

(R) Sealing Compound, Low Adhesion, for Removable Panels
and Fuel Tank Inspection Plates

RATIONALE

5 year update. Premixed and frozen, final acceptance tests and qualification requirements added.

1. SCOPE

1.1 Form

This specification covers a polysulfide sealing compound with low adhesive strength. This elastomeric compound shall be supplied as a two-component system which cures at room temperature.

1.2 Application

This compound has been used typically for sealing aircraft access doors and accessories where gaskets are required, but usage is not limited to such applications. The sealing compound is resistant to jet fuels and high aromatic aviation gasolines and is usable from -65 to 250 °F (-54 to 120 °C).

1.3 Classification

The sealing compound covered by this specification is classified as corrosion inhibiting or non-corrosion inhibiting, method of application, and application time as follows:

Type 1: Non-corrosion inhibiting

Type 2: Corrosion inhibiting (non-chromated)

Class A - Suitable for brush application, available with the following application times:

Class A-1/2

Class A-2

Class B - Suitable for application by extrusion gun or spatula, available with the following application times:

Class B-1/2

Class B-2

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1.4 Safety – Hazardous Materials

Shall be in accordance with AS5502 (1.1)

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 cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

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

AMS2471	Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Undyed Coating
AMS2629	Fluid, Jet Reference
AMS4045	Aluminum Alloy Sheet and Plate, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr, 7075: (-T6 Sheet, -T651 Plate), Solution and Precipitation Heat Treated
AMS4049	Aluminum Alloy Sheet and Plate, Alclad, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (Alclad 7075; -T6 Sheet - T651 Plate), Solution and Precipitation Heat Treated
AMS4911	Titanium Alloy, Sheet, Strip, and Plate, 6Al - 4V, Annealed
AMS5516	Steel, Corrosion-Resistant, Sheet, Strip, and Plate, 18Cr - 9.0Ni (SAE 30302), Solution Heat Treated
AS5127	Methods for Testing Aerospace Sealings
AS5127/1	Aerospace Standard Test Methods for Aerospace Sealants, Two-Component Synthetic Rubber Compounds
AS5502	Standard Requirements for Aerospace Sealants

2.2 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>.

MIL-PRF-23377	Primer Coating: Epoxy, High Solids
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2.3 PRI Publications

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

PD 2000	Governance Administration of an Industry Managed Product Qualification Program
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PRI-QPL-AMS3284	Products Qualified Under AMS3284
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3. TECHNICAL REQUIREMENTS

3.1 Materials

The basic ingredient shall be a polysulfide type synthetic rubber. The sealing compound shall cure by the addition of a curing agent to the base compound, and shall not depend on solvent evaporation for curing. The material shall consist of corrosion inhibiting and non-corrosion inhibiting types but neither shall contain lead or chromium compounds. The curing agent shall possess sufficient color contrast to the base compound to permit easy identification of an unmixed or incompletely mixed sealing compound. The cured sealant shall be red or pink in color. The base compound and the curing agent shall be of uniform blend and shall be free of skins, lumps, and gelled or coarse particles.

3.2 Qualification

All products sold to this specification shall be listed, or approved for listing, on the qualified products list, PRI-QPL-AMS3284. The qualified products list shall be in accordance with PD 2000.

3.3 Date of Packaging

Shall be in accordance with AS5502 (3.1).

3.4 Toxicological Formulations

Shall be in accordance with AS5502 (3.2).

3.5 Quality

Shall be in accordance with AS5502 (3.3).

3.6 Shelf Life

Packaged material shall have a minimum shelf life of 9 months from date of packaging when stored unopened at 80 °F (27 °C) or lower.

3.6.1 Premixed and Frozen Material

Premixed and frozen material shall have a minimum storage life of 42 days at -80 °F (-62 °C) or lower, or 30 days at -40 °F (-40 °C) or lower, or 10 days at -10 to -40 °F (-23 to -40 °C) from date of mix/freeze. The date of mix/freeze shall be within the shelf life of the unmixed material.

3.7 Properties

The base compound and curing agent, when mixed in accordance with the manufacturer's instructions and cured as specified in 4.5.3.3, shall conform to the requirements shown in Table 1, as determined in accordance with the specified test methods.

TABLE 1 - PROPERTIES

Paragraph	Property	Requirement	Standard Test Method (paragraph)
3.7.1	Color	Reddish	Visual Examination
3.7.2	Specific Gravity, max	1.65	AS5127/1 (6.1)
3.7.3	Nonvolatile Content By weight, min. Class A Class B	84% 97%	AS5127/1 (5.1)
3.7.4	Viscosity of Base Compound		AS5127/1 (5.3)
	Class A	100 to 500 poise (10 to 50 Pa·S)	Use No. 6 spindle at 10 rpm
	Class B	(6000 to 14000 poise) (600 to 1400 Pa·S)	Use No. 7 spindle at 2 rpm
3.7.5	Flow (Class B only) Class B	0.10 to 0.75 inch (2.5 to 19.0 mm)	AS5127/1 (5.5.1)
3.7.6	Application Time, min		AS5127/1 (5.6)
	Class A	2500 poise (250 Pa·S) max	AS5127/1 (5.6.1) Use No. 7 spindle at 10 rpm
	Class B	15 grams/minute, min	AS5127/1 (5.6.2)
3.7.7	Tack-Free Time (Measured from the beginning of mixing), max		AS5127/1 (5.8)
	Class A-1/2	10 hours	
	Class A-2	24 hours	
	Class B-1/2	10 hours	
	Class B-2	24 hours	
3.7.8	Standard Cure Time, Durometer A Hardness, min		AS5127/1 (5.9)
	Class A-1/2	30 @ 24 hours	
	Class A-2	30 @ 72 hours	
	Class B-1/2	30 @ 24 hours	
	Class B-2	30 @ 72 hours	
3.7.9	Low Temperature Flexibility	No cracking or checking	AS5127/1 (7.6)
3.7.10	Peel Strength, max	4 pounds force/inch (lbf) (720 N/m), 98% adhesive failure, min	AMS3284 (4.5.4.1)

TABLE 1 - PROPERTIES (CONTINUED)

Paragraph	Property	Requirement	Standard Test Method (paragraph)
3.7.11	Resistance to Heat	No visual evidence of softening, sponging, checking, or cracking.	AMS3284 (4.5.4.2)
3.7.12	Accelerated Storage Stability	Must pass Viscosity, Tack Free Time, and Application Time	AS5127/1 (9.1)
3.7.13	Weight Loss and Flexibility, max	8% Weight Loss. No cracking or checking.	AS5127/1 (7.4)
3.7.14	Corrosion, Mixed-Metal Assemblies (Type 2, only)	No evidence of corrosion	AS5127/1 (7.10.2)

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 (4.1.2).

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).

4.2.1.1 Qualification of First Class

All products sold to this specification shall be listed, or approved for listing, on the PRI Qualified Products List. The qualified products list shall be in accordance with PD 2000. Class B-2 shall be the first material that is qualified for each supplier of sealing compound in accordance with AS5502 (4.7). Class B-2 sealing compound shall be tested for, and shall meet all technical requirements of this specification with the exception of requirements unique to other types of the sealing compound.

4.2.1.2 Qualification of Subsequent Classes and Application Times

Once qualification for Class B-2 has been obtained, other classes of the sealing compound and application times of qualified classes may be qualified. The formulation for other classes, and for other application times of qualified classes, shall be the same as Class B-2 except for minor variations necessary for conformance to viscosity and application time requirements. All compounds shall meet all technical requirements of this specification. Other classes of the sealing compound need only to be tested to the initial acceptance tests listed in 4.2.2.1 plus all peel strength tests listed in Table 3, or as defined by purchaser or QPL agency. Application times of qualified classes need only to be tested to the initial acceptance tests listed in 4.2.2.1 or as defined by purchaser or QPL agency.

4.2.2 Acceptance Tests

4.2.2.1 Initial Acceptance Tests

Tests for the following requirements are acceptance tests and shall be performed on each batch:

Color	3.7.1
Nonvolatile content	3.7.3
Viscosity of the base compound	3.7.4
Flow	3.7.5
Application time	3.7.6
Tack-free time	3.7.7
Standard cure time, hardness	3.7.8
Peel adhesion on MIL-PRF-23377	4.5.4.1

4.2.2.2 Final Acceptance Tests

Shall be in accordance with AS5502 (4.2.3).

4.3 Sampling and Testing

Shall be in accordance with AS5502 (4.3).

4.3.1 For Acceptance Tests

Shall be in accordance with AS5502 (4.3.1).

4.3.2 Statistical Sampling Plan

4.3.3 A statistical sampling plan, acceptable to the purchaser, may be used in lieu of sampling as in 4.3.1 and the report for 4.6 shall state that such a plan was used.

4.3.4 Shelf-Life Surveillance and Extensions

The following inspections are to be conducted for shelf-life surveillance and updating:

Viscosity of the base compound	3.7.4
Application time	3.7.6
Tack-free time	3.7.7
Standard cure time	3.7.8

Tests are to be conducted in accordance with test methods outlined in this specification for acceptance tests. If the tests are being performed at the end of the stated shelf-life to update the shelf-life of the sealing compound, and all tests are passed, the shelf-life will be extended an additional 3 months. Up to three extensions will be allowed.

4.4 Approval

Shall be in accordance with AS5502 (4.4).

4.4.1 Purchaser Approval

Shall be in accordance with AS5502 (4.4.1).

4.4.2 Method of Inspection

Shall be in accordance with AS5502 (4.4.2).

4.5 Test Methods

4.5.1 Standard Test Conditions

4.5.2 Standard laboratory conditions shall be in accordance with AS5127 (4.1). Test specimens shall be prepared and immediately after completion of preparation, shall be placed under $77^{\circ}\text{F} \pm 2$ ($25^{\circ}\text{C} \pm 1$) and $50\% \pm 5$ relative humidity to cure.

4.5.3 Standard Tolerances

Unless otherwise specified herein, standard tolerances of AS5127 (3.1) "Standard Tolerances" shall apply.

4.5.4 Preparation of Test Specimens

Test specimens shall be prepared in accordance with AS5127 (6).

4.5.4.1 Cleaning of Test Panels

Test panels shall be cleaned in accordance with AS5127 (6).

4.5.4.2 Application of Sealing Compound

Unless otherwise specified herein, freshly mixed sealing compound shall be applied to test panels in accordance with AS5127 (6.8) "Application of Sealing Compound" and shall be given an application of sealing compound to produce a coating having a total thickness of $0.125\text{ inch} \pm 0.016$ ($3.2\text{ mm} \pm 0.4$) when cured.

4.5.4.3 Curing of Sealing Compound

Shall be in accordance with AS5127 (6.9) "Curing of Sealing Compounds". For qualification and preproduction testing, the sealing compound shall be cured 14 days at standard conditions. For acceptance testing, the sealing compound shall be given an accelerated cure of 48 hours at standard conditions followed by 24 hours at 140°F (60°C).

4.5.4.4 Curing of Organic Coating

When organic coating is specified for the test panels, the coating shall be fully cured as defined by the applicable coating specification before cleaning. The applied coatings shall be at least 14 days, but not more than 6 months old when stored at ambient indoor temperatures.

4.5.5 Test Procedures

In the event of a conflict between the test of this document and AS5127 and/or AS5127/1, the text of this document takes precedence.