SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3276

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Submitted for recognition as an American National Standard

SEALING COMPOUND, INTEGRAL FUEL TANKS AND GENERAL PURPOSE, INTERMITTENT USE TO 360 °F (182 °C)

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, for wet-installation of fasteners, for overcoating fasteners, and for sealing joints and seams. The sealing compound can be used in fuel areas as well as nonfuel areas. It cures at room temperature and the cure can be accelerated at higher temperatures. AMS 3100 adhesion promoter can be applied before the sealant. The sealing compound is usable from -65 to 250 °F (-54 to 121 °C), with short-term exposure (six hours) up to 360 °F (182 °C).

1.3 Classification:

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

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

a. A-1/2
b. A-2
c. A-4

1.3 (Continued)

Class B - Suitable for application by extrusion gun, spatula, brush, or roller. Used for fay surface sealing only. Available with the following application times:

a. B-1/4
b. B-1/2
c. B-1
d. B-2
e. B-4
f. B-6
g. B-12

Class C - Suitable for application by extrusion gun, spatula, brush or roller. Used for fay surface sealing only. Available with the following application times:

a. C-1/2
b. C-2
c. C-6
d. C-20

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

a. D-1/4
b. D-1/2

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

a. E-6

1.3.1 The specific sealing compound supplied shall conform to the class and application time ordered.

1.4 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 which may be 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.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2471	Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Undyed Coating
AMS 2629	Jet Reference Fluid
AMS 3020	Oil, Reference, for "L" Stock Rubber Testing
AMS 3021	Fluid, Reference, for Testing Di-Ester (Polyol) Resistant Material
AMS 3100	Adhesion Promoter, for Polysulfide Sealing Compounds
AMS 3819	Cloths, Cleaning, for Aircraft Primary and Secondary Structural Surfaces
AMS 4037	Aluminum Alloy Sheet and Plate, 4.4Cu - 1.5Mg - 0.60Mn, (2024; -T3 Flat Sheet, -T351 Plate), Solution Heat Treated
AMS 4045	Aluminum Alloy Sheet and Plate, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr, (7075; -T6 Sheet, -T651 Plate), Solution and Precipitation Heat Treated
AMS 4049	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
AMS 4901	Titanium Sheet, Strip, and Plate, Commercially Pure Annealed, 70.0 ksi (485 MPa) Yield Strength
AMS 5516	Steel Sheet, Strip, and Plate, Corrosion Resistant, 18Cr - 9.0Ni (SAE 30302), Solution Heat Treated

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM D 412	Rubber Properties in Tension
ASTM D 792	Specific Gravity (Relative Density) and Density of Plastics by Displacement
ASTM D 2240	Rubber Property - Durometer Hardness

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

L-P-390	Plastic, Molding and Extrusion Material, Polyethylene and Copolymers (Low, Medium and High Density)
QQ-A-250/4	Aluminum Alloy 2024, Plate and Sheet
TT-N-97	Naphtha, Aromatic
CCC-C-419	Cloth, Duck, Unbleached, Plied Yarns, Army and Numbered
PPP-B-636	Box, Shipping Fiberboard
PPP-C-96	Can, Metal, 28 Gauge and Lighter
PPP-D-729	Drum, Shipping and Storage, Steel, 55 Gallon (208 Liters)
PPP-P-704	Pails, Metal: (Shipping, Steel, 1 through 12 Gallons)
FED-STD-141	Paint, Varnish, Lacquer and Related Materials: Method of Inspection, Sampling and Testing
MIL-A-9962	Abrasive Mats, Non-woven, Non-metallic
MIL-P-23377	Primer Coating, Epoxy, Chemical and Solvent Resistant
MIL-C-27725	Coating, Corrosion Preventive, for Aircraft Integral Fuel Tanks
MIL-C-38334	Corrosion Removing Compound, Prepaint, for Aircraft Aluminum Surfaces
MIL-S-38714	Sealant Cartridge for Two Component Materials
MIL-C-38736	Compound, Solvent, for Use in Integral Fuel Tanks
MIL-C-81706	Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys
MIL-C-83286	Coating, Urethane, Aliphatic Isocyanate, for Aerospace Applications
MIL-S-83430	Sealing Compound, Integral Fuel Tanks and Fuel Cell Cavities, Intermittent Use to 360 Deg F (182 Deg C)
MIL-P-85582	Primer Coatings, Epoxy Waterborne
MIL-C-87936	Cleaning Compounds, Aircraft Exterior Surfaces, Water Dilutable
MIL-STD-453	Inspection, Radiographic
MIL-STD-2073-1	DOD Materiel, Procedures for Development and Application of Packaging Requirements
MS-21042	Nut, Self-Locking, 450 °F, Reduced Hexagon, Reduced Height, Ring Base, Non-corrosion Resistant Steel (ASG)
AN 4	Bolt and Machine, Aircraft

2.4 AIA Publications:

Available from National Standards Association, Inc., 1321 14th Street, N.W., Washington, DC 20005.

NAS 679	Nut, Self-Locking, Hexagon Head, Titanium, .190 to .500
NAS 1154	Screw, Machine-Flat, 100 Degree Head, Close Tolerance, Short Thread, Torque Set

3. TECHNICAL REQUIREMENTS:

3.1 Materials:

The basic ingredient shall be synthetic rubber of the polysulfide (T) type. 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 contain no lead compounds. The curing agent shall possess sufficient color contrast to the 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.

3.2 Properties:

The sealing compound, when mixed in accordance with manufacturer's instructions and cured as specified in 4.5.2.8, shall conform to requirements shown in Table 1, determined in accordance with specified test methods.

TABLE 1 - Properties

Paragraph	Property	Requirement	Test Method
3.2.1	Specific Gravity, max	1.65	4.5.4
3.2.2	Hardness, Shore Durometer A Scale, Instantaneous, min	40	4.5.5
3.2.3	Nonvolatile Content, (% by weight), min		4.5.6
	Class A	85%	
	Class B	96%	
	Class C	92%	
	Class D	97%	
	Class E	85%	
3.2.4	Viscosity of Base Compound		4.5.7
	Class A	100 to 600 poises (10 to 60 Pa·S	
	Class B	9000 to 16000 poises (900 to 1600 Pa·S	
	Class C	1000 to 4000 poises (100 to 400 Pa·S	
	Class D	20000 to 30000 poises (2000 to 3000 Pa·S	
	Class E	300 to 800 poises (30 to 80 Pa·S	
3.2.5	Viscosity of Curing Agent	700 to 1600 poises (70 to 160 Pa·s)	4.5.8
3.2.6	Flow		4.5.9
	Class B	0.10 to 0.75 inch (2.5 to 19.0 mm)	
	Class C	0.010 inch (0.25 mm), min	
	Class D	0.20 inch (5.1 mm), max	

TABLE 1 - Properties (Continued)

Paragraph	Property	Requirement	Test Method
3.2.7	Application Time, min		
3.2.7.1	Class A - From the beginning of mixing, the viscosity shall not exceed 2500 poises (250 Pa·S)		4.5.10.1
	A-1/2	1/2 hour	
	A-2	2 hours	
	A-4	4 hours	
3.2.7.2	Class B - From the beginning of mixing, 15 grams per minute, min, shall be extruded		4.5.10.2
	B-1/4	1/4 hour	
	B-1/2	1/2 hour	
	B-1	1 hour	
	B-2	2 hours	
	B-4	4 hours	
	B-6	6 hours	
	B-12	12 hours	
3.2.7.3	Class C - From the beginning of mixing, 30 grams per minute, min, shall be extruded		4.5.10.2
	C-1/2	1/2 hour	
	C-2	2 hours	
	C-6	6 hours	
	C-20	8 hours	
3.2.7.4	Class D - From the beginning of mixing, 15 grams per minute, min, shall be extruded		4.5.10.2
	D-1/4	1/4 hour	
	D-1/2	1/2 hour	
3.2.7.5	Class E - From the beginning of mixing, the viscosity shall be between 800 to 1100 poises (80 to 110 Pa·S)		4.5.10.1
	E-6	6 hours	
3.2.8	Assembly Time, min		4.5.11
	Class C-6	6 hours	
	Class C-20	20 hours	

TABLE 1 - Properties (Continued)

Paragraph	Property	Requirement	Test Method
3.2.9	Tack-Free Time (Measured from The beginning of mixing), max		4.5.12
	Class B-1/4, D-1/4	6 hours	
	Class A-1/2, B-1/2, C-1/2, D-1/2	10 hours	
	Class B-1	12 hours	
	Class A-2, B-2, C-2	24 hours	
	Class A-4, B-4	36 hours	
	Class B-6, C-6	48 hours	
	Class E-6	120 hours	
	Class B-12	120 hours	
	Class C-20	96 hours	
3.2.10	Standard Cure Time, max (35 Shore A, min)		4.5.13
	Class B-1/4, D-1/4	16 hours	
	Class A-1/2, B-1/2. C-1/2. D-1/2	30 hours	
	Class B-1	36 hours	
	Class A-2, B-2, C-2	48 hours	
	Class A-4, B-4	90 hours	
	Class B-6, C-6	120 hours	
	Class E-6	240 hours	
	Class B-12	240 hours	
	Class C-20	336 hours	
3.2.11	Fluid Immersion Cure Time (Class B-1/4, A-1/2, B-1/2 only), min		4.5.14
	After 48 hours	25 Shore A	
	After 120 hours	35 Shore A	
3.2.12	Peel Strength, min		4.5.15
3.2.12.1	All Classes, except C-20	20 pounds force per inch (3580 N/m/100% Cohesive failure)	
3.2.12.2	Repairability	10 pounds force per inch (1750 N/m/100% Cohesive failure)	4.5.15.5
3.2.13	Chalking	No chalking	4.5.16
3.2.14	Shear Strength, min Classes C and E only	200 psi (1379 kPa) average with 100% Cohesive failure	4.5.17
3.2.15	Air Content, max Class B only	4%	4.5.18
3.2.16	Weight Loss, Flexibility and Swell		4.5.19
3.2.16.1	Weight Loss, max	8%	
3.2.16.2	Flexibility	No cracking or checking,	
3.2.16.3	Swell	5 to 15%	

TABLE 1 - Properties (Continued)

Paragraph	Property	Requirement	Test Method
3.2.17	Resistance to Thermal Rupture	No blistering or sponging, 5/32 inch (0.8 mm) deformation, max	4.5.21
3.2.18	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	4.5.21
3.2.19	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	4.5.23
3.2.20	Tensile Strength and Elongation, (All Class B, C-1/2, C-2, C-6, D-1/4, and D-1/2)		
3.2.21	Low-Temperature Flexibility	No visual evidence of cracking, checking, or loss of adhesion	4.5.24
3.2.22	Hydrolytic Stability, min	30 Shore A	4.5.25
3.2.23	Corrosion Resistance	No corrosion or signs of deterioration	4.5.26
3.2.24	Repairability, min	5 pounds force per inch (895 N/m), 100 % cohesive failure	4.5.27
3.2.25	Paintability	No separation from sealant	4.5.28
3.2.26	Weather Resistance	No cracking, chalking, peeling, or loss of adhesion	4.5.29
3.2.27	Shaving and Sanding Class B only	No rolling or tearing of the sealant, smooth finish	4.5.30
3.2.28	Radiographic Density		4.5.31
3.2.28.1	Difference between plate and plate plus sealant, max	1.00	
3.2.28.2	Through sealant in the slot, approximately	3.00	
3.2.29	Storage Stability		

TABLE 1 - Properties (Continued)

Paragraph	Property	Requirement	Test Method
3.2.29.1	Accelerated Storage		4.5.32
	Viscosity of Base Compound	Same as 3.2.4	4.5.7
	Viscosity of Curing Agent	Same as 3.2.5	4.5.8
	Flow	Same as 3.2.6	4.5.9
	Application Time, min	Same as 3.2.7	4.5.10
	Assembly Time, max	Same as 3.2.8	4.5.11
	Tack-Free Time	Same as 3.2.9	4.5.12
	Peel Strength	Same as 3.2.12	4.5.15
3.2.29.2	Long-Term Storage		4.5.32
3.2.29.2.1	Application Time; hours, max		
	Class B-1/4, D-1/4	0.25	
	Class A-1/2, B-1/2, C-1/2, D-1/2	0.5	
	Class B-1	1	
	Class A-2, B-2, C-2	2	
	Class A-4, B-4	1	
	Class B-6, C-6	6	
	Class E-6	6	
	Class B-12	12	
	Class C-20	20	
3.2.29.2.2	Tack-Free Time, hours, max		
	Class B-1/4, D-1/4	16	
	Class A-1/2, B-1/2, C-1/2, D-1/2	20	
	Class B-1	24	
	Class A-2, B-2, C-2	48	
	Class A-4, B-4	72	
	Class B-6, C-6	96	
	Class E-6, B-12	180	
	Class C-20	144	
3.2.29.2.3	Cure Time, hours, max		
	Class B-1/4, D-1/4	24	
	Class A-1/2, B-1/2, C-1/2, D-1/2	40	
	Class B-1	54	
	Class A-2, B-2, C-2	72	
	Class A-4, B-4	114	
	Class B-6, C-6	144	
	Class E-6, B-12	264	
	Class C-20	360	

3.3 Performance and Application Requirements:

Properties are divided into two classes; performance requirements and application requirements. Performance requirements define those properties of the cured sealant and its performance in service. Application requirements define those properties of the uncured sealant and affect the application parameters of the sealant, but have little or no effect on the performance properties of the cured sealant. Minor variations in application requirements during acceptance testing may not be cause for rejection if approved by the procuring agency. Application requirements are listed below, all other requirements are performance requirements.

a. Viscosity of Base Compound
b. Viscosity of Curing Agent
c. Flow
d. Application Time
e. Tack-Free Time
f. Cure Time
g. Fluid Immersion Cure Time

3.4 Quality:

The base compound and the curing agent (accelerator), as received by purchaser, shall each be of uniform blend and shall be free of excessive air, skins, lumps, and gelled or coarse particles. There shall be no separation of ingredients which cannot be readily dispersed.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the sealing compound shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the sealing compound conforms to the requirements of this specification.

4.1.1 Shelf-Life Surveillance and Updating:

4.1.1.1 Sampling: The minimum number of samples to be tested during shelf-life surveillance and updating is shown in Table 2.

TABLE 2 - Shelf-Life Surveillance Samples

Items in Stock	Samples to be Tested
Up to 100, excl	3
100 to 500, incl	5
Over 500	7

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

a. Condition of container
b. Application time
c. Tack-free time
d. Standard cure time
e. Viscosity of base compound (not possible with sectional-type containers)
f. Viscosity of curing agent (not possible with sectional-type containers)
g. Peel strength - two aluminum panels coated with MIL-C-27725, corrosion-preventive coating, age in JRF for seven days at 140 °F (60 °C)

4.1.1.2.1 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 updatings will be allowed.

4.1.2 Curing Compound Replacement: There are instances where the sealant will become overaged and require excessive time to cure. Usually, the curing agent will be the component that has deteriorated. It is possible to replace the curing agent so that the sealant can be used. Anytime the curing agent is replaced, all the acceptance tests must be met by the final curing agent/base compound combination.

4.2 Classification of Tests:

4.2.1 Qualification Tests: Tests for all technical requirements are qualification tests (see 8.1) and shall be performed prior to or on the initial shipment of sealing compound to a purchaser, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.1.1 The first compound that a manufacturer must qualify is Class B-2 (see 8.1). That compound must meet all technical requirements with the exception of those requirements that are for other classes. Once qualification for Class B-2 is obtained, other classes may be qualified. The formulation for the other classes and other Class B materials shall be the same as that for the Class B-2, except for minor variations necessary for viscosity and application life. It will not always be necessary for the qualifying agency to conduct all tests on the other classes. In general, the acceptance tests will be sufficient, although additional tests can be required. The manufacturer shall show proof that all requirements are met prior to requesting qualification approval for any class. This includes assurance that the sealant will cure at standard conditions. (Acceptance testing is conducted on sealant that has been cured at 140 °F (60 °C). After the compound has been accepted for qualification, approval will be granted and the sealant will be identified by reference to the manufacturer's code or formula number.

4.2.1.2 For direct U.S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, contracting officer, or request for procurement (see 8.1).

4.2.2 Acceptance Tests: Tests for the following requirements are acceptance tests and shall be performed on each batch. A batch shall be the quantity of sealing compound run through a mill or mixer at one time.

a. Hardness (3.2.2)
b. Nonvolatile Content (3.2.3)
c. Viscosity of Base Compound (3.2.4) (see 4.2.2.1)
d. Viscosity of Curing Agent (3.2.5) (see 4.2.2.1)
e. Flow (3.2.6)
f. Application Time (3.2.7)
g. Assembly Time (C-6 and C-20 only) (3.2.8)
h. Tack-Free Time (3.2.9)
i. Standard Cure Time (all classes except C-20) (3.2.10)
j. Fluid Immersion Cure Time (B-1.4, A-1/2, B-1/2) (3.2.11)
k. Peel Strength (All classes except C-20) (3.2.12)
l. Chalking (3.2.13)
m. Shear Strength (Class C and E only) (3.2.14)
n. Air Content (Class B only) (3.2.15)
o. Weight Loss, Flexibility and Swell (3.2.16)
p. Resistance to Thermal Rupture (3.2.17)

4.2.2.1 Testing need not be performed on sealant packaged in sectionalized containers of small size containers under 8 ounces (237 mL).

4.2.2.2 Acceptance test requirements can be satisfied by use of the National Aerospace Defense Contractor's Accreditation Program (NADCAP) or by performing the tests required by 4.2.2. If the NADCAP system is used, the sealant manufacturer must be NADCAP accredited and product surveillance in accordance with NADCAP procedures must be performed on each batch of sealant. All tests specified in 4.2.2 must be performed by the manufacturer.

4.3 Sampling and Testing:

Shall be as follows:

4.3.1 For Qualification Tests: Samples shall consist of one 5-gallon (19-L) and two 1-quart (1-L) containers of sealing compound. Samples shall be identified as follows and forwarded to the activity responsible for qualification testing as designated in the letter of authorization from the activity (see 8.1).

SEALING COMPOUND, INTEGRAL FUEL TANK AND GENERAL PURPOSE,
INTERMITTENT USE OF 360 °F (182 °C)
SPECIFICATION AMS 3276
MANUFACTURER'S IDENTIFICATION
NAME OF MANUFACTURER
LOT NUMBER
DATE OF MANUFACTURE
SUBMITTED BY (NAME) (DATE) FOR QUALIFICATION TESTS IN ACCORDANCE WITH AMS 3276 UNDER AUTHORIZATION (REFERENCE AUTHORIZING LETTER)

4.3.2 For Acceptance Tests: Sufficient sealing compound shall be taken at random from each batch to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three. Multiple testing is not required for viscosity, application time, flow, tack-free time, and hardness.

4.3.2.1 Compound for testing shall be mixed, whenever possible, in the same containers in which the sealing compounds were procured.

4.3.2.2 If the compound is being procured in plastic injection kits, such as those conforming to MIL-S-38714, all tests shall be conducted on compound that has been packaged and mixed in the initial sample injection kits except for viscosity of the base compound and viscosity of the curing agent. During filling of the initial sample injection kits, base compound and curing agent shall be placed in 1-quart (1-L) cans for the viscosity tests. If more than one size of injection kits are to be packaged from a particular batch, it is necessary to test compound from only one size kit.

4.3.2.3 If the compound is being procured in cans, pails, or drums, the batch shall be tested on the compound placed in 1-quart (1-L) cans.

4.3.2.4 If the compound is being procured in both type containers, the quality conformance tests shall be conducted on the compound packaged in plastic injection kits (see 4.3.2.2).

4.3.2.5 When a statistical sampling plan has been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.2 and the report for 4.6 shall state that such plan was used.

4.3.2.6 U.S. Government Procurement: Each batch shall be subjected to both initial and final acceptance testing. Sufficient compound 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. Final acceptance testing is to be conducted on the final packaged product and consists of application time, tack-free time, standard cure time, and air content (Class B only). After successful completion of the initial quality conformance tests, the batch shall be released for final packaging. During packaging, tests kits shall be picked at random to perform the following final acceptance tests:

a. Application time (3.2.7)
b. Tack-free time (3.2.9)
c. Standard cure time (3.2.10)
d. Air Content (3.2.15)

4.3.2.6.1 If the batch is being packaged in different type and/or different size containers, the final acceptance tests shall be conducted on each type and/or each size containers. If the 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 once.

4.4 Approval:

4.4.1 Sealing compound shall be approved by purchaser before sealing compound for production use is supplied, unless such approval be waived by purchaser. For direct U.S. Military procurement and for procurement for use on U.S. Military contracts, the sealing compound shall be listed, or approved for listing, on the applicable U.S. Military qualified products list. Results of tests on production sealing compound shall be essentially equivalent to those on the qualification sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production sealing compound which are essentially the same as those used on the approved sample. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in ingredients and/or processing and, when requested, a sample of sealing compound. Production sealing compound made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

Shall be as follows:

4.5.1 Standard Conditions:

4.5.1.1 Test Conditions: Standard laboratory test conditions shall be 77 °F ± 2 (25 °C ± 1) and 50% ± 5 relative humidity. Except as otherwise specified herein, all test specimens shall be prepared and cured under these conditions.

4.5.1.2 Standard Tolerances: Unless otherwise specified herein, standard tolerances shown in Table 3 shall apply.

4.5.1.3 Standard Heat Cycle: Standard heat cycle shall consist of the cure cycle of 4.5.2.8 followed by 24 hours ± 1 at 260 °F (127 °C), 4 hours ± 0.5 at 320 °F (160 °C), 6 hours ± 1 at 360 °F (182 °C) divided evenly into six portions, each consisting of 4 hours ± 0.5 at 260 °F (127 °C), 40 minutes ± 5 at 320 °F (160 °C), and 1 hour ± 5 minutes at 360 °F (182 °C). At the completion of each 360 °F (182 °C) exposure, the temperatures shall be reduced to below 100 °F (38 °C) before again exposing to the 260 °F (127 °C) cycle.

TABLE 3 - Standard Tolerances

Measurement Units	Tolerance
Temperatures	±2 °F (1 °C)
Days	±2 hours
Hours	±5 minutes
Minutes	±10 seconds
Inches (mm)	±0.010 inch (0.25 mm)

4.5.2 Preparation of Test Specimens:

4.5.2.1 Chemical Conversion Coating Application:

4.5.2.1.1 Coating Preparation: A chemical conversion coating, conforming to MIL-C-81706, Class 1A, Form II, Method C, shall be prepared according to manufacturer's instructions. The pH of the resulting solution shall be adjusted to 1.5 using nitric acid.

4.5.2.1.2 Panel Preparation: Vapor or solvent degrease and alkaline detergent clean using MIL-C-87936, Type I, compound, or equivalent commercially available alkaline cleaner. The cleaning may be accomplished by brushing, swabbing, or soaking the panels in the detergent solution or by a combination of the above techniques. Rinse the cleaned panels in warm flowing tap water, 60 to 100 °F (16 to 38 °C), and check for cleanliness by observing for a waterbreak-free surface. If waterbreak occurs on the panel surfaces, return them to the detergent solution and repeat the cleaning procedure until a waterbreak-free surface is obtained. Immediately transfer the cleaned panels to a deoxidizing solution consisting of the following:

a. Butyl alcohol: 35% by weight
b. Distilled or deionized water: 22% by weight
c. Isopropyl alcohol: 25% by weight
d. Phosphoric acid (85% by weight): 18% by weight

4.5.2.1.2.1 Acid deoxidizer conforming to MIL-C-38334 may also be used. Allow the panels to remain in solution of 4.5.2.1.2 for 3 to 5 minutes. Rinse the panels thoroughly under flowing tap water.

4.5.2.1.3 Coating Application (Immersion): Transfer the deoxidized panels immediately to the MIL-C-81706 chemical conversion coating solution. Immerse the panels in the solution at standard temperature (see 4.5.1.1) for 3 to 5 minutes or until a light straw color develops. Color development time will vary with the aluminum alloy being conversion coated. After removal from the conversion coating solution, immediately rinse thoroughly in flowing distilled or deionized water. Arrange the panels in an upright position to drain dry. Apply the test materials to the conversion coated surfaces within 48 hours.

4.5.2.1.3.1 Mix the conversion coating solution in either 18-8 type stainless steel, polyethylene, or other compatible plastic containers. DO NOT MIX IN GLASS CONTAINERS.

4.5.2.2 Cure of Composite Panels: AS 4/3501-6 shall be fabricated using eight piles of unidirectional tape laid (0, 45, 90, 135) symmetrical. Size of the test panels shall be 0.040 x 2.75 x 6 inches (1.02 x 69.8 x 152 mm). Cure as in 4.5.2.2.1.

4.5.2.2.1 Install peel ply to bag surface of laminate. Nylon peel ply is acceptable. Apply a vacuum of not less than 28 inches (711 mm) of mercury and 85 psi (587 kPa) pressure. Heat to 225 °F (107 °C) at 1 to 4 F (1 to 2 C) degrees per minute. Hold at 225 °F (107 °C) for one hour. Heat to 350 °F (177 °C) at 1 to 4 F (1 to 2 C) degrees per minute. Hold at 350 °F ± 10 (177 °C ± 6) for two hours. Cool to 150 °F (66 °C) while maintaining vacuum and pressure. Remove peel ply.

4.5.2.3 Preparation of Sealing Compound:

4.5.2.3.1 For Qualification Tests: The quantity of sealing compound required for the tests shall be mixed as thoroughly as practical. Class B-2, B-4, B-6, and B-12 shall be machine mixed. Class B-1/4, B-1/2 and all classes A, C, D, and E shall be hand mixed. The sealing compound shall have a minimum inclusion of air. Where applicable, the sealing compound, immediately after mixing, shall be placed in cartridges for extrusion from a pneumatic sealing gun. Sealing compound in sectional-type containers shall be machine mixed.

4.5.2.3.2 Acceptance Tests: The quantity of sealing compound required for tests shall be hand mixed, thoroughly as possible, according to manufacturer's instructions. MIL-S-38714 containers shall be used when applicable.

4.5.2.4 Quick Freezing: After machine mixing, two cartridges shall be held at room temperature. One cartridge shall be used for testing application time and the other for tack-free time, curing rate, and flow. The remainder of the cartridges shall be quick frozen. After the compound is loaded into the cartridges, both ends of the cartridges shall be closed after filling. The installed plunger constitutes a satisfactory plug at one end. The sealant shall be quick frozen immediately in TT-N-97, Type I, Grade B, aromatic naphtha and dry ice bath at -80 °F (-62 °C) or lower for 30 minutes. The cartridge shall be placed in a plastic bag and immersed with its plugged nozzle end down and the upper end about 1 inch(25 mm) above the liquid level. For tests for tack-free time, curing rate, application time, and flow, the Class B-2, B-4, B-6 and B-12 sealant shall be stored at or below -40 °F (-40 °C) for a least 16 hours but not more than 48 hours. When frozen sealant stored at -40 °F (-40 °C) is used for tests, it shall be further conditioned for two hours at -67 °F (-55 °C) prior to the start of the thaw-out. Thaw-out shall be accomplished by immersion of the frozen cartridge in a 120 °F (49 °C) water bath for 18 minutes with the plugs installed and the upper end of the cartridge 1 inch (25 mm) above the liquid level. Time zero shall be considered as occurring at the end of the 18-minute period and the timed tests begun. For all other tests, the storage time of the frozen material shall not exceed 10 days at -67 °F (-55 °C). Thaw-out shall be accomplished as shown except sealant may be thawed out at room temperature if desired.

4.5.2.5 Cleaning of Test Panels: All test panels shall be cleaned by scrubbing and rinsing with MIL-C-38736 solvent and clean AMS 3819, Grade A, cloths which are free of sizing and any other contaminant. The panels shall be wiped dry immediately with clean AMS 3819, Grade A, cloths. Titanium, stainless steel, and epoxy graphite panels shall be scrubbed with abrasive mats and MIL-C-38736 solvent. After scrubbing, the panels shall be rinsed using MIL-C-38736 solvent and clean cloth and then wiped dry. The abrasive mats shall conform to MIL-A-9962, Type I, Class 1, Grade A, for stainless steel and epoxy graphite panels and MIL-A-9962, Type III, Class 1, Grade A, for titanium panels.

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

4.5.2.6 Application of Adhesion Promoter: When specified, the panel surface shall be treated with AMS 3100 adhesion promoter, immediately after the panel is cleaned, by wetting a clean AMS 3819, Grade A, cloth and wiping the surface. Allow adhesion promoter to air dry for 30 minutes up to two hours before applying the sealant. If more than two hours has elapsed, reclean and reapply the adhesion promoter before applying the sealant.

4.5.2.7 Application of Sealing Compound: Unless otherwise specified herein, test panels shall be given an application of sealing compound to produce a coating having a total thickness of 0.125 inch ± 0.016 (3.18 mm ± 0.41) when cured. For Class A material, a time equal to the rated application life shall be used between applications to permit release of solvents.

4.5.2.8 Cure of Sealing Compound: For qualification testing, the sealing compound shall be cured for 14 days at 77 °F (25 °C) and 50% ± 5 relative humidity. For acceptance testing, the sealing compound shall be given an accelerated cure for 48 hours at 77 °F (25 °C) and 50% ± 5 relative humidity plus 24 hours at 140 °F (60 °C). Tests on the cured sealing compound shall commence not more than two days after the completion of the specified cure.

4.5.3 Jet Reference Test Fluid: The jet reference fluid (JRF) required for conducting fluid immersion tests shall conform to AMS 2629. Type I fluid shall be used for conducting all tests requiring fluid except that Type II shall be used for the chalking test (4.5.16).

4.5.4 Specific Gravity: Three test specimens, approximately 0.125 x 1 x 1 inch (3.18 x 25 x 25 mm), shall be cut out with a sharp razor blade or scalpel from a sheet of the sealing compound that has been cured as in 4.5.2.8. Determine the specific gravity of each sample in accordance with ASTM D 792, Method A, and report the average value.

4.5.5 Hardness: The instantaneous hardness shall be determined in accordance with ASTM D 2240, Method 3021, after the sealing compound is cured as in 4.5.2.8. The reading shall be taken on a double back-to-back, 0.125 inch (3.18 mm) thick specimen making the total thickness 0.25 inch (6.4 mm).

4.5.6 Nonvolatile Content: Within five minutes after mixing or warming to application temperature, 11 to 12 grams of mixed sealing compound shall be transferred, as rapidly as possible, to a previously weighed (W1) aluminum dish approximately 2 inches (51 mm) in diameter. The Class A and C sealants shall be poured into the dish. The Class B sealant shall be extruded from a plastic cartridge, fitted with 0.125 inch (3.18 mm) orifice nozzle, to fill the bottom of the dish to a uniform depth. The initial weight (W2) shall be determined using an analytical balance accurate within ±1 milligram. Immediately following weighing, the sample and dish shall be placed in a circulating-air oven preheated to 160 °F (71 °C), allowed to dwell for three days, the sample and dish shall be removed from the oven, and allowed to cool in a desiccator to room temperature. Final weight (W3) shall be determined on the same balance used for the initial weights. All weights shall be recorded to the nearest milligram.

4.5.6.1 Percent nonvolatile content shall be determined from the average of three samples and calculated as shown in Equation 1:

$$Percent\ Nonvolatile = \frac{(W3 - W1) \times 100}{W2 - W1} \qquad \text{(Eq.1)}$$

4.5.7 Viscosity of Base Compound:

4.5.7.1 Shall be determined with the base compound placed in a 1-quart (1-L) can. The can shall be filled with the base compound to within 0.5 inch (13 mm) of the top, covered, and stored at 77 °F (25 °C) for not less than eight hours. The base compound shall be thoroughly mixed by stirring slowly for not less than three minutes after which the can shall be closed and the base compound shall be allowed to stand for one hour.

4.5.7.2 The Brookfield Model RVF viscosimeter, or equivalent, shall be used. The readings obtained shall be converted to poises (Pa·s). For Class A sealant, the No. 6 spindle, at 10 rpm, shall be used for the test. For Class B and D sealants, the No. 7 spindle, at 2 rpm, shall be used. For Class C sealant, the No. 6 spindle, at 2 rpm, shall be used. For Class E sealant, the No. 7 spindle, at 10 rpm, shall be used. The highest reading shall be taken after the instrument has run in the base compound for not less than one minute.

4.5.8 Viscosity of the Curing Agent: The viscosity of the curing agent shall be determined in accordance with 4.5.7 except a No. 7 spindle at 10 rpm shall be used.

4.5.9 Flow (Class B, C and D only):

4.5.9.1 Class B and D: A standard sealant gun cartridge, fitted with a suitable nozzle, shall be filled with freshly mixed sealing compound. The gun and sealing compound shall be maintained at standard conditions (4.5.1.1) throughout the test. The test shall be conducted with a flow test fixture as shown in Figure 1. Depth of the plunger tolerance is critical and shall be controlled within the specified tolerance during all tests. The flow fixture shall be placed on a table with the front face upward and the plunger depressed to the limit of its travel. Within 15 minutes after the beginning of mixing, enough of the mixed sealing compound shall be extruded from the application gun to fill the recessed cavity of the fixture and leveled off with the block. The test at this interval shall be considered the initial flow of the sealing compound. Within 10 seconds after the leveling operation, the fixture shall be placed on its end and the plunger immediately advanced to the limit of its forward travel. The flow measurement shall be taken exactly 30 minutes after the sealing compound has been applied to the test fixture. The flow shall be measured from tangent to the lower edge of the plunger to the farther point to which the flow has advanced. As the sealing compound progresses in its application time, the flow test shall be repeated at time intervals specified below. All time intervals, other than for the initial test, shall be measured from the end of the mixing period.

a. B-1/4, D-1/4 Initial Reading Only
b. B-1/2, D-1/2 Initial Reading Only
c. B-1 Initial, 30 minutes
d. B-2 Initial, 50 minutes, 90 minutes
e. B-4 Initial, 2 hours, 3.5 hours
f. B-6 Initial, 3 hours, 5.5 hours
g. B-12 Initial, 6 hours, 11.5 hours

4.5.9.2 Class C: A 0.015 to 0.020 inch (0.38 to 0.51 mm) layer of freshly mixed sealant shall be applied to an AMS 4049 aluminum alloy panel, 0.040 x 2.75 x 6 inches (1.02 x 69.8 x 152 mm). Immediately place the panel in a vertical position and allow to stand for a period equivalent to the rated tack-free time. The sealant thickness at its thinnest spot shall conform to 3.2.6.

4.5.10 Application Time:

4.5.10.1 Class A and E Material:

4.5.10.1.1 The base compound and curing agent shall be stabilized at standard conditions (4.5.1.1) for not less than eight hours before a sample of the base compound is mixed with the proper amount of curing agent sufficient to fill a standard 0.5-pint (0.33-L) can, 2.88 inches (73.2 mm) in diameter to 2.88 inches (73.2 mm) high to within 0.5 inch (13 mm) of the top. This can shall be tightly covered except when testing for viscosity.

4.5.10.1.2 At the end of 0.5 hour for A-1/2, two hours for A-2, four hours for A-4, and six hours for E-6, measured from the beginning of the mixing period, the sealing compound shall be tested for viscosity using a Brookfield Model RVF viscosimeter, or equivalent. The No. 7 spindle at 10 rpm shall be used. The highest reading shall be taken after the instrument has run in the sealing compound for one minute.

4.5.10.2 Class B, C, and D Material:

4.5.10.2.1 The base compound, curing agent, and application gun shall be stabilized at standard conditions (4.5.1.1) for not less than eight hours before not less than 250 grams of the base compound is mixed with the proper amount of curing agent.

4.5.10.2.2 The mixed sealing compound shall be used to fill a standard sealing gun cartridge, having a nozzle (Figure 2) with an orifice of 0.125 inch ± 0.004 (3.18 ± 0.10 mm). The gun cartridge and sealing compound shall be maintained at standard conditions throughout the test.

4.5.10.2.3 The gun shall be attached to a constant air supply of 90 psi ± 5 (621 kPa ± 34). From 2 to 3 inches (51 to 76 mm) of sealing compound shall be extruded initially to clear any entrapped air. At the end of 0.25 hour for B-1/4 and D-1/4, 0.5 hour for B-1/2, C-1/2 and D-1/2, one hour for B-1, two hours for B-2 and C-2, four hours for B-4, six hours for B-6 and C-6, and 12 hours for B-12 and C-20 measured from the beginning of the mixing period, the sealing compound shall be extruded onto a previously weighed suitable receptacle for one minute and the weight of extruded sealing compound determined.

4.5.11 Assembly Time (Class C only): Six test panels, 0.040 x 1.5 x 4 inches (1.02 x 38 x 102 mm), shall be prepared from AMS 4049 aluminum alloy. Drill two holes with a No. 11 drill, 1.2 inches (30 mm) from one end with centers 0.75 inch (19 mm) apart and 0.38 inch (9.7 mm) from each side. Deburr and clean as in 4.5.2.5. Accurately determine the thickness of the panels around the holes. Apply approximately 0.015 inch (0.38 mm) of freshly mixed sealant to the drilled end of three specimens and allow to cure for 0.5 hour. Place the other cleaned panels on those with sealant so that the holes line up and result in a one inch (25 mm) overlap. Sealant shall cover the entire 1 inch (25 mm) faying surface overlap area. Insert two 10-32 steel bolts, heat treated to at least 160 ksi (1103 MPa), into the holes and tighten NAS 679-A3 nuts only until sealant starts to squeeze out. The thickness of the assembly shall be measured and the thickness of the sealant shall be 0.010 to 0.015 inch (0.25 to 0.38 mm). Allow the specimens to be exposed to standard conditions (4.5.1.1) for four hours. Tighten nuts to a torque value of 40 inch pounds (4.5 N·m). Measure the thickness of the assembly at the bolts with a micrometer and from this thickness subtract the thickness of the panels. The mixed sealing compound shall have an assembly time as stated in 3.2.8. The sealant must squeeze out to a thickness of 0.005 inch (0.13 mm) or less at the bolts.

4.5.12 Tack-Free Time:

4.5.12.1 A 0.040 x 2.75 x 6 inch (1.02 x 69.8 x 152 mm) AMS 4049 aluminum alloy panel shall be cleaned in accordance with 4.5.2.5. Sealing compound shall be applied in accordance with 4.5.2.7. The sealant shall be given a standard cure (see 4.5.2.8).

4.5.12.2 At the end of the tack-free time (see 3.2.9), two 1 x 7 inch (25 x 178 mm) strips of polyethylene 0.005 inch ± 0.002 (0.13 mm ± 0.05) thick shall be applied to the sealing compound and held in place at a pressure of approximately 0.5 ounces per square inch (0.0002 N/mm^2) for two minutes.

4.5.12.3 The strips shall be slowly and evenly peeled back at right angles to the sealing compound surface. The polyethylene shall come away clean and free of sealing compound.

4.5.13 Standard Cure Time: The instantaneous hardness shall be determined in accordance with ASTM D 2240 (instantaneous) using a Type A Durometer after the sealing compound is allowed to cure at standard conditions (4.5.1.1) for the time specified in 3.2.10. The reading shall be taken on a double back-to-back, 0.125 inch (3.18 mm) thick specimen.

4.5.14 Fluid Immersion Cure Time (Classes A-1/2, B-1/4, B-1/2 and C-1/2 only): An AMS 4049 aluminum alloy test panel, 0.040 x 2.75 x 6 inches (1.02 x 69.8 x 152 mm), shall be cleaned in accordance with 4.5.2.5 and covered with sealing compound to a depth of 0.25 inch (6.4 mm) in one application. After curing at standard conditions for six hours, the test panel shall be immersed in AMS 2629 at 77 °F (25 °C). The hardness shall be determined, after a total of 48 hours (42 hours in fluid) and after a total of 120 hours (114 hours in fluid), in accordance with ASTM D 2240 (instantaneous) using a Type A Durometer.

4.5.15 Peel Strength (All Classes except C-20):

4.5.15.1 The type, quantity, and thickness of panels shown in Table 4 shall be used for evaluation of peel strength. All panels shall be as described in Figure 3. The panels shall be prepared in accordance with Table 4. The manufacturer's recommended adhesion promoter shall be applied as in 4.5.2.3.5. The center 4 inches (102 mm) of the panels shall be coated on one face with a 0.125 inch (3.18 mm) thickness of sealing compound. An optional configuration consists of coating the bottom, approximately 5 inches (127 mm), of the panel with sealant (Figure 3). A 2.75 x 12 inch (69.8 x 305 mm) strip of wire screen [20 to 40 (850 to 425 µm] mesh aluminum or monel wire fabric or CCC-C-419, Type III, cotton duck cloth shall be impregnated with the sealing compound, so that approximately 5 inches (127 mm) at one end is completely covered on both sides. The sealant coated end of the fabric shall be placed on the sealant coated panel, and smoothed down on the layer of sealing compound, taking care not to trap air beneath the fabric. An additional coating of sealing compound shall be applied over the fabric approximately 0.031 inch (0.79 mm) thick. The sealant shall be given a standard cure as in 4.5.2.8.

TABLE 4 - Peel Strength Panels

Quantity	Panel Material	Panel Thickness
6	AMS 4049 aluminum alloy, chemical treated in accordance with 4.5.2.1	0.040 inch (1.02 mm)
6	AMS 4045 aluminum alloy, sulfuric acid anodized in accordance with AMS 2471	0.040 inch (1.02 mm)
6	AMS 5516 stainless steel (Use AMS 3100 adhesion promoter prior to sealing)	0.025 to 0.040 inch (0.64 to 1.02 mm)
* 10	AMS 4901 titanium (Use AMS 3100 adhesion promoter prior to sealing)	0.025 to 0.040 inch (0.64 to 1.02 mm)
* 10	AMS 4045 aluminum alloy, sulfuric acid anodized in accordance with AMS 2471, and coated with MIL-C-27725	0.040 inch (1.02 mm)
6	AMS 4045 aluminum alloy, sulfuric acid anodized in accordance with AMS 2471, and coated with MIL-C-27725 (Use AMS 3100 adhesion promoter prior to sealing)	0.040 inch (1.02 mm)
2	AMS 4045 aluminum alloy, sulfuric acid anodized in accordance with AMS 2471, coated with MIL-C-23377, and cured 7 days at standard conditions	0.040 inch (1.02 mm)
2	AMS 4045 aluminum alloy sulfuric acid anodized in accordance with AMS 2471, coated with MIL-P-23377, cured 2 hours at 200 °F (93 °C)	0.040 inch (1.02 mm)
2	AMS 4045 aluminum alloy, sulfuric acid anodized in accordance with AMS 2471, coated with MIL-P-23377, and coated with MIL-C-83286 urethane topcoat	0.040 inch (1.02 mm)
2	AMS 4045 aluminum alloy, sulfuric acid anodized in accordance with AMS 2471, primed with MIL-P-23377, and coated with MIL-C-83286 urethane topcoat	0.040 inch (1.02 mm)
2	AMS 4045 aluminum alloy, sulfuric acid anodized in accordance with AMS 2471, coated with MIL-P-85582 waterbased primer (Use AMS 3100 adhesion promoter prior to sealing)	0.040 inch (1.02 mm)
2	Graphite Epoxy as in 4.5.2.2 Test both ply side and tool side. Do not test both sides of the same panel	0.040 inch (1.02 mm)

4.5.15.2 At the end of the sealing compound cure, two panels of each substrate listed in Table 4, except those coated with MIL-P-23377 primer, MIL-C-83286 urethane topcoat, and MIL-P-85582 waterbased primer, shall be subjected to each of the following test conditions:

a. Seven days at 140 °F (60 °C) in AMS 2629 JRF

b. Seven days at 140 °F (60 °C) in equal parts JRF and 3% by weight aqueous sodium chloride solution

c. 100 hours at 140 °F (60 °C), 10 hours at 160 °F (71 °C), 1 hour at 180 °F (82 °C) in equal parts JRF and 3% by weight aqueous sodium chloride solution. Repeat cycle five times, six cycles total, using new fluid each time.

4.5.15.2.1 In addition, two panels of each of the substrates marked with a * in Table 4 shall be subjected to each of the following test conditions:

a. 70 days at 140 °F (60 °C) in JRF with fluid change every 14 days.

b. 70 days at 140 °F (60 °C) in equal parts JRF and 3% by weight aqueous sodium chloride solution with fluid change every 14 days.

4.5.15.2.2 Four of the panels coated with MIL-P-23377 primer (two cured at standard conditions and two cured at 200 °F (93 °C)), two of the panels coated with MIL-C-83286 urethane topcoat, and two of the panels coated with MIL-P-85582 waterbased primer shall be subjected to seven days at 140 °F (60 °C) in 3% by weight aqueous sodium chloride solution. After specified exposure at 140 °F (60 °C), the panels shall be retained in the fluid for one day at standard conditions (4.5.1.1). Measure peel strength within five minutes after removal from the test fluid.

4.5.15.3 Two 1-inch (25-mm) wide strips shall be cut through the sealing compound and wire screen or fabric to the metal and extended the full length of the wire screen or fabric.

4.5.15.4 The specimens shall be stripped back at an angle of 180 degrees to the metal panel in a suitable tensile testing machine having a jaw separation rate of 2 inches per minute (0.8 mm/s). During peel strength testing, three cuts shall be made through the sealing compound to the panel in an attempt to promote adhesive failure. The cuts shall be at approximately 1-inch (25-mm) intervals. The results reported shall be the numerical average of the peak loads during cohesive failure. Bond failures between sealant compound and fabric shall not be included in the peel strength values.

4.5.15.5 Repairability. For Classes A-1/2, B-1/4, B-1/2, and C-1/2, two AMS 4045 aluminum alloy panels, 0.040 x 2.75 x 6 inch (1.02 x 69.8 x 152 mm), shall be sulfuric acid anodized in accordance with AMS 2471 and coated with MIL-C-27725. Apply sealing compound as in 4.5.15.1. After curing at standard conditions for six hours (B-1/4) or for 10 hours (A-1/2, B-1/2, 6-1/2), immerse the panels in JRF at 77 °F (25 °C) for seven days. Test the panels in accordance with 4.5.15.3 and 4.5.15.4.

4.5.15.6 For Acceptance Tests: Four AMS 4045 aluminum alloy panels, 0.040 x 2.75 x 6 inches (1.02 x 69.8 x 152 mm), shall be sulfuric acid anodized in accordance with AMS 2471 and coated with MIL-C-27725. Prepare peel panel as in 4.5.15.1. Soak two panels in JRF and two panels in JRF/salt water for seven days at 140 °F (60 °C). Test the panels in accordance with 4.5.15.3 and 4.5.15.4.

4.5.16 Chalking: Four, 0.125 x 0.125 x 5 inch (3.18 by 3.18 by 127 mm), specimens shall be cut from a sheet of the sealing compound cured as in 4.5.2.8. The specimens shall be suspended on a nylon cord in a closed glass container with 900 mL of JRF, Type II, so that the specimens are totally immersed in the fluid. Aluminum foil shall be used to seal the lids of the containers. No metal items shall be allowed to be in contact with fluid or specimens during the immersion period. The specimens shall not touch each other; all sides of specimens shall be exposed to the fluid. The immersion temperature shall be 77 °F (25 °C). The tests shall be started on a Wednesday and the fluid changed on the following Friday. The specimens shall be examined for chalking on the following Monday. Remove the specimens from the fluid and allow the fluid to evaporate. The specimens are not to be blotted or wiped. Inspect strips in a well lighted area. Use an original specimen for comparison with the specimens under test to detect chalking. The rating criteria for sealant chalking are:

a. Slight Chalk: Initial observation of white or light gray formation, usually at the edges of the sealant.

b. Moderate Chalk: The white or light gray formation has spread to one quarter to one-half of the surface area.

c. Heavy Chalk: The white or light gray formation has spread to three-quarters or more of the surface.

4.5.17 Shear Strength (Class C and E only): Six AMS 4049 aluminum alloy test panels, 0.040 x 1 x 3 inches (1.02 x 25 x 76 mm), shall be prepared. Apply a coat of sealant 0.010 to 0.020 inch (0.025 to 0.51 mm) thick to one end of three panels covering approximately 1 inch (25 mm) on each panel. Overlap the sealant with another panel making a 1 square inch (645 mm^2) lap test specimen. The jig shown in Figure 4 can be used. Reduce the thickness of the sealant to 0.005 to 0.010 inch (0.13 to 0.25 mm). Cure the sealant as in 4.5.2.8 and determine the shear strength by pulling in shear at a speed of two inches per minute (0.8 mm/s).

4.5.18 Air Content (Class B only): The equipment used for the air content test shall be as shown:

a. Sealing Cartridge, 3-1/2 ounce (104 mL)

b. 2.5 inch (64 mm) nozzle with a 0.125 inch (3.18 mm) orifice

c. Dasher Rod with valve assembly and separate plug and ramrod from a 6 inch (152 mm) sectional cartridge conforming to MIL-S-38714

4.5.18.1 The test method shall conform to the following steps and shall refer to Figure 5 for the various steps:

4.5.18.1.1 Test shall be performed at standard conditions as in 4.5.1.1.

4.5.18.1.2 Test sealant conditions shall be stabilized at standard conditions (4.5.1.1) for at least eight hours prior to the test.

4.5.18.1.3 Fill cartridge with sealant being careful not to introduce air. Attach a 2.5 inch (64 mm) nozzle with a 0.125 inch (3.18 mm) orifice to the cartridge. Cut 1.125 inch (28.58 mm) from the tip of the nozzle. Extrude approximately 2 inches (51 mm) of sealant to remove entrapped air.

4.5.18.1.4 Prior to starting the test, the dasher rod should have the seal ring just contacting the dasher end and the valve is open.

4.5.18.1.5 Insert the tip of the filled cartridge firmly into the handle of the dasher rod and deliver sealant slowly until dasher is about three-quarters full. The sealant, however, should completely fill the handle end of the dasher.

4.5.18.1.6 Fill the wider flange side of the plug with sealant and place the plug in the rod behind the sealant with the wide flange side toward the sealant, taking care not to entrap air. Clean off excess sealant.

4.5.18.1.7 Measure the length of the sealant in the dasher in millimeters. Measurements shall be between the interior bottom of the plug and the middle of the curve sealant bead at the other end of the dasher rod (length "X", as shown in Figure 5).

4.5.18.1.8 Insert the ramrod into the dasher rod and push until the valve is in full open position as shown in Figure 5.

4.5.18.1.9 Remove ramrod and clean off any remaining excess sealant at the handle end of the dasher ramrod.

4.5.18.1.10 Slowly push the valve body into the dasher, finally forcing a seal.

4.5.18.1.11 Lightly insert the ramrod again into the dasher until it just touches the top of the plug. Make a mark "B" on the ramrod at the handle end of the dasher.

4.5.18.1.12 Put firm hand pressure on the ramrod while the valve end of the dasher is held against a table edge. Make a second mark "C".

4.5.18.1.13 Measure the distance between the two marks on the ramrod.

4.5.18.2 The percent of air present in the sealant material can be calculated as shown in Equation 2:

$$\%\ Air\ Present = \frac{Distance\ between\ marks\ B\ and\ C\ on\ the\ ramrod}{Original\ length\ of\ the\ sealant\ in\ dasher\ rod} \times 100 \quad \text{(Eq.2)}$$

4.5.18.3 Three test runs should be made and results averaged. Use fresh equipment for each run.

4.5.18.3.1 Sealant used for compression test shall not be obtained from the top of a drum or container.

4.5.19 Weight Loss, Flexibility, and Swell (Class B only):

4.5.19.1 Four 0.125 x 1 x 5 inches (3.18 x 25 x 127 mm) specimens shall be cut from a sheet of the sealing compound that has been cured in accordance with 4.5.2.8.

4.5.19.2 Specimens shall be weighed in air (W1) and in water (W2) and then dried. The specimens shall be immersed in 900 mL of JRF for seven days at 140 °F (60 °C) in a closed container. At the end of the exposure period, the specimens shall be removed from the fluid, dipped momentarily in methyl alcohol, and reweighed in air (W3) and in water (W4). The specimens shall be dried for 24 hours at 120 °F (49 °C), cooled to standard conditions (4.5.1.1) in a desiccator and weighed (W5). The percent swell shall be calculated as shown in Equation 3, and percent weight loss shall be calculated as shown in Equation 4:

$$Percent\ Swell = \frac{(W2 + W3) - (W1 + W4)}{W1 - W2} \times 100 \quad \text{(Eq.3)}$$

$$Percent\ Weight\ Loss = \frac{(W1 - W5)}{W1} \times 100 \quad \text{(Eq.4)}$$

4.5.19.3 After weighing, the specimens shall be bent 180 degrees over a 0.125-inch (3.18-mm) mandrel. Visual evidence of cracking or checking is not acceptable.

4.5.20 Resistance to Thermal Rupture:

4.5.20.1 Two specimens shall be prepared, each having a fillet of sealing compound, approximately 0.125 inch (3.18 mm) thick by 2 inches (51 mm) in diameter, applied to a test panel of AMS 4045 aluminum alloy. The test panels shall be 0.040 x 3.5 x 3.5 inches (1 x 89 x 89 mm) with a hole 0.25 inch (6.4 mm) in diameter in the center of the panel. The hole in the test panel shall be filled with sealant.

4.5.20.2 The sealing compound fillets shall be cured as in 4.5.2.8 and tests shall begin not more than two days after cure cycle.

4.5.20.3 One of the panels shall be immersed in JRF for 120 hours ± 4 at 140 °F (60 °C), plus 60 hours ± 4 at 160 °F (70 °C), and plus 6 hours ± 1 at 180 °F (82 °C).

4.5.20.4 The panel shall be removed from the fluid and immediately applied to the fixture, shown in Figure 6, using a suitable gasket. The panel shall be positioned on the fixture such that the sealant is within the fixture chamber.

4.5.20.5 The fixture shall be placed in an oven at 400 °F (205 °C). 10 psi (69 kPa) air pressure shall be applied using an air regulator. The clamp fixture shall be maintained in the oven for one hour after the pressure is applied.

4.5.20.6 Deformation shall be measured from the surface of the test panel not exposed to pressure, to the point of maximum deformation of the sealant compound.

4.5.20.7 The test shall be repeated on test panel not immersed in JRF.

4.5.21 Resistance to Thermal Expansion: The thermal expansion block shown in Figure 7 shall be anodized in accordance with AMS 2471 and overcoated with MIL-P-23377 primer. Fill the groove in the block with sealant. Care shall be taken to prevent air entrapment during filling. The sealant shall be given a standard cure as in 4.5.2.8, and the surface trimmed flush with the block, if necessary. Expose the specimen to a standard heat cycle as in 4.5.1.2, remove from the oven, and measure the amount of sealant expansion 2 inches (51 mm) from each end of the block. Allow the block to cool to 77 °F (25 °C) and repeat the measurements. The expansion or contraction shall be reported.

4.5.22 Heat Reversion Resistance (Classes B, C, and E only): Two AMS 4045 aluminum panels, 0.040 x 3 x 12 inches (1.02 x 76 x 305 mm) anodized in accordance with AMS 2471, and coated with 0.001 inch (0.025 mm) of MIL-C-27725, shall be coated with freshly mixed sealing compound applied over one surface of one panel and the other panel positioned over the sealant-covered surface to form a sandwich with a layer of sealing compound approximately 0.010 inch (0.25 mm) thick. The panels shall be given a standard cure as is 4.5.2.8 and then exposed to a standard heat cycle as in 4.5.1.3. The panels shall be cooled to room temperature and peeled apart in a tensile testing machine at a jaw separation rate of 2 inches per minute (0.8 mm/s) Report the peak load value.

4.5.23 Tensile Strength and Elongation (All Class B, C-1/2, C-2, C-6, D-1/4 and D-1/2):

4.5.23.1 Mixed sealing compound, 0.125 inch ± 0.015 (3.18 mm ± 0.4) thick, shall be prepared by pressing between two polyethylene sheets, removing the top sheet at the end of the tack-free time, and allowing the sealing compound to cure as in 4.5.2.8. Twenty-four tensile specimens shall be cut from the sheet using Die C, as specified in ASTM D 412. Three specimens shall be exposed to each of the environmental conditions:

4.5.23.1.1 Standard Cure as in 4.5.2.8

4.5.23.1.2 12 days at 140 °F (60 °C) plus 60 hours at 160 °F (71 °C) plus six hours at 180 °F (82 °C), all in JRF,

4.5.23.1.3 Condition 4.5.23.1.2 12 days at 140 °F (60 °C), plus 60 hours at 160 °F (71 °C), plus six hours at 180 °F (82 °C), all in JRF, plus 24 hours at 120 °F (49 °C), plus standard heat cycle as in 4.5.1.3

4.5.23.1.4 Standard heat cycle as in 4.5.1.3
72 hours in AMS 3021 at room temperature
72 hours in AMS 3020 at room temperature
72 hours in AMS 3021 plus standard heat cycle as in 4.5.1.3
72 hours in AMS 3020 plus standard heat cycle as in 4.5.1.3

4.5.23.2 Where fluid immersion is specified, the specimens shall be immersed in 400 mL of JRF. Specimens to be tested after the fluid immersion shall be cooled, held for 24 hours at 77 °F (25 °C), and tested within five minutes after removal from the fluid.

4.5.23.3 Specimens to be tested after oven aging shall be allowed to cool and held for 16 to 48 hours at standard conditions (4.5.1.1) before testing.

4.5.23.4 The tensile and elongation tests shall be conducted at standard conditions (4.5.1.1), in accordance with ASTM D 412 at a jaw separation rate of 20 inches per minute ± 1 (8.5 mm/s ± 0.4).

4.5.24 Low-Temperature Flexibility:

4.5.24.1 Four AMS 4049 aluminum alloy test panels, 0.040 x 2.75 x 6 inches (1.02 x 69.8 x 152 mm), shall be prepared. A coating of the sealing compound, 0.1 x 1.5 x 4 inches (2.5 x 38 x 102 mm), shall be applied to the center of each of the four panels. Care shall be taken to maintain an accurate sample thickness of 0.1 inch (2.5 mm). At the end of a standard cure, as specified in 4.5.2.8, the specimens shall be immersed in 900 mL of JRF for 120 hours ± 4 at 140 °F (60 °C) followed by 60 hours ± 4 at 160 °F (71 °C) and 6 hours ± 1 at 180 °F (82 °C). At the completion of the fluid exposure, the specimens shall be removed from the fluid and given a standard heat cycle as in 4.5.1.3. All four panels shall be immediately placed in a low-temperature flexibility fixture (see Figure 8) consisting of a clamp support that will grip both 6-inch (152-mm) edges of the panel for 3 inches (76 mm) from one end without touching the sealant. The fixture shall be capable of flexing

4.5.24.1 (Continued)

the panel through a 30-degree arc, 15 degrees each side of center, at a constant speed of one cycle every five seconds. The temperature shall be reduced to -65 °F (-54 °C), stabilized at this temperature for at least two hours, and the panels flexed through 130 consecutive cycles.

4.5.25 Hydrolytic Stability: A cured specimen, approximately 0.50 inch (12.7 mm) thick x 3 inches (76 mm) in diameter, shall be exposed for 120 days in an environment of 160 °F (71 °C) and 95% ± 5 relative humidity. To obtain this environment, pour a solution of 22% by weight glycerin in distilled water into a desiccator until the liquid level is 1 inch (25 mm) below the desiccator plate. Suspend the sealant specimen in the desiccator so that it does not touch anything. Apply vacuum grease to the lid and slide the lid in place. Loosely stopper the hole to prevent vacuum build up. Place the desiccator in a circulating-air oven set at 160 °F (71 °C) and tightly stopper the hole to prevent water evaporation. Change the glycerin solution every 30 days or whenever it becomes cloudy. After 120 days, remove the desiccator from the oven and allow to cool, frequently loosening the stopper. Remove the specimen from the desiccator and hold at standard conditions (4.5.1.1) for 14 days. The instantaneous hardness shall be determined in accordance with ASTM D 2240 and reported.

4.5.26 Corrosion: Two AMS 4045 aluminum alloy panels, 0.040 x 2.75 x 6 inch (1.02 x 69.8 x 152 mm), shall be prepared as follows; a controlled area 1 inch (25 mm) wide by 5 inches (127 mm) long shall be masked in the center on one side of each panel and the remainder of the panel shall be chemical coated as in 4.5.2.1 and overcoated with MIL-C-27725. After the coating has cured, the manufacturer's recommended adhesion promoter shall be applied and a 0.062 inch (1.57 mm) thick layer of sealing compound applied to the area, overlapping not less than 0.25 inch (6.4 mm) onto the coated portion. The sealant shall be given a standard cure and the panels conditioned as follows: The panels shall be immersed vertically in a covered glass vessel containing a two layer liquid consisting of a 3% by weight aqueous sodium chloride solution and JRF so that 2 inches (51 mm) of the panel is exposed to the salt solution, 2 inches (51 mm) is exposed to the JRF, and the remainder of the panel is exposed to the air-vapor mixture. The temperature of the fluid shall be maintained at 140 °F (60 °C) for 12 days, followed by 60 hours at 160 °F (72 °C), and six hours at 180 °F (82 °C). Immediately upon removal from the liquid, the sealant shall be removed by mechanical means using a nonmetallic scraper and the panel examined.

4.5.27 Repairability:

4.5.27.1 Prepare sufficient number of AMS 4045 aluminum alloy panels, 0.040 x 2.75 x 6 inches (1.02 x 69.8 x 152 mm), so that there are two panels for each Class B-2 sealing compound already qualified to this specification, plus two panels for the sealant being qualified and two panels for sealant qualified to MIL-S-83430. Sulfuric acid anodize panels in accordance with AMS 2471 and overcoat with MIL-C-27725.

4.5.27.2 Apply adhesion promoter as in 4.5.2.6 and overcoat one side of the panels with 0.125 inch (3.18 mm) of sealing compound so that two panels are coated with each Class B-2 sealing compound already qualified to this specification, two panels are coated with MIL-S-83430 polysulfide sealing compound and two panels are coated with the sealing compound being qualified. After curing for 14 days at standard conditions (4.5.1.1), expose one panel of each sealing compound to AMS 2629 for three days at 140 °F (60 °C), followed by three days air drying at 120 °F (49 °C), and seven days air aging at 250 °F (121 °C).

4.5.27.3 Clean all panels in accordance with 4.5.2.5, apply adhesion promoter as in 4.5.2.6, and apply a thickness of 0.125 inch (3.18 mm) of newly mixed sealing compound over the existing compound. A peel strength panel shall be prepared in accordance with 4.5.15. After a standard cure as in 4.5.2.8, the specimens shall be tested as specified in 4.5.15.

4.5.28 Paintability: Two, 0.040 x 2.75 x 6 inch (1.02 x 69.8 x 152 mm), AMS 4045 aluminum alloy panels shall be sulfuric acid anodized in accordance with AMS 2471 and coated with MIL-C-27725. A thin layer of sealant, approximately 0.031 inch (0.79 mm) thick, shall be applied to one surface and allowed to cure as in 4.5.2.8. After curing, the sealant coated surface of one panel shall be painted with MIL-P-23377 primer. The sealant coated surface of the other panel shall be coated with MIL-P-23377 primer and MIL-C-83286 polyurethane coating. When the coatings are thoroughly cured, they shall be tested for adhesion using a "wet tape adhesion test" in accordance with FED-STD-141, Method 6301.2. Soak the panels in distilled water for 24 hours.

4.5.29 Weather Resistance: A test specimen shall be prepared using a thermal expansion block (Figure 7). All of the block shall be finished with MIL-P-23377 primer coating. After the coating is cured, the groove shall be filled approximately flush with sealant. After a standard cure, as in 4.5.2.8, the test specimen shall be exposed in an Atlas Weatherometer, or equivalent, for 30 days. The temperature shall be 140 °F (60 °C) and a cycle of three minutes water spray and 17 minutes sunshine shall be maintained during the exposure. Visually inspect specimen for evidence of cracking, chalking, peeling, or loss of adhesion.

4.5.30 Shaving and Sanding (Class B only): The groove and screw heads of a thermal expansion block (Figure 7), coated with MIL-P-23377, shall be filled with sealant allowing a small excess for shaving and sanding. After being given a standard cure, the excess compound shall be shaved off with a nonmetallic scraper and the surface sanded with 400 grit abrasive paper on a sanding block. Visually inspect for rolling or tearing of the sealant.

4.5.31 Radiographic Density:

4.5.31.1 Preparation of Test Panels: A 6-inch (152-mm) square plate, 0.25 inch (6.4 mm) thick, shall be prepared from AMS 4049 aluminum alloy. A notch 0.25 inch (6.4 mm) wide shall be milled to a depth of 0.125 inch (3.18 mm) half way across the plate. A continuation of this notch shall be milled completely through the remaining half so as to form a slot in the plate.

4.5.31.2 Application of Sealant: A sample of the sealant to be tested shall be machined mixed, after which a strip, 1 inch (25 mm) wide and 0.125 inch (3.18 mm) thick, shall be applied over the entire length of the notched portion and slot in the test plate. A mold shall be used during application of the sealant to the plate to ensure uniform thickness of the sealant.

4.5.31.3 Test Procedure: The test panel, prepared in 4.5.31.1 and 4.5.31.2, shall be radiographed in accordance with MIL-STD-453 to obtain a 2% sensitivity through the plate at an H & D density of 2.5 ± 0.2, using Dupont 510 or Kodak M film, or equivalent. All density measurements shall be measured with an Ansco-Sweet densitometer, or equivalent.

4.5.32 Storage Stability:

4.5.32.1 Accelerated Storage Stability: A full, tightly closed 1-quart (1-L) container of the base compound and a full, tightly closed container of the appropriate amount of the curing agent shall be maintained 14 days at 120 °F (49 °C). After cooling to standard conditions (4.5.1.1) for 24 hours, tests shall be conducted in accordance with 4.5.7, 4.5.8, 4.5.9, 4.5.10, 4.5.11, and 4.5.12. Four AMS 4045 aluminum alloy panels, 0.040 x 2.75 x 6 inches (1.02 x 69.8 x 152 mm), sulfuric acid anodized in accordance with AMS 2471 and overcoated with MIL-C-27725 shall be prepared for peel panels as in 4.5.15. The panels shall be aged for seven days at 140 °F (60 °C) with two panels immersed in JRF and two panels immersed in equal parts JRF and 3% by weight aqueous sodium chloride solution. The panels shall be tested as in 4.5.15.

4.5.32.2 Long-Term Storage: Three original unopened 1-pint (1/2-L) kits of sealing compounds (12 fluid ounces (355 mL) of base compound in each kit and the appropriate amount of curing agent) shall be stored at 77 °F (25 °C) for nine months. At the end of the storage period, the sealant shall be tested in accordance with 4.5.10, 4.5.12, and 4.5.13 and inspected to 3.2.29.2.

4.6 Reports:

The vendor of sealing compound shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the sealing compound conforms to the other technical requirements. This report shall include the purchase order number, batch number, AMS 3276, vendor's compound designation, and quantity.

4.7 Resampling and Retesting:

If any specimen used in the above tests fails to meet the specified requirements, disposition of the sealing compound may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the sealing compound represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging:

5.1.1 Sealing compound shall be furnished in individual containers for the base compound and the curing agent or in sectional containers. The ratio of the quantity contained in the base compound container to the quantity contained in the curing agent container shall be the same as the recommended mixing ratio of the base compound to the curing agent. Adhesion promoter shall be packaged with the sealing compound.

5.1.2 Individual Containers: The base compound shall be furnished in 1/2-pint (236-mL), 1-pint (473-mL), 1-quart (1-L), or 1-gallon (3.78-L) metal cans conforming to PPP-P-704, in 5-gallon (19-L) pails, in 55-gallon (208-L) drums conforming to PPP-D-729, Type III, except that tin plate cans with paper labels may be used or as specified in the purchase order. The air in the base compound containers shall be replaced with nitrogen immediately prior to closing the containers. The base compound contained in each size container shall be as shown in Table 5.

TABLE 5 - Container Content

Size of Container	Amount of Base Compound
1/2 pint (236 mL)	6 fluid ounces ± 0.125 (178 mL ± 4)
1 pint (473 mL)	12 fluid ounces ± 0.25 (355 mL ± 7)
1 quart (1 L)	24 fluid ounces ± 0.5 (710 mL ± 15)
1 gallon (3.78 L)	96 fluid ounces ± 2 (2840 mL ± 60)
5 gallons (19 L)	5 gallons ± 10 fluid ounces (19 L ± 298 mL)
55 gallons (208 L)	50 gallons ± 0.5 (189 L ± 2)

5.1.2.1 The curing compound for kits 1 gallon (3.78 L) or under shall be furnished in glass jars or in suitable containers approved by purchaser. Glass jars or plastic containers, as applicable, shall have vertical, smooth inside walls with no internal projections or internal lips exceeding 0.062 inch (1.57 mm). The glass jars shall be closed with enameled metal or plastic continuous thread screw caps having a nonabsorbent lining material. Caps shall be tightened adequately and further sealed with cellulose bands, or equivalent. Curing agent for 5-gallon (19-L) pails shall be packaged in 1-gallon (3.78-L) cans conforming to PPP-C-96, Type 5, Class 2. Curing agent for 55-gallon (208-L) drums shall be packaged in pails conforming to PPP-P-704.

5.1.2.2 One container each of the base compound and the curing agent, individually packaged in accordance with the foregoing, shall be enclosed in a PPP-B-636, Grade W5C, container and shall constitute a complete kit.

5.1.3 Sectional-Type Containers: The base compound and the curing agent shall be furnished in high-density polyethylene sectional-type 2.5-ounce (74-mL) or 6-ounce (178-mL) cartridges, conforming to MIL-S-38714, as specified in the purchase order. The total content of the base compound/curing agent contained in each sectional-type container shall be as shown in Table 6.

TABLE 6 - Container Content

Size of Container	Total Content (Base and Curing)
2.5 ounces (74 mL)	2 fluid ounces ± 0.125 (60 mL ± 4)
6 ounces (178 mL)	3.5 fluid ounces ± 0.125 (104 mL ± 4)
6 ounces (178 mL)	4.5 fluid ounces ± 0.125 (134 mL ± 4)

5.1.4 Containers of compound shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to handling, packaging, and transportation of the compound to ensure carrier acceptance and safe delivery.

5.1.5 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-2073-1, Commercial Level, unless Level A is specified in the request for procurement.

5.2 Identification:

5.2.1 Compound: Each container and each box shall be permanently and legibly marked with not less than the following:

SEALING COMPOUND, POLYSULFIDE (T) SYNTHETIC RUBBER, INTEGRAL FUEL TANKS AND GENERAL PURPOSE, INTERMITTENT USE TO 360 °F (182 °C)

AMS 3276
MANUFACTURER'S NAME _____
MANUFACTURER'S PRODUCT DESIGNATION _____
COMPOUND NUMBER _____
BATCH NUMBER _____
DATE OF MANUFACTURE _____
STORE BELOW 80 °F (27 °C) _____

5.2.2 Shipping Containers: Each exterior shipping container shall be legibly marked with not less than the following:

SEALING COMPOUND, POLYSULFIDE (T) SYNTHETIC RUBBER, INTEGRAL FUEL TANKS AND GENERAL PURPOSE, INTERMITTENT USE TO 360 °F (182 °C)

AMS 3276
PURCHASE ORDER NUMBER _____
MANUFACTURER'S NAME _____
MANUFACTURER'S MATERIAL DESIGNATION _____
DESCRIPTION _____
BATCH NUMBER _____
NET WEIGHT _____

6. ACKNOWLEDGMENT:

A vendor shall mention this specification number letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS:

Sealing compound not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.

8. NOTES:

8.1 Qualification of Sealing Compound for U.S. Government Procurement:

With respect to sealing compounds requiring qualification, awards will be made only for sealing compounds which are, prior to the award of a contract, qualified for inclusion in the applicable qualified products list (QPL) whether or not such products have been so listed up to that date. The attention of contractors is called to these requirements, and manufacturers are urged to arrange to have the sealing compound that they propose to offer to the U.S. Government tested for qualification in order that they may be eligible to be awarded contracts orders for the sealing compound covered by this specification. The activity responsible for the QPL is the Wright Research and Development Center, ATTN: MLSE, Wright-Patterson Air Force Base, Ohio 45433-6533, and information pertaining to qualification of sealing compound may be obtained from that activity.

8.1.1 Qualification tests must be performed every three years in order to remain on the U.S. Government Qualified Products List.

8.2 Dimensions and properties in inch/pound units and the Fahrenheit temperatures are primary; dimensions and properties in SI units and the Celsius temperatures are shown as the approximate equivalents of the primary units and are presented only for information.