AEROSPACE MATERIAL SPECIFICATION

AMS3374™	REV. G

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Superseding AMS3374F

Sealing Compound
Aircraft Firewall, Silicone

RATIONALE

Provide clarification for updating sealant compound shelf-life extension requirements and general standard specification editorial updating.

1. SCOPE

1.1 Form

This specification covers six types of silicone sealing compounds as either one-part or two-part systems that cure at room temperature.

1.2 Application

These products are intended for use for sealing aircraft firewall structures against passage of air, vapors, and flames, but usage is not limited to such applications. The sealing compounds are effective at all temperatures from -65 to +400 °F (-54 to +204 °C) and are able to withstand flash temperatures of up to 2000 °F (1093 °C).

1.3 Safety - Hazardous Materials

Shall be in accordance with AS5502 (1.1).

1.4 Classification

Compounds covered by this specification are classified as follows:

Type 1 - One-part (or two-part, pre-mixed, room temperature stable) high temperature silicone, condensation cured.

Type 2 - Two-part high temperature silicone, addition cured.

Type 3 - Two-part high temperature silicone, condensation cured.

Type 4 - Two-part high temperature silicone, rapid curing, condensation cured.

Type 5 - One-part high temperature silicone, condensation cured, extended life.

Type 6 - Two-part high temperature silicone, lightweight, rapid curing, addition cured.

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For more information on this standard, visit
https://www.sae.org/standards/content/AMS3374G/

2. APPLICABLE DOCUMENTS

Shall be in accordance with AS5502 (Section 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.

AMS3021 Fluid, Reference for Testing Di-Ester (Polyol) Resistant Material

AMS4462 Aluminum Alloy, Sheet and Plate, Alclad, 4.4Cu - 1.5Mg - 0.60Mn (Alclad 2024, -T3 Sheet, -T351 Plate), Solution Heat Treated, Cold Worked and Naturally Aged

AMS4911 Titanium Alloy, Sheet, Strip, and Plate, 6Al - 4V, Annealed

AMS5516 Steel, Corrosion-Resistant, Sheet, Strip, and Plate, 18Cr - 9.0Ni (302), Solution Heat Treated

AS1241 Fire Resistant Phosphate Ester Hydraulic Fluid for Aircraft

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

AS5127/2 Test Method for Aerospace Firewall Sealant Flame Penetration

AS5502 Standard Requirements for Aerospace Sealants and Adhesion Promoters

2.2 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-AMS3374 Products Qualified Under AMS3374

3. TECHNICAL REQUIREMENTS

3.1 Date of Packaging

Shall be in accordance with AS5502 (3.1).

3.2 Toxicological Formulations

Shall be in accordance with AS5502 (3.2).

3.3 Quality

Shall be in accordance with AS5502 (3.3).

3.4 Shelf Life

Shelf life of sealing compounds conforming to Types 1 through 4 and Type 6 shall be a minimum of 6 months from the date of packaging when stored at the manufacturer's recommended conditions. Shelf life of sealing compound conforming to Type 5 shall be a minimum of 2 years from the date of packaging when stored at the manufacturer's recommended conditions.

3.5 Properties

The sealing compound, when mixed in accordance with the manufacturer's instructions and cured as in 4.4.6, shall conform to the requirements shown in Table 1, determined in accordance with specified test methods:

Table 1 - Properties

Paragraph	Property	Requirement	Test Procedures (Paragraph)
3.4.1	Nonvolatile Content, (% by Weight), Minimum		AS5127/1 (5.1)
	Type 1	90%	
	Types 2, 6	97%	
	Type 3	96%	
	Type 4	96%	
	Type 5	80%	
3.4.2	Flow, Inches (mm), Maximum	0.5 (13)	AS5127/1 (5.5.1)
3.4.3	Application Time, Hours, Minimum (From the Beginning of Mixing, Not Less Than 25 g/min Shall be Extruded)		AS5127/1 (5.6.2)
	Types 1, 5	Not applicable	
	Types 2, 3	4	
	Type 4	0.5	
	Type 6 (Not Less Than 5 g/min)	0.5	
3.4.4	Tack-Free Time (Measured from the Beginning of Mixing), Hours, Maximum		AS5127/1 (5.8)
	Types 1, 3, 5	6	
	Types 2, 6	24	
	Type 4	2	
3.4.5	Specific Gravity, Maximum		AS5127/1 (6.1)
	Types 1, 3, 4, 5	1.5	
	Type 2	1.6	
	Type 6	0.85	
3.4.6	Cure Time to Hardness, Maximum (Time to Reach 30 Durometer Type A)		AS5127/1 (5.9)
	Types 1, 2, 3, 5, 6	48 hours	
	Type 4	4 hours	
3.4.7	Resistance to Thermal Rupture, Maximum Deformation	No blistering or sponging, 0.125-inch (3.2-mm) deformation, maximum	AS5127/1 (7.2)[1] 300 °F (149 °C), 10 psi (69 kPa), 30 minutes
3.4.8	Low Temperature Flexibility	No cracking or loss of adhesion	AS5127/1 (7.6.2)
3.4.9	Oil Resistance	No loss of adhesion, softening, blistering, or reversion	AMS3374 (4.5.1)
3.4.10	Shear Strength, psi (kPa) Minimum 85% Cohesion Minimum		AMS3374 (4.5.2)
	Types 1, 2, 3, 4, 5	150 (1034)	
	Type 6	100 (690)	

Table 1 - Properties (continued)

Paragraph	Property	Requirement	Test Procedures (Paragraph)
3.4.11	Flame Resistance	No flame penetration	AS5127/2, Class B Fireproof
3.4.12	Peel Strength, lb/in (N/m), Minimum,		AS5127/1 (8.1)[2]
	Types 1, 2, 3, 4, 5	10 (1750)	
	Type 6	5 (875)	
3.4.13	Repairability	Adhere, meet 3.4.12 requirements	AS5127/1 (8.2)[3]
3.4.14	Storage Stability		
3.4.14.1	Accelerated Storage, Type 2 Only Application Time, Minimum Tack-Free Time, Maximum Cure Time to Hardness, Maximum Peel Strength, Minimum	 Same as 3.4.3 Same as 3.4.4 Same as 3.4.6 Same as 3.4.12	AS5127/1 (9.1)[4]
3.4.14.2	Long Term Storage Application Time, Minimum Tack-Free Time, Maximum Cure Time to Hardness, Maximum	 Same as 3.4.3 Same as 3.4.4 Same as 3.4.6	AS5127/1 (9.2)

[1] Test control specimens only, no AMS2629 exposure requirement.
[2] Test using two each AMS4462 aluminum alloy anodized panels per AS5127 (6.3), AMS4911 titanium alloy, and AMS5516 stainless steel panels only. For each substrate, test one specimen after being aged in air at 400 °F ± 5 °F (204 °C ± 3 °C) for 72 hours ± 1 hour. Test the other specimen with no preconditioning.
[3] Test only two each AMS4462 aluminum alloy anodized per AS5127 (6.3) with no preconditioning.
[4] Test using only two each AMS4462 aluminum alloy anodized panels per AS5127 (6.3) with no preconditioning.

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 and Testing

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

Shall be in accordance with AS5502 (4.2.1). Any changes in ingredients and/or processing of any adhesion promoter used to qualify sealing compounds shall require retesting of all technical requirements in Table 1, which rely on the use of adhesion promoter for qualification (Low Temperature Flexibility [3.4.8], Oil Resistance [3.4.9], Shear Strength [3.4.10], Peel Strength [3.4.12], and Repairability [3.4.13]).

4.2.2 Initial Acceptance Tests

Requirements in Table 2 shall be tested in accordance with AS5502 (4.2.2.1).

Table 2 - Initial acceptance tests

Test	Requirement Paragraph
Nonvolatile Content	3.4.1
Flow	3.4.2
Application Time	3.4.3
Tack-Free Time	3.4.4
Cure Time to Hardness	3.4.6
Shear Strength[1]	3.4.10
Peel Strength[2]	3.4.12

[1] Test only using AMS4911 titanium substrate.
[2] Test only using AMS4462 aluminum alloy anodized per AS5127 (6.3). Omit for Type 2 material.

4.2.3 Final Acceptance Tests

Requirements in Table 3 shall be tested in accordance with AS5502 (4.2.2.2).

Table 3 - Final acceptance tests/shelf-life extension (4.3.3)

Test	Requirement Paragraph
Application Time	3.4.3
Tack-Free Time	3.4.4
Cure Time to Hardness	3.4.6
Shear Strength[1]	3.4.10
Peel Strength[2]	3.4.12

[1] Shear strength applicable for shelf-life extension, test only using AMS4911 titanium substrate.
[2] Peel strength applicable for shelf-life extension, test only using AMS4462 aluminum alloy anodized per AS5127 (6.3). Omit for Type 2 material.

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 Batch and Lot

Shall be in accordance with AS5502 (4.3.1.1).

4.3.1.2 Initial and Final Acceptance Tests

Shall be in accordance with AS5502 (4.3.1.2 and 4.3.1.3).

4.3.2 Qualification Test Samples

Samples shall be produced using production scaled equipment. Enough material shall be supplied to perform all required tests. Samples shall be identified as specified herein and below:

SEALING COMPOUND, AIRCRAFT FIREWALL, SILICONE
AMS3374G Type _____
Manufacturer's Identification _____
Name of Manufacturer _____
Batch/Lot Number _____
Date of Manufacture _____
Shelf Life Expiration Date _____
Store Below 80 °F (27 °C)

4.3.3 Shelf-Life Extension

Shelf-life extension shall be in accordance with AS5502 (3.1.3), except as specified in the following paragraphs:

4.3.3.1 Shelf-Life Testing

The tests conducted for shelf-life extensions are listed in Table 3.

4.3.3.2 Shelf-Life Extension for Type 1

The shelf life of Type 1 sealing compound may be extended 3 months by exhibiting conformance to the applicable tests prior to the end of the manufacturer's stated shelf life. The shelf life may be further extended 45 days by exhibiting conformance to the same tests prior to the end of the original extension.

4.3.3.3 Shelf-Life Extension for Type 2

No sealing compounds are currently identified/approved for use as Type 2 in accordance PRI-QPL-AMS3374.

4.3.3.4 Shelf-Life Extension for Type 3

No sealing compounds are currently identified/approved for use as Type 3 in accordance PRI-QPL-AMS3374.

4.3.3.5 Shelf-Life Extension for Type 4

The shelf life of Type 4 sealing compound may be extended 3 months by exhibiting conformance to the applicable tests prior to the end of the manufacturer's stated shelf life.

4.3.3.6 Shelf-Life Extension for Type 5

The shelf life of Type 5 sealing compound may be extended 1 year by exhibiting conformance to applicable tests prior to the end of the manufacturer's stated shelf life. The shelf life may be further extended 6 months by exhibiting conformance to the same tests prior the end of the original extension.

4.3.3.7 Shelf-Life Extension for Type 6

No sealing compounds are currently identified/approved for use as Type 6 in accordance PRI-QPL-AMS3374.

4.4 Test Methods

4.4.1 Standard Tolerances

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

4.4.2 Standard Conditions

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

4.4.3 Preparation of Test Specimens

Test specimens shall be prepared, cleaned, surface treated, and coated in accordance with AS5127 (Section 6) prior to application of sealant for testing unless otherwise specified herein.

4.4.4 Application of Adhesion Promoter

When required by the sealant manufacturer, apply the recommended adhesion promoter in accordance with AS5127 (6.7). Any adhesion promoter used for qualification must be documented and will be included on any qualification approval documentation.

4.4.5 Application of Sealing Compound

Unless otherwise specified herein, freshly mixed or opened sealing compound shall be applied to test panels in accordance with AS5127 (6.8).

4.4.6 Cure of Sealant Compound

Cure the sealing compound at standard conditions in accordance with AS5127 (Section 4) and Table 4. Use standard cure for qualification or preproduction testing. Accelerated cure is optional and may be used for acceptance testing.

Table 4

Type	Standard Cure	Accelerated Cure
1, 3, 5	14 days	None
2, 6	7 days	1 day at standard conditions + 4 hours at 120 °F (49 °C)
4	7 days	None

4.5 Test Procedures

Standard test methods are in accordance with AS5127, AS5127/1, and AS5127/2. In the event of a conflict between the text of this document and any of the aforementioned documents, the text of this document takes precedence.

4.5.1 Oil Resistance

Panels shall be cleaned in accordance with AS5127 (6.1). Prepare two panels AMS4462 aluminum alloy chemically treated per AS5127 (6.2), 0.040 × 2.75 × 6 inches (1.0 × 69.8 × 152 mm), and apply two parallel strips of sealing compound, each strip being 0.188 × 0.75 × 5 inches (4.76 × 19 × 127 mm) extending to within 0.5 inch (13 mm) of the edge of the panel. Compound on the panel shall be cured as in 4.4.6. Immerse panels vertically in AMS3021 fluid at 140 °F (60 °C) for 72 hours ± 1 hour. Examine sealant to requirements of Table 1 (3.4.9).