



AEROSPACE MATERIAL SPECIFICATION

AMS3102™**REV. A**Issued 2017-02
Revised 2022-01

Superseding AMS3102

Sealing Compound, Polythioether Rubber
Fast Curing, Light Weight (Specific Gravity 0.78, Max)
for Integral Fuel Tanks and General Purpose,
Intermittent Use to 360 °F (182 °C)

RATIONALE

Five-Year Review. General updates and corrections. Amended one tensile and elongation 7-day heat exposure requirement from 300 °F (149 °C) to 285 °F (141 °C) in order to be in agreement with similar polythioether integral fuel tank and general purpose sealants.

1. SCOPE

1.1 Form

This specification covers a fuel-resistant polythioether sealing compound with low specific gravity, supplied as a two-component system which cures at room temperature.

1.2 Application

This sealing compound intended usage includes sealing aircraft integral fuel tanks, fillets, and fastener seals, and faying surface seals as well as initial sealing of faying surfaces, overcoating fasteners, pressure barriers, sealing joints, and seams, for service from -80 to +320 °F (-62 to +160 °C), with short-term exposure (approximately 6 hours, cumulative) up to 360 °F (182 °C), but usage is not limited to such applications. This product is not recommended for use on aircraft windshields or canopies or other applications where crazing or degradation of plastic components may occur. Sealing compound must be applied at temperatures above 50 °F (10 °C), but will cure at lower temperatures.

1.3 Classification

Sealing compounds covered by this specification are classified by method of application and application times as follows:

Class B - Suitable for application by extrusion gun or spatula. Available with the following application times in hours:

B-1/2

B-2

1.4 Safety - Hazardous Materials

Shall be in accordance with AS5502 (1.1).

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Documents

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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 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 +1 724-776-4970 (outside USA), www.sae.org.

AMS2629	Fluid, Jet Reference
AMS3020	Oil, Reference, for "L" Stock Rubber Testing
AMS3021	Fluid, Reference, for Testing Di-Ester (Polyol) Resistant Material
AMS3277	Sealing Compound, Polythioether Rubber Fast Curing for Integral Fuel Tanks and General Purpose, Intermittent Use to 360 °F (182 °C)
AMS4045	Aluminum Alloy Sheet and Plate, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr, 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 (302), Solution Heat Treated
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

2.2 U.S. Government Publications

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

MIL-PRF-23377	Primer Coatings: Epoxy High Solids
MIL-PRF-85285	Coating, Polyurethane, Aircraft and Support Equipment
MIL-PRF-85582	Primer Coatings, Epoxy, Waterborne

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.

OP 2007 Appendix G9 Additional Requirements for the Aerospace Sealants and Associated Materials (G9) QPG

PRI-QPL-AMS3102 AMS3102 Qualified Products Listing

2.4 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 Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement

3. TECHNICAL REQUIREMENTS

3.1 Materials

The basic ingredient shall be synthetic rubber, made from liquid polythioether and derivations thereof. The sealing compound shall cure by the addition of a separate curing agent to the base compound and shall not depend on solvent evaporation for curing. The curing agent shall possess sufficient color contrast to the base compound to permit easy identification of an unmixed or incompletely mixed sealing compound. Neither the base compound nor the cured sealing compound shall be red or pink in color. No glass fillers shall be used.

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 Quality

Shall be in accordance with AS5502 (3.3).

3.5 Shelf Life

Shelf life shall be a minimum of 9 months from the date of packaging when stored at 60 to 80 °F (16 to 27 °C). Material may be retested for shelf life extension per 4.3.3.

3.5.1 Premixed and Frozen Material

Premixed and frozen material shall have a minimum storage life of 42 days at -80 °F (-62 °C) or lower from date of mix/freeze. The date of mix/freeze shall be within the shelf life of the unmixed material. Recommendations for longer storage lives at other temperatures may be provided by the manufacturer.

3.6 Properties

The base compound and the curing agent, when mixed in accordance with manufacturers' instructions and cured in accordance with 4.5.4.5, shall conform to all requirements shown in Table 1, determined in accordance with the specified test methods.

Table 1 - Properties

Paragraph	Property	Requirement	Test Procedures (Paragraph)
3.6.1	Nonvolatile Content, by weight, minimum	95%	AS5127/1 (5.1)
3.6.2	Viscosity of Base Compound		AS5127/1 (5.3)
	Class B (Use No. 7 spindle at 2 rpm)	9000 to 18000 poises (900 to 1800 Pa•s)	
3.6.3	Flow, maximum Class B	0.75 inch (19.0 mm)	AS5127/1 (5.5.1)
3.6.4	Application Time Class B - From the beginning of mixing, 10 g/min, minimum B-1/2 B-2	1/2 hour 2 hours	AS5127/1 (5.6) AS5127/1 (5.6.2)
3.6.5	Tack-Free Time (Measured from beginning of mixing), maximum B-1/2 B-2	3 hours 8 hours	AS5127/1 (5.8)
3.6.6	Standard Cure Time (max time to reach 30 Durometer A), maximum B-1/2 B-2	4 hours 12 hours	AS5127/1 (5.9)
3.6.7	Specific Gravity (Note 1)	0.72 to 0.78	AS5127/1 (6.1) and ASTM D792 Method A or Method B (using hexane)
3.6.8	Heat Reversion Resistance	The sealant shall not revert to a liquid or paste-like consistency, nor shall it become brittle or lose adhesion	AS5127/1 (6.5)
3.6.9	Hydrolytic Stability, minimum	30 Durometer A	AS5127/1 (6.6)
3.6.10	Shaving and Sanding	No tearing or rolling of the sealant; smooth finish	AS5127/1 (6.7)
3.6.11	Paintability	No separation from sealant	AS5127/1 (6.8)
3.6.12	Weathering	No cracking, chalking, peeling, or loss of adhesion	AS5127/1 (6.9)
3.6.13	Chalking	Slight	AS5127/1 (7.1)
3.6.14	Resistance to Thermal Rupture, maximum Oven air aging at 320 °F (160 °C), 10 psi (69 kPa), 30 minutes	0.156 inch (3.96 mm) No blistering or sponging	AMS3102 (4.6.1) and AS5127/1 (7.2)
3.6.15	Weight Loss and Flexibility (Standard Cure) Weight Loss, maximum Flexibility	8% No cracking or checking	AS5127/1 (7.4)
3.6.16	Volume Swell, maximum (Note 1)	20%	AS5127/1 (7.5)
3.6.17	Low Temperature Flexibility	No visual evidence of cracking or checking, no loss of adhesion	AMS3102 (4.6.2) and AS5127/1 (7.6)
3.6.18	Tensile Strength and Elongation, minimum		AS5127/1 (7.7)
3.6.18.1	Standard Cure	200 psi (1379 kPa), 250% elongation	
3.6.18.2	Standard Cure + 2 hours at 360 °F (182 °C)	150 psi (1,034 kPa), 50% elongation	
3.6.18.3	Standard Cure + 12 days at 140 °F (60 °C), + 60 hours at 160 °F (71 °C), + 6 hours at 180 °F (82 °C) all in AMS2629, Type 1	125 psi (862 kPa), 100% elongation	
3.6.18.4	Standard Cure + 12 days at 140 °F (60 °C), + 60 hours at 160 °F (71 °C), + 6 hours at 180 °F (82 °C) all in AMS2629, Type 1 + 24 hours at 120 °F (49 °C), + Standard Heat Cycle as in accordance with 4.5.3, in air	125 psi (862 kPa), 50% elongation	