

# AEROSPACE MATERIAL SPECIFICATION

(R)

## Sealing Compound Aircraft Firewall

### 1. SCOPE:

#### 1.1 Form:

This specification covers four types of sealing compounds curing to elastomeric materials.

#### 1.2 Application:

These products are used primarily 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:

While the materials, methods, applications and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

#### 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

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## 2. APPLICABLE DOCUMENTS:

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been canceled and no superseding document has been specified, the last published issue of that document shall apply.

### 2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or [www.sae.org](http://www.sae.org).

AMS 3021	Fluid, Reference, for Testing Di-Ester (Polyol) Resistant Material
AMS 4911	Titanium Alloy, Sheet, Strip, and Plate, 6Al - 4V, Annealed
AMS 5517	Steel, Corrosion Resistant, Sheet and Strip, 18Cr - 8Ni (SAE 30301) Cold Rolled, 125 ksi (862 MPa) Tensile Strength
AMS-QQ-A-250/5	Aluminum Alloy Alclad 2024, Plate and Sheet
AS5127	Methods for Testing Aerospace Sealants
AS5127/1	Test Methods for Aerospace Sealants Two-Component Synthetic Rubber Compounds
AS5127/2	Test Method for Aerospace Firewall Sealant Flame Penetration
AS5502	Standard Requirement for Aerospace Sealants

## 3. TECHNICAL REQUIREMENTS:

### 3.1 Date of Packaging:

Shall be in accordance with AS5502 - (3.1).

3.1.1 Shelf Life: Shall be 6 months minimum when stored at manufacturer's recommended conditions.

### 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 Properties:

Shall conform to the following requirements and test methods in Table 1.

TABLE 1 - Properties

Property	Requirement	Test Method
3.4.1 Nonvolatile Content, % min		AS5127/1 - (5.1)
Type 1	90	
Type 2	97	
Type 3	96	
Type 4	96	
3.4.2 Flow, inches (mm), max	0.5 (13)	AS5127/1 - (5.5.1)
3.4.3 Application Time, hours, min (25 g/minute requirement)		AS5127/1 - (5.6.2)
Type 1	Not applicable	
Type 2 - 3	4	
Type 4	0.5	
3.4.4 Tack-Free Time, hours, max		AS5127/1 - (5.8)
Types 1, 3	6	
Type 2	24	
Type 4	2	
3.4.5 Specific Gravity, max		AS5127/1 - (6.1)
Types 1, 3, 4	1.5	
Type 2	1.6	
3.4.6 14 Day Hardness, Durometer A, min		AS5127/1 - (6.2)
Types 1, 3	50	
Type 4	45	
3.4.7 Resistance to Thermal Rupture, inch (mm), max	0.125 (3.2)	AS5127/1 - (7.2) <sup>1</sup>
3.4.8 Low Temperature Flexibility	No cracking or loss of adhesion.	AS5127/1 - (7.6.2) <sup>1</sup>
3.4.9 Oil Resistance	No loss of adhesion, softening, or blistering.	AMS 3374B - (4.3.4)
3.4.10 Shear Strength, psi (kPa) min 85% Cohesion min	150 (1034)	AMS 3374B - (4.3.5)
3.4.11 Corrosion Resistance	Not applicable per AS5127/1 (fuel tank sealant requirements)	
3.4.12 Flame Resistance	No Flame Penetration	AS5127/2, Class B
3.4.13 Peel Strength, lb/inch (N/m), min	10 (1750)	AS5127/1 - (8.1) <sup>2</sup>
3.4.14 Repairability	Adhere, meet 3.4.13 requirements	AS5127/1 - (8.2) <sup>3</sup>

TABLE 1 - Properties (Continued)

Property	Requirement	Test Method
3.4.15 Storage Stability		
3.4.15.1 Accelerated Storage Type 2 only	Meet AMS 3374B (4.2.1) requirements	AS5127/1 (9.1) <sup>4</sup>
3.4.15.2 Long-Term Storage	Meet AMS 3374B (4.2.1) requirements	AS5127/1 (9.2) <sup>5</sup>

<sup>1</sup>Test control specimens only, no JRF exposure requirement.  
<sup>2</sup>Test using 2 each AMS-QQ-A-250/5 aluminum alloy chemically treated per AS5127 - (6.1), AMS 4911 titanium alloy and AMS 5517 stainless steel panels only. Test control specimens and specimens aged in air at 400 °F(204 °C) for 72 hours ± 1.  
<sup>3</sup>Omit AMS 2629 fluid soak from panel preparation.  
<sup>4</sup>Use AS5127/1 (9.1) for material conditioning only.  
<sup>5</sup>AS5127/2 compliant materials shall be tested per manufacturers recommendations.

#### 4. QUALITY ASSURANCE PROVISIONS:

##### 4.1 Responsibility for Inspection:

Shall be in accordance with AS5502 - (4.1).

##### 4.2 Classification of Tests:

Shall be in accordance with AS5502 - (4.2).

##### 4.2.1 Batch Acceptance Tests: Tests for the following requirements are acceptance tests and shall be performed on each batch prior to final packaging:

Nonvolatile content	(3.4.1)
Flow	(3.4.2)
Application time	(3.4.3)
Tack-Free time	(3.4.4)
14 Day Hardness	(3.4.6)
Shear Strength <sup>1</sup>	(3.4.10)
Peel Strength <sup>2</sup>	(3.4.13)

1. Test only using AMS 4911 titanium substrate.

2. Test only using AMS-QQ-A-250/5 aluminum alloy chemically treated per AS5127 - (6.1) substrate. Omit for Type 2 material.

## 4.3 Sampling and Testing:

Shall be in accordance with AS5502 - (4.3).

- 4.3.1 For Qualification Tests: Samples shall consist of six containers of sealing compound. Purchaser and manufacturer shall agree upon the container size. Samples shall be identified as specified below and forwarded to the activity responsible for qualification testing as designated in the letter of authorization from that activity.

## SEALING COMPOUND, AIRCRAFT FIREWALL

AMS 3374B Type \_\_\_\_\_

Manufacturer's Identification \_\_\_\_\_

Batch Number \_\_\_\_\_

Date of Manufacture \_\_\_\_\_

Submitted by (name) (date) for qualification test in accordance with AMS 3374 under authorization (reference authorization letter)

- 4.3.2 Test Methods: Shall be in accordance with test methods shown in Table 1.

- 4.3.3 Cure of Sealant Compound: Cure the sealing compound at standard conditions in accordance with AS5127 - (4) according to the schedule in Table 2. Use Standard Cure for qualification or preproduction testing. Accelerated Cure is optional and may be used for acceptance testing.

TABLE 2

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

- 4.3.4 Oil Resistance: All test panels shall be cleaned in accordance with AS5127 - (6.1.1). Use two panels AMS-QQ-A-250/5 aluminum alloy chemically treated per AS5127 - (6.1), 0.040 x 2.75 x 6 inches (1.0 x 69.8 x 152 mm), having two parallel strips of sealing compound applied, each strip being 0.188 x 0.75 x 5 inches (4.76 x 19 x 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 4.3.3. Immerse panels vertically in AMS 3021 fluid at 140 °F ± 2 (60 °C ± 1) for 72 hours ± 1. Examine for signs of blistering, softening, loss of adhesion, or reversion.