



AEROSPACE MATERIAL SPECIFICATION

AMS3376™**REV. D**Issued 1985-07
Revised 2021-06

Superseding AMS3376C

Sealing Compound, Non-Curing, Fluorosilicone Groove Injection
Temperature and Fuel Resistant

RATIONALE

This is a Five-Year Review of AMS3376. Update formatting and reference specification titles. Clarify "extrusion" nomenclature, exposure procedure, and figure notes.

1. SCOPE

1.1 Form

This specification covers a permanently mastic, non-curing fluorosilicone sealing compound in the form of a paste.

1.2 Application

This product has been used typically for sealing or resealing integral fuel tanks designed for groove-injection type sealing for use from -65 to +360 °F (-54 to +182 °C), but usage is not limited to such applications.

1.3 Classification

Sealing compounds covered by this specification are classified as follows:

Class 1 - High viscosity, permanently mastic, fuel resistant, fluorosilicone paste compound suitable for sealing applications with structural mismatch of 0.005 inch (0.13 mm) or less, normally contains glass bead filler material.

Class 2 - Medium viscosity, permanently mastic, fuel resistant, fluorosilicone paste compound suitable for sealing applications with structural mismatch of 0.005 inch (0.13 mm) or less, normally contains glass bead filler material.

Class 3 - High viscosity, permanently mastic, fuel resistant, fluorosilicone paste compound suitable for sealing applications with structural mismatch of 0.015 inch (0.38 mm) or less, normally contains cured fluorosilicone rubber particles.

1.4 Safety - Hazardous Materials

Shall be in accordance with AS5502 (1.1).

2. APPLICABLE DOCUMENTS

Shall be in accordance with AS5502 (Section 2).

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Documents

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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.

AMS2629	Fluid, Jet Reference
AMS3167	Solvents, Wipe for Cleaning Prior to Application of Primer and Top Coat Materials, or Sealing Compounds
AMS3660	Polytetrafluoroethylene (PTFE) Moldings, General Purpose Grade, As Sintered
AMS3819	Cloths, Cleaning for Aircraft Primary and Secondary Structural Surfaces
AMS4035	Aluminum Alloy, Sheet and Plate, 4.4Cu - 1.5Mg - 0.60Mn (2024-O), Annealed; or when specified, "As Fabricated" (2024-F)
AMS4045	Aluminum Alloy, Sheet and Plate, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr, 7075: (-T6 Sheet, -T651 Plate), Solution and Precipitation Heat Treated
AMS5070	Steel, Bars and Forgings, 0.18 - 0.23C (SAE 1022)
AMS5640	Steel, Corrosion-Resistant, Bars, Wire, and Forgings, 18Cr - 9.0Ni, Free Machining
AMS6370	Steel, Bars, Forgings, and Rings, 0.95Cr - 0.20Mo (0.28 - 0.33C) (SAE 4130)
AMS-C-27725	Coating, Corrosion Preventative, for Aircraft Integral Fuel Tanks for Use to 250 °F (121 °C)
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
AS8879	Screw Threads, UNJ Profile, Inch, Controlled Radius Root with Increased Minor Diameter
AS71051	Pipe Threads, Taper, Aeronautical National Form, Symbol ANPT - Design and Inspection Standard

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 D471	Standard Test Method for Rubber Property - Effect of Liquids
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2.3 PRI Publications

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

PRI-QPL-AMS3376	Products Qualified Under AMS3376
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3. TECHNICAL REQUIREMENTS

3.1 Material

Sealing compound shall be a permanently deformable, non-curing fluorosilicone product which does not contain solvents. Sealing compound shall exhibit no separation of components. Occluded gases shall not be permitted.

3.2 Date of Packaging

Shall be in accordance with AS5502 (3.1).

3.3 Toxicological Formulations

Shall be in accordance with AS5502 (3.2).

3.4 Shelf Life

Shelf life shall be a minimum of 18 months from the date of packaging when stored at 90 °F (32 °C) or lower. Material may be retested for shelf life extension per 4.3.3.

3.5 Quality

Shall be in accordance with AS5502 (3.3).

3.6 Properties

Sealing compound shall conform to the requirements shown in Table 1, determined in accordance with specified test methods.

Table 1 - Properties

Paragraph	Property	Requirements	Test Method
3.6.1	Nonvolatile Content, minimum	98%	AS5127/1 (5.1)
3.6.2	Extrusion Force		4.5.4
	Class 1	200 to 275 pounds force (890 to 1223 N)	
	Class 2	100 to 200 pounds force (445 to 890 N)	
	Class 3	250 to 350 pounds force (1112 to 1557 N)	
3.6.3	Corrosion Resistance	The surface of the panel which was in contact with sealing compound shall have no more corrosion or severe discoloration than the uncoated panel.	4.5.5
3.6.4	Pressure Rupture, minimum	10 inches Hg (254 mm Hg)	4.5.6
3.6.5	Fuel Resistance		4.5.7
3.6.5.1	Volume Change	+5 to +35%	4.5.7.1
3.6.5.2	Weight Loss, maximum	6%	4.5.7.2
3.6.6	Liquid and Vapor Sealability	No leaks or loss of pressurization	4.5.8
3.6.7	Reinjection Time, maximum	20 seconds	4.5.9

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

Shall be in accordance with AS5502 (4.1).

4.1.1 Source Inspection

Shall be in accordance with AS5502 (4.1.1).

4.1.2 Sampling

Shall be in accordance with AS5502 (4.3).

4.2 Classification of Tests

Shall be in accordance with AS5502 (4.2).

4.2.1 Qualification Tests

All technical requirements listed in Table 1 are qualification tests and shall be performed on a production lot of the sealing compound prior to shipment to a purchaser, when a change in ingredients and/or processing requires reapproval, or when purchaser deems confirmatory testing to be required.

4.2.2 Acceptance Tests

Requirements shown in Table 2 are acceptance tests and shall be performed on each lot per AS5502 (4.2.2.2).

Table 2 - Acceptance tests

Test	Requirement Paragraph
Nonvolatile Content	3.6.1
Extrusion Force	3.6.2
Pressure Rupture	3.6.4
Fuel Resistance	3.6.5

4.3 Sampling and Testing

Shall be in accordance with AS5502 (4.3).

4.3.1 Acceptance Tests

Shall be in accordance with AS5502 (4.3.1).

4.3.1.1 Each lot shall be subjected to acceptance testing. Sufficient material for acceptance testing shall be packaged in the same type containers that are being procured. After packaging, test kits shall be selected at random for acceptance testing. Acceptance testing is to be conducted on the final packaged product and consist of those tests outlined in 4.2.2.

4.3.2 Qualification Test Samples

Sample lots shall be produced using production scaled equipment. Enough material shall be supplied to perform all required tests.

4.3.2.1 Samples shall be identified as specified herein and below:

Sealing Compound, Non-Curing, Fluorosilicone Groove Injection, Temperature and Fuel Resistant
AMS3376D Class
MANUFACTURER'S IDENTIFICATION _____
LOT NUMBER _____
DATE OF PACKAGING _____
SHELF LIFE EXPIRATION DATE _____
STORE BELOW 90 °F (32 °C)

4.3.3 Shelf Life Extensions

4.3.3.1 Sampling

Shall be in accordance with AS5502 (4.3).

4.3.3.2 Shelf Life Testing

The testing to be conducted for shelf-life extensions are listed in Table 3.

Table 3 - Shelf life testing

Test	Requirement Paragraph
Nonvolatile Content	3.6.1
Extrusion Force	3.6.2
Pressure Rupture	3.6.4
Fuel Resistance	3.6.5

4.3.3.3 Time and Limits of Shelf Life Extensions

If tests are being performed at the end of the stated shelf life to extend the shelf-life of the sealing compound, and all tests are passed, the shelf-life will be extended 9 months. Up to four extensions are permissible.

4.4 Approval

Shall be in accordance with AS5502 (4.4).

4.5 Test Methods

4.5.1 Standard Conditions

Standard laboratory conditions shall be as specified in AS5127 (Section 4).

4.5.2 Standard Tolerances

Unless otherwise specified herein, standard tolerances of AS5127 (Section 3) shall apply.

4.5.3 Standard Cleaning

Unless otherwise specified herein, all test panels and jigs shall be cleaned using AMS3167 and AMS3819, Grade A, cleaning cloths.

4.5.4 Extrusion Force

The extrusion plastometer shown in Figures 1 and 2 shall be packed with a hand rolled, cylindrically shaped mass of sealing compound about 0.75 inch (19 mm) in diameter and 2.25 to 2.50 inches (57.2 to 63.5 mm) long. Special precaution should be taken to avoid forming air pockets in the slug of sealing compound. Sufficient fingertip pressure shall be used to force the sealing compound into intimate contact with the cylinder walls. The packed apparatus shall be stabilized for 24 hours at standard conditions (4.5.1). At the end of the stabilization period, insert the plastometer piston, center the assembly on the fixed base of a tensile machine, and load in compression at the constant rate of 0.100 inch $\pm$ 0.002 inch (2.54 mm $\pm$ 0.05 mm) per minute. When the top of the piston is approximately 1.25 inches (31.8 mm) from the top of the plastometer cylinder, the maximum scale load which occurs during the ensuing 0.25 inch (6.4 mm) of piston travel shall be recorded. Clean the plastometer completely per 4.5.3 after each trial. Repeat the test on the empty plastometer, measuring the scale load during the same piston travel location and the scale load obtained from the maximum scale loads obtained when the sealing compound was tested. The test shall be run in duplicate and the average of the results reported. Individual test results shall not deviate by more than 10% of the average value.