

AEROSPACE MATERIAL SPECIFICATION

SAE AMS3276E

Issued 1993-10
Revised 2008-03

Superseding AMS3276D

Sealing Compound, Integral Fuel Tanks and General Purpose,
Intermittent Use to 360 °F (182 °C)

RATIONALE

AMS3276E results from a Five Year Review and update of this specification. Also changing from clad to alloy aluminum to be consistent with actual use.

1. SCOPE

1.1 Form

This specification covers five classes of a fuel-resistant polysulfide (T) sealing compound supplied as a two-component system.

1.2 Application

This sealing compound has been used typically for fuel tank sealing, cabin pressure sealing, and aerodynamic smoothing, but usage is not limited to such applications. It can be used for faying surface sealing, wet-installation of fasteners, overcoating fasteners, sealing joints and seams, and nonstructural adhesive bonding. This room-temperature curing sealing compound can be used in fuel areas as well as nonfuel areas. Curing of this material can be accelerated at higher temperatures. This material is usable from -65 to 250 °F (-54 to 121 °C), with short-term exposure (approximately six hours) to 360 °F (182 °C).

1.2.1 Notation

AMS3100 adhesion promoter should be applied prior to the sealant.

1.3 Classification

Sealing compounds covered by this specification are classified as follows:

Class A - Suitable for application by brush. Available with the following application times in hours:

A-1/2
A-2
A-4

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Class B - Suitable for application by extrusion gun or spatula. Used primarily for fillet sealing, injection sealing, prepack sealing, and rework of damaged fillet seals. Available with the following application times in hours:

B-1/4
B-1/2
B-1
B-2
B-4
B-6
B-12

Class C - Suitable for application by brush, extrusion gun, roller or spatula. Used mostly for fay surface sealing and wet installation of fasteners. Available with the following application times in hours:

Notation: () Assembly time in hours, where indicated.

C-1/2
C-2
C-8(20)

Class D - Suitable for application by extrusion gun or spatula. Used for hole and void filling, or for other applications where a very thick sealant is required. Available with the following application times in hours:

D-1/4
D-1/2

Class E - Suitable for application by automatic riveting equipment. Available with the following application time in hours:

E-6

1.4 Precautions

1.4.1 Safety - Hazardous Materials

Shall be in accordance with AS5502 (1.1).

2. APPLICABLE DOCUMENTS

Shall be in accordance with AS5502 (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 724-776-4970 (outside USA), www.sae.org.

AMS2471	Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Undyed Coating
AMS2629	Fluid, Jet Reference Fluid
AMS3020	Oil, Reference, for "L" Stock Rubber Testing
AMS3021	Fluid, Reference, for Testing Diester (Polyol) Resistant Material
AMS3100	Adhesion Promoter, for Polysulfide Sealing Compounds
AMS3276	Sealing Compound, Integral Fuel Tank and Fuel Cell Cavities, Intermittent Use to 360 °F (182 °C)
AMS4045	Aluminum Alloy Sheet and Plate, 5.6 Zn - 2.5Mg - 1.6 Cu - 0.23 Cr (7075 -T6 Sheet, T651 Plate), Solution and Precipitation Heat Treated
AMS4911	Titanium Sheet, Strip and Plate, 6Al, 4V Annealed
AMS5516	Steel, Corrosion Resistant, Sheet, Strip, and Plate, 18Cr - 9.0Ni (SAE 30302) Solution Heat Treated
AMS-C-27725	Coating, Corrosion Preventive, for Aircraft Integral Fuel Tanks

ARP1917	Clarification of Terms Used in Aerospace Metals Specifications
AS5127	Methods for Testing Aerospace Sealants
AS5127/1	Methods for Testing 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 Coatings: Epoxy Polyamide, Chemical and Solvent Resistant
MIL-DTL-81706	Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys
MIL-PRF-85285	Coating, Polyurethane, High Solids
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.

PD 2000	Procedures for an Industry Qualified Product Management Process
PRI-QPL-AMS-3276	Products Qualified Under AMS3276

2.4 Definitions

See AS5502 (2.3)

3. TECHNICAL REQUIREMENTS

3.1 Materials

The basic ingredient shall be synthetic rubber of the polysulfide (T) type. The sealing compound shall cure by addition of a curing agent to the base compound; the curing agent is also called a catalyst or accelerator. Curing of the sealing compound shall not depend on solvent evaporation for curing. The material shall contain no lead compounds. The curing agent shall possess sufficient color contrast to base compounds to permit easy identification of an unmixed or incompletely mixed sealing compound. Neither the base compound nor the cured sealant shall be red or pink in color.

3.1.1 Qualification

All products sold to this specification shall be listed, or approved for listing, on the qualified products list, PRI-QPL-AMS3276. The qualified products list shall be in accordance with PD 2000.

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. Material may be retested for shelf life extension.

3.5.1 Premixed and Frozen Material

Premixed and frozen material shall have a minimum storage life of 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.

3.6 Properties

The sealing compound and the curing agent 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, min		AS5127/1 (5.1)
	Class A	85%	
	Class B	96%	
	Class C	92%	
	Class D	97%	
	Class E	85%	
3.6.2	Air Content, max (Class B only)	4%	AS5127/1 (5.2)
3.6.3	Viscosity of Base Compound		AS5127/1 (5.3)
	Class A (Use No. 6 spindle @ 10 rpm)	100 to 600 poises (10 to 60 Pa•S)	
	Class B (Use No. 7 spindle @ 2rpm)	9000 to 16000 poises (900 to 1600 Pa•S)	
	Class C (Use No. 6 spindle @ 2 rpm)	1000 to 4000 poises (100 to 400 Pa•S)	
	Class D (Use No. 7 spindle @ 2 rpm)	20,000 to 30,000 poises (2000 to 3000 Pa•S)	
	Class E (Use No. 7 spindle @ 10 rpm)	300 to 800 poises (30 to 80 Pa•S)	
3.6.4	Viscosity of Curing Agent (Use No. 7 spindle @ 10 rpm)	700 to 2500 poises (70 to 250 Pa•S)	AS5127/1 (5.4)
3.6.5	Flow		AS5127/1 (5.5)
	Class B (Class B-2: see Notes 1 and 2.)	0.1 to 0.75 inches (2.5 to 19.0 mm)	AS5127/1 (5.5.1)
	Class C	0.010 inch (0.25 mm), min	AS5127/1 (5.5.2)
	Class D	0.20 inch (5.1 mm), min	AS5127/1 (5.5.1)
3.6.6	Application Time, min		AS5127/1 (5.6)
	Class A - From the beginning of mixing, the viscosity shall not exceed 2500 poise (250 Pa•S), (Use No. 7 spindle @ 10 rpm)		AS5127/1 (5.6.1)
	Class A-1/2	1/2 hour	
	Class A-2	2 hours	
	Class A-4	4 hours	

TABLE 1 - PROPERTIES (CONTINUED)

Paragraph	Property	Requirement	Test Procedures (Paragraph)
3.6.6 (con't)	Class B - From the beginning of mixing, not less than 15 grams per minute shall be extruded.		AS5127/1 (5.6.2)
	Class B-1/4	1/4 hour	
	Class B-1/2	1/2 hour	
	Class B-1	1 hour	
	Class B-2 (see Notes 1 and 2)	2 hours	
	Class B-4	4 hours	
	Class B-6	6 hours	
	Class B-12	12 hours	
	Class C - From the beginning of mixing, not less than 30 grams per minute shall be extruded		AS5127/1 (5.6.2)
	Class C-1/2	1/2 hours	
	Class C-2	2 hours	
	Class C-8(20)	8 hours	
	Class D - From the beginning of mixing, not less than 15 grams per minute shall be extruded.		AS5127/1 (5.6.2)
	Class D-1/4	1/4 hour	
	Class D-1/2	1/2 hour	
	Class E - From the beginning of mixing, the viscosity shall be between 800 to 1100 poise (80 to 110 Pa•S), (Use No. 7 spindle @ 10 rpm)		AS5127/1 (5.6.1)
	Class E-6	6 hours	
3.6.7	Assembly Time (Class C only)		AS5127/1 (5.7)
	Class C-8(20)	20 hours	
3.6.8	Tack-Free Time (Measured from beginning of mixing), hours, max		AS5127/1 (5.8)
	Class A-1/2	10	
	Class A-2	24	
	Class A-4	36	
	Class B-1/4	6	
	Class B-1/2	10	
	Class B-1	12	
	Class B-2 (See Notes 1 and 2)	24	
	Class B-4	36	
	Class B-6	48	
	Class B-12	120	
	Class C-1/2	10	
	Class C-2	24	
	Class C-8(20)	96	
	Class D-1/4	6	
	Class D-1/2	10	
	Class E-6	120	

TABLE 1 - PROPERTIES (CONTINUED)

Paragraph	Property	Requirement	Test Procedures (Paragraph)
3.6.9	Standard Cure Time (time to reach 35 Durometer A), hours, max		AS5127/1 (5.9)
	Class A-1/2	30	
	Class A-2	72	
	Class A-4	90	
	Class B-1/4	16	
	Class B-1/2	30	
	Class B-1	36	
	Class B-2 (See Notes 1 and 2.)	72	
	Class B-4	90	
	Class B-6	120	
	Class B-12	240	
	Class C-1/2	30	
	Class C-2	72	
	Class C-8(20)	336	
	Class D-1/4	16	
	Class D-1/2	30	
	Class E-6	240	
3.6.10	Fluid Immersion Cure Time, min (Classes A-1/2, B-1/4, B-1/2 only)		AS5127/1 (5.11)
	After 48 hours	25 Shore A	
	After 120 hours	35 Shore A	
3.6.11	Specific Gravity, max average	1.65	AS5127/1 (6.1)
3.6.12	14-Day Hardness, min (Note 3)	40 Durometer A	AS5127/1 (6.2)
3.6.13	Radiographic Density		AS5127/1 (6.3)
	Difference between plate and plate plus sealant, max	1.00	
	Through sealant in the slot, approximately	3.00	
3.6.14	Resistance to Thermal Expansion	Sealant flush with groove within +0.010 and -0.003 inch (+0.25 and -0.08 mm) at the wide end of the test block and within +0.005 and -0.003 inch (+0.13 and -0.08 mm) at the narrow end.	AS5127/1 (6.4)
3.6.15	Heat Reversion Resistance (Classes B, C and E only)	The sealant shall not revert to a liquid or paste-like consistency, nor shall it become brittle or lose adhesion.	AS5127/1 (6.5)
3.6.16	Hydrolytic Stability	30 Durometer A	AS5127/1 (6.6)
3.6.17	Shaving and Sanding (Class B only)	No rolling or tearing of the sealant, smooth finish	AS5127/1 (6.7)
3.6.18	Paintability	No separation from sealant	AS5127/1 (6.8)

TABLE 1 - PROPERTIES (CONTINUED)

Paragraph	Property	Requirement	Test Procedures (Paragraph)
3.6.19	Weathering	No cracking, chalking, peeling or loss of adhesion	AS5127/1 (6.9)
3.6.20	Chalking	Slight	AS5127/1 (7.1)
3.6.21	Resistance to Thermal Rupture, max (Class A and B only), Oven air aging at 300 °F (149 °C), 10 psi (69 kPa), 30 minutes	0.156 inch (3.96 mm) No blistering or sponging	AMS3276 (4.6.1) and AS5127/1 (7.2)
3.6.22	Weight Loss & Flexibility Weight Loss, Max	8%	AS5127/1 (7.4)
3.6.23	Flexibility Volume Swell	No cracking or checking 5 to 15%	AS5127/1 (7.5)
3.6.24	Low Temperature Flexibility	No visual evidence of cracking or checking. No loss of adhesion	AMS3276 (4.6.2) and AS5127/1 (7.6)
3.6.25	Tensile Strength and Elongation, min (Classes B, C-1/2, C-2, C-6, D-1/4, and D-1/2)		AS5127/1 (7.7)
3.6.25.1	Standard Cure	250 psi (1724 kPa), 250% elongation	
3.6.25.2	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 I	125 psi (862 kPa), 100% elongation	
3.6.25.3	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 I, + 24 hours at 120 °F (49 °C), followed by Standard Heat Cycle in Air as in 4.5.3	125 psi (862 kPa), 25% elongation	
3.6.25.4	Standard Cure + Standard Heat Cycle as in 4.5.3	100 psi (689 kPa), 25% elongation	
3.6.25.5	Standard Cure + 2 hours at Standard Conditions in AMS3021	125 psi (862 kPa), 100% elongation	
3.6.25.6	Standard Cure + 72 hours at Standard Conditions in AMS3020	125 psi (862 kPa), 100% elongation	
3.6.26	Shear Strength, min (Classes C and E only)	200 psi (1379 kPa), 100% cohesive failure	AS5127/1 (7.8)
3.6.27	Corrosion Resistance	No corrosion under sealant or signs of deterioration	AS5127/1 (7.9)

TABLE 1 - PROPERTIES (CONTINUED)

Paragraph	Property	Requirement	Test Procedures (Paragraph)
3.6.28	Peel Strength, min (All Classes except C-8(20))	20 lbf/inch (3503 N/m) /100% cohesive failure	AMS3276 (4.6.3)
3.6.28.1	Peel Strength for Repair Material, min	10 lbf/inch (1751 N/m) /100% cohesive failure	AMS3276 (4.6.3.4)
3.6.29	Repairability, min	5 lbf/inch (876 N/m) /100% cohesive failure	AMS3276 (4.6.4)
3.6.30	Storage Stability		
3.6.30.1	Accelerated Storage		AS5127/1 (9.1)
	Viscosity of Base Compound	Same as 3.6.3	
	Viscosity of Curing Agent	Same as 3.6.4	
	Flow	Same as 3.6.5	
	Application Time	Same as 3.6.6	
	Assembly Time	Same as 3.6.7	
	Tack Free Time	Same as 3.6.8	
	Peel Strength: 4 Aluminum panels, Sulfuric acid anodized in accordance with AMS2471 and coated with AMS-C-27725 Type II, Class B (See 8.6) 2 panels in AMS2629 Type I; 2 panels in AMS2629 Type I / 3% saltwater; all at 140 °F (60 °C) for 7 days	20 lbf/inch (3503 N/m) / 100% cohesive failure	AS5127/1 (8.1)
3.6.30.2	Long Term Storage		AS5127/1 (9.2)
	Application Time	Same as 3.6.6	
	Tack-Free Time, hours, max		
	Class A-1/2	20	
	Class A-2	48	
	Class A-4	72	
	Class B-1/4	16	
	Class B-1/2	20	
	Class B-1	24	
	Class B-2	48	
	Class B-4	72	
	Class B-6	96	
	Class B-12	180	
	Class C-1/2	20	
	Class C-2	48	
	Class C-8(20)	144	
	Class D-1/4	16	
	Class D-1/2	20	
	Class E-6	180	
	Standard Cure Time, hours, max		
	Class A-1/2	40	
	Class A-2	72	
	Class A-4	114	
	Class B-1/4	24	
	Class B-1/2	40	

TABLE 1 - PROPERTIES (CONTINUED)

Paragraph	Property	Requirement	Test Procedures (Paragraph)
3.6.30.2 (con't.)	Class B-1	54	
	Class B-2	72	
	Class B-4	114	
	Class B-6	144	
	Class B-12	264	
	Class C-1/2	40	
	Class C-2	72	
	Class C-8(20)	360	
	Class D-1/4	24	
	Class D-1/2	40	
	Class E-6	144	

Note 1: Two cartridges of freshly mixed Class B-2 sealing compound shall be held at Standard Conditions to be tested for Flow, Application Time, Tack-Free Time, and Standard Cure Time. These tests shall be run concurrently during the mixing/freezing process.

Note 2: Class B-2 shall be tested using sealing compound which has been freshly mixed, then quick-frozen and thawed in accordance with AS5127/1 (4.4).

Note 3: Does not apply for longer work life sealants including Classes B-12; C- 8 (20)

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

All technical requirements listed in Table 1 are qualification tests (See 8.2) and shall be performed on the initial production lot of the sealing compound prior to shipment to a purchaser, when a change in ingredients and/or processing requires reapproval as in 4.4, and when purchaser deems confirmatory testing to be required.

4.2.1.1 Qualification

All products sold to this specification shall be listed, or approved for listing, on the Qualified Products List, PRI-QPL-AMS3276. The qualified products list shall be in accordance with PD 2000: See AS5502 (2.1). Class B-2 shall be the first material that is qualified for each supplier of sealing compound in accordance with (8.2). 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 classes of the sealing compound.

4.2.1.2 Once qualification for Class B-2 has been obtained, other classes of the sealing compound may be qualified. The formulation for other classes, and for other Class B application times, 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. However, other classes of the sealing compound need only to be tested to the initial acceptance tests listed in 4.2.2, plus all peel strength tests listed in Table 5, or as defined by purchaser or QPL agency.

4.2.2 Initial Acceptance Tests

Requirements shown in Table 2 are initial acceptance tests and shall be performed on each batch.

4.2.3 Final Acceptance Tests

Requirements shown in Table 3 are final acceptance tests and shall be performed on each lot. Acceptance tests of the final packaged product shall consist of the following:

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

A batch shall be defined as the quantity of material run through a mill or mixer at one time. A lot shall be defined as material from one batch of each component assembled (packaged) as finished product in one size and/or type of container at the same time. The lot, when used, shall be traceable to the batches of base compound and curing agent.

TABLE 2 - ACCEPTANCE TESTS

Test	Requirement Paragraph
Nonvolatile Content	3.6.1
Viscosity of the Base Compound ^{1/}	3.6.3
Viscosity of the Curing Agent ^{1/}	3.6.4
Flow (Class B only)	3.6.5
Application Time	3.6.6
Assembly Time (C-4(4) only)	3.6.7
Tack-Free Time	3.6.8
Standard Cure Time	3.6.9
14-Day Hardness	3.6.11
Shear Strength (Class C only)	3.6.21
Peel Strength	3.6.28

^{1/} Testing need not be performed on material packaged in sectionalized containers or small size containers less than eight ounces (235 mL).

TABLE 3 - FINAL ACCEPTANCE TESTS

Test	Requirement Paragraph
Air Content	3.6.2
Application Time	3.6.6
Tack-Free Time	3.6.8
Standard Cure Time	3.6.9

4.3.1.2 Initial and Final Acceptance Tests

Each batch shall be subjected to both initial and final acceptance testing. Sufficient material for initial acceptance testing shall be packaged in the same type containers that are being procured. Initial acceptance tests are those listed in 4.2.2. After successful completion of the initial acceptance tests, the batch shall be released for final packaging. During packaging, test kits shall be selected at random for final acceptance testing. Final acceptance testing is to be conducted on the final packaged product and consist of those tests outlined in 4.2.3.

4.3.1.3 If the batch is being packaged in different types and/or size containers, the final acceptance tests shall be conducted on each type and/or each size containers. If the sealing compound is being procured under different purchase orders, but the purchase orders call for the same type and size containers, it is only necessary to conduct the final acceptance tests one time.

4.3.1.4 Plastic Injection Kits

Shall be in accordance with AS5502 (4.3.1.3).

4.3.1.5 Cans, Pails, and Drums

Shall be in accordance with AS5502 (4.3.1.4).

4.3.1.6 Both Type Containers

Shall be in accordance with AS5502 (4.3.1.5).

4.3.2 Statistical Sampling Plan

When a statistical sampling plan has been agreed upon by the purchaser and supplier, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.3 and the report for 4.7 shall state that such plan was used.

4.3.3 Qualification Test Samples

Samples should consist of one five-gallon (19-L) pail of base compound with one 1-gallon (4-L) pail of curing agent, two 1-quart (1-L) kits of sealing compound, three 1-pint (1/2-L) kits of sealing compound, one 1-quart (1-L) container of curing agent, and two 1-pint (1/2-L) containers of adhesion promoter.

Samples shall be identified as specified herein and below:

SEALING COMPOUND, INTEGRAL FUEL TANKS AND GENERAL PURPOSE,

INTERMITTENT USE TO 360 °F (182 °C)

AMS3276E Class _____

MANUFACTURER'S IDENTIFICATION _____

BATCH/LOT NUMBER _____

DATE OF PACKAGING _____

SHELF LIFE EXPIRATION DATE _____

STORE BELOW 80 °F (27 °C)

4.3.4 Shelf Life Surveillance and Updating

4.3.4.1 Sampling

Shall be in accordance with AS5502 (4.1.2).

4.3.4.2 Shelf-Life Testing

The inspections to be conducted for shelf-life surveillance and updating are listed in Table 4.

TABLE 4 - SHELF-LIFE TESTING

Test	Requirement Paragraph
Appearance	3.4
Viscosity of Base Compound <u>1/</u>	3.6.3
Viscosity of Curing Agent <u>1/</u>	3.6.4
Application Time	3.6.6
Tack-Free Time	3.6.8
Standard Cure Time	3.6.9
Peel Strength: two aluminum panels, sulfuric acid anodized per AMS2471, coated with AMS-C-27725 Type II Class B corrosion preventive coating (See 8.6), and aged in AMS2629, Type I for 7 days at 140 °F (60 °C).	3.6.28
<u>1/</u> Not possible with sectional-type containers.	

4.3.4.3 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 three 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 Methods of Inspection

Shall be in accordance with AS5502 (4.4.2).

4.5 Test Methods

4.5.1 Standard Tolerances

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

4.5.2 Standard Test Conditions

Standard laboratory conditions shall be as specified in AS5127 (4). Test specimens shall be prepared and immediately after completion of preparation, shall be placed under 77 °F (25 °C) and 50% ± 5 relative humidity to cure according to 4.5.8. Except as otherwise directed herein, tests shall be performed at conditions in accordance with AS5127 (4).

4.5.3 Standard Heat Cycle

When directed herein, the Standard Heat Cycle to which sealants shall be exposed shall be performed six times:

Standard Heat Cycle:

4 hours at 260 °F (127 °C), plus
40 minutes at 320 °F (160 °C), plus
1 hour at 360 °F (182 °C).

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 with AS5127 (6).

4.5.4.2 Preparation of Peel Strength Test Panels

Test panel configuration shall be in accordance with AS5127/1 (8.) "Peel Strength Properties" and (8.1) "Peel Strength Testing" and as in Figure 22 "Five-Inch Peel Specimen Configuration".

4.5.5 Preparation of Sealing Compound

Sealing compound shall be prepared in accordance with AS5127/1 (4.) "Preparation of Sealing Compound" and subparagraphs (4.1) "Qualification Testing", (4.2) "Acceptance Testing", (4.3) "Quick-Freezing of Sealing Compound", and (4.4) "Thawing of Quick-Frozen Sealing Compound".

4.5.6 Application of Adhesion Promoter

AMS4911, AMS5516, AMS-C-27725, MIL-PRF-85285 and MIL-PRF-85582 panels shall be treated with AMS3100 adhesion promoter in accordance with AS5127 (6.7) "Application of Adhesion Promoter".

4.5.7 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". For Class A material, a time equal to the application life shall be used between the three applications to permit release of solvents.

4.5.8 Curing of Sealing Compounds

Shall be in accordance with AS5127 (6.9) "Curing of Sealing Compounds." For Qualification testing, Classes A and B sealing compounds shall be cured for 14 days at Standard Conditions. For Acceptance testing, Classes A and B sealing compounds may be given an accelerated cure for 48 hours at Standard Conditions followed by 24 hours at 140 °F (60 °C). For Qualification testing and Acceptance testing of Class C sealing compounds, accelerated cure shall be 48 hours at Standard Conditions, followed by 24 hours at 140 °F (60 °C).

4.6 Test Procedures

Standard Test Methods are in accordance with AS5127 and AS5127/1. In the event of a conflict between the text of this document and AS5127 and/or AS5127/1, the text of this document takes precedence.

4.6.1 Resistance to Thermal Rupture

4.6.1.1 Resistance to Thermal Rupture shall be conducted in accordance with AS5127/1 (7.2). The air circulating oven shall be preset at 250 °F (121 °C) and the clamp fixture shall be placed in the oven at 10 psi +1, -0 (69 kPa +6.9, -0) for 30 minutes.

4.6.2 Low Temperature Flexibility

Low temperature flexibility shall be conducted in accordance with AS5127/1 (7.6). At the end of the standard cure in accordance with 4.5.8, two panels shall be immersed in AMS2629, Type I for 120 hours at 140 °F (60 °C) followed by 60 hours at 160 °F (70 °C) and 6 hours at 180 °F (80 °C). At the completion of the fluid exposure, the specimens shall be removed from the fluid. All four specimens shall be exposed to the standard heat cycle as in 4.5.3, after which all four panels shall be immediately placed in a low temperature flexibility fixture and tested in accordance with AS5127/1 (7.6).