheet Material up to 80 x 80 inches (2032 x 2032 mm)

Grade 2: Die Cut Gasket up to 80 x 80 inches (2032 x 2032 mm)

Type 2: High Temperature, 356 °F (180 °C), Fuel Resistant Sealant

Form 1: 250 to 500 g/m²Form 2: 500 to 750 g/m²Form 3: 750 to 1000 g/m²Form 4: 1000 to 1500 g/m²

Grade 1: Sheet Material up to 17.7 x 78.7 inches (450 x 2000 mm)

Grade 2: Die Cut Gasket up to 17.7 x 78.7 inches (450 x 2000 mm)

Grade 3: Continuous Non-ribbed Tape

1.4 Safety - Hazardous Materials

Shall be in accordance with AS5502 (1.1).

2. APPLICABLE DOCUMENTS

Shall be in accordance with AS5502 (2).

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS1424	Deicing/Anti-Icing Fluid, Aircraft SAE Type 1
AMS2629	Fluid, Jet Reference
AMS3021	Fluid, Reference for Testing Di-Ester (Polyol) Resistant Material
AMS4037	Aluminum Alloy, Sheet and Plate 4.4Cu - 1.5Mg - 0.60Mn (2024; -T3 Flat Sheet, -T351 Plate) Solution Heat Treated
AMS4045	Aluminum Alloy Sheet and Plate 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr 7075: (-T6 Sheet, -T651 Plate) Solution and Precipitation Heat Treated
AMS4377	Magnesium Alloy, Sheet and Plate 3.0Al - 1.0Zn - 0.20Mn (AZ31B-H24) Cold Rolled, Partially Annealed
AMS4911	Titanium Alloy, Sheet, Strip, and Plate 6Al - 4V Annealed
AMS-M-3171	Magnesium Alloy, Processes for Pretreatment and Prevention of Corrosion on
AS5127	Aerospace Standard Test Methods for Aerospace Sealants Methods for Preparing Aerospace Sealant Test Specimens
AS5127/1	Aerospace Standard Test Methods for Aerospace Sealants Two-Component Synthetic Rubber Compounds
AS5502	Standard Requirements for Aerospace Sealants and Adhesion Promoters

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D792	Standard Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement
ASTM F152	Standard Test Methods for Tension Testing of Nonmetallic Gasket Materials
ASTM D3776	Standard Test Method for Mass Per Unit Area (Weight) of Fabric

2.3 U.S. Government Publications

Copies of these documents are available online at <http://quicksearch.dla.mil>.

MIL-PRF-23377	Primer Coatings: Epoxy, High-Solids
MIL-PRF-83282	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft, Metric, NATO Code Number H-537
MIL-PRF-85582	Primer Coatings: Epoxy, Waterborne
MS51967	Nut, Plain, Hexagon-Carbon Steel, Cadmium Plated, UNC-2B

2.4 AIA/NAS Publications

Available from Aerospace Industries Association, 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3928, Tel: 703-358-1000, www.aia-aerospace.org.

NASM90725 Screw, Cap, Hexagon Head (Finished Hexagon Bolt), Steel, Grade 5, Cadmium Plated, UNC-2A

2.5 PRI Publications

Available from Performance Review Institute, 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616, www.pri-network.org.

PD2103 Aerospace Quality Assurance, Product Standards, Qualification Procedure, Sealants

PRI-QPL-AMS3255 PRODUCTS QUALIFIED UNDER AMS3255

3. TECHNICAL REQUIREMENTS

3.1 Material

Sealing tapes, gaskets, and sheets shall be fabricated from virgin expanded polytetrafluoroethylene. To improve physical, mechanical, and/or fluid resistance properties identified by the various Classes of sealant tape, the manufacturer may use mechanical or chemical modification of the PTFE. The sealant tapes and gaskets may be applied using a double-sided, pressure sensitive adhesive tape, a separate adhesive, or without adhesive.

3.1.1 Color

Shall be gray or white and may exhibit varied color within the product.

3.2 Date of Packaging

Shall be in accordance with AS5502 (3.1). For sealant tapes supplied with double-sided pressure-sensitive adhesive, the manufacturer shall provide adhesive shelf life requirements and comply with packaging and retesting instructions of AS5502.

3.3 Toxicological Formulations

Shall be in accordance with AS5502 (3.2).

3.4 Quality

The sealing tapes, gaskets, or sheets as received by purchaser, shall visually appear smooth and uniform (except for color per 3.1.1). The surface shall have no irregularities, such as wrinkles, creases, cracks, or gouges, visible to the naked eye and shall be free from imperfections detrimental to usage of the material.

3.5 Shelf Life

Sealing tape, gasket, or sheet, stored in accordance with manufacturer instructions shall meet the shelf life requirements in accordance with Table 1. Adhesive-backed material may be retested for shelf life extension per 4.6.8.

3.6 Properties

The sealing tape, gaskets, and sheets, when stored in accordance with manufacturer instructions, shall conform to the requirements shown in Table 1, determined in accordance with specified test methods.

Table 1 - Properties

Paragraph	Property	Requirement	Test Method
3.6.1	Density Classes 1, 2, 3, and 4 Class 5 Type 1 Class 5 Type 2	0.4 to 1.2 g/cc 0.8 to 1.4 g/cc N/A	AMS3255 (4.6.1) ASTM D792
3.6.2	Weight per Unit Area (WPA), Class 5, Type 2 only	See Table 9	ASTM D3776
3.6.3	Corrosion Resistance	No evidence of corrosion under tape or in center of specimen	AMS3255 (4.6.2) AS5127/1 (7.10.3)
3.6.4	Tensile Strength, Bulk, minimum Class 2 Type 1 Class 2 Type 2 and Class 4 Type 2 All other Classes, Types and Forms	500 psi (3.44 MPa) 1300 psi (9.0 MPa) 1000 psi (6.9 MPa)	AMS3255 (4.6.3) ASTM F152, Method C
3.6.5	Fluid and Thermal Stability		AMS3255 (4.6.4)
3.6.5.1	Tensile Strength, Bulk, minimum Class 2 Type 1 Class 2 Type 2 All other Classes, Types, and Forms Standard Heat Cycle 72 hours in AMS3021 at 140 °F (60 °C) 72 hours in MIL-PRF-83282 at 140 °F (60 °C) 72 hours in AMS1424 at 140 °F (60 °C) 72 hours in AMS2629 at 180 °F (82 °C)	500 psi (3.44 MPa) 1300 psi (9.0 MPa) 1000 psi (6.9 MPa)	ASTM F152, Method C AMS3255 (4.6.4.1)
3.6.7	Low Temperature Flexibility	No evidence of cracking	AMS3255 (4.6.5)
3.6.8	Liquid Sealability, Class 5 only	No fluid leakage or loss of pressurization	AMS3255 (4.6.6)
3.6.9	Repairability, Class 5 only	No fluid leakage or loss of pressurization	AMS3255 (4.6.7)
3.6.10	Shelf Life Classes 1, 2, 3, 4, and 5 (no adhesive) Classes 1, 2, 3, 4, and 5 (with supplied adhesive)	10 years 2 years	AMS3255 (4.6.8)

3.7 Sizes and Tolerances

3.7.1 Class 1 Continuous Ribbed Sealing Tape

Tape shall conform to Figure 1 and shall be supplied in the sizes and to the tolerances shown in Table 2.