SAE Aerospace
An SAE International Group

# AEROSPACE MATERIAL SPECIFICATION

SAE AMS3262 REV. A

Issued 2000-02
Stabilized 2011-09

Superseding AMS3262

## Sealing Compound, Silicone Rubber, Two-Part, Electrically Conductive and Corrosion Resistant (Nonchromated) for Use from -67 to 500 °F (-55 to 260 °C)

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

This document has been declared "Stabilized" by SAE G-9, Aerospace Sealing Committee, and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.





**TO PLACE A DOCUMENT ORDER:** **Tel: 877-606-7323 (inside USA and Canada)**
**Tel: +1 724-776-4970 (outside USA)**
**Fax: 724-776-0790**
**Email: CustomerService@sae.org**
**SAE WEB ADDRESS:** **http://www.sae.org**

**SAE values your input. To provide feedback on this Technical Report, please visit**
**http://www.sae.org/technical/standards/AMS3262A**

1. SCOPE:

1.1 Form:

This specification covers a silicone, electrically conductive and corrosion-inhibiting sealing compound.

1.2 Application:

This sealing compound has been used typically for electrical bonding and sealing bare aluminum alloy or chemical conversion coated aluminum alloy surfaces, but usage is not limited to such applications.

1.3 Safety - Hazardous Materials:

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards 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 issue of the following documents in effect on the date of the purchase order form a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been canceled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications:

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

AMS 2471 Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Undyed Coating
AMS 2825 Material Safety Data Sheets
AMS 3819 Cloths, Cleaning for Aircraft Primary and Secondary Structural Surfaces
AMS 4037 Aluminum Alloy Sheet and Plate, 44Cu - 1.5Mg - 0.60Mn (2024: -T3 Flat Sheet, T-351 Plate), Solution Heat Treated
AMS 4045 Aluminum Alloy Sheet and Plate, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (7075-T6 Sheet: -T6 Sheet, -T651 Plate), Solution and Precipitation Heat Treated
AMS 4901 Titanium Sheet, Strip and Plate, Commercially Pure, Annealed, 70.0 ksi (485 MPa)
AMS 5516 Steel, Corrosion Resistant, Sheet, Strip, and Plate, 18Cr - 9.0Ni, Solution Heat Treated

AS5127 Methods for Testing Aerospace Sealants (May 1997)

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 117 Operating Salt Spray (Fog) Testing
ASTM D 412 Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension
ASTM D 991 Rubber Property - Volume Resistivity of Electrically Conductive and Antistatic Products
ASTM D 1002 Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)
ASTM D 2137 Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics
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-378 Plastic Sheet and Strip, Thin Gauge, Polyolefin
L-P-390 Plastic, Molding and Extrusion Material, Polyethylene and Copolymers (Low, Medium, and High Density)
CCC-C-419 Cloth, Duck, Cotton, Unbleached, Plied Yarns, Army and Numbered
MIL-C-5541 Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-A-9962 Abrasive Mats, Non-woven, Non-metallic
MIL-P-23377 Primer Coating, Epoxy Polyamide, 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-C-38736 Compound, Solvent, for Use in Integral Fuel Tanks
MIL-C-81706 Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys
MIL-P-85582 Primer Coatings: Epoxy, VOC Compliant, Chemical and Solvent Resistant
MIL-C-87936 Cleaning Compounds, Aircraft Exterior Surfaces, Water Dilutable

3. TECHNICAL REQUIREMENTS:

3.1 Materials:

The basic ingredient shall be silicone polymer. The sealing compound shall preferably be gray in color. Compound shall cure by addition of a curing agent.

3.1.1 An adhesive primer may be included as part of the material package. Manufacturer shall specify whether a primer is necessary or optional to meet the requirements of the specification.

3.2 Properties:

The sealing compound, when mixed in accordance with manufacturer's instructions and cured as specified in 4.5.2.7, shall conform to the requirements of this specification, determined in accordance with specified test methods in Table 1.

3.2.1 Storage Life: The base compound and the curing agent, stored in closed containers at no higher than 80 °F (27 °C), shall, when mixed in proper proportions at any time up to six months from the date of packaging, shall meet all acceptance test requirements of this specification.



TABLE 1 - Properties

| Paragraph | Property | Requirement | Test Method |
|---|---|---|---|
| 3.2.2 | Nonvolatile Content | 95% | 4.6.1 |
| 3.2.3 | Viscosity of Base Compound one hour after stirring, max | 1,500 Poise (1,500 Pa·s) | 4.6.2 |
| 3.2.4 | Application Time | Amount extruded not less than 15 gm/min after 2 hour | 4.6.3 |
| 3.2.5 | Tack-Free Time, max | 10 hours | 4.6.4 |
| 3.2.6 | Peel Strength, min | 8 pounds per inch width (69 kPa) | 4.6.5 |
| 3.2.7 | Hardness, Durometer "A", min | 40 | 4.6.6 |
| 3.2.8 | Tensile Strength, min | 50 psi (345 kPa) | 4.6.7 |
| 3.2.9 | Elongation, min | 50% | 4.6.7 |
| 3.2.10 | Tensile Shear, min | 70 psi (483 kPa) | 4.6.8 |

TABLE 1 - Properties (Continued)

| Paragraph | Property | Requirement | Test Method |
|---|---|---|---|
| 3.2.11 | Thermal Stability | No sign of blister or cracking, hardness change not greater than 15 points. | 4.6.9 |
| 3.2.12 | Low Temperature Brittleness | Pass | 4.6.10 |
| 3.2.13 | Direct Current Resistance, max after one hour cure and 2000 hours salt spray | 1.0 milliohms | 4.6.11<br>ASTM B 117 |
| 3.2.14 | Volume Resistivity, max<br>after 200 hours salt spray<br>initial after 100 hours salt spray | 0.5 ohm-m | 4.6.12<br>ASTM D 991<br>ASTM B 117 |
| 3.2.15 | Corrosion Resistance, after 2000 hours salt spray | No blisters or corrosion | 4.6.13<br>ASTM B 117 |

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The manufacturer of the sealing compound shall supply all samples and shall be responsible for the performance of 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.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Acceptance tests shall consist of the following tests:

Nonvolatile content (4.6.1)
Viscosity (4.6.2)
Application time (4.6.3)
Peel strength (4.6.5)
Resistance, D.C. (4.6.11)

4.2.2 Qualification Testing: Qualification testing shall consist of all tests imposed by the specification.

4.3 Sampling for Test:

4.3.1 Batch and Lot: A batch shall be defined as the quantity of material runs through a mill or mixer at one time. A lot shall be defined as material from one batch of each component packaged at the same time as finished product.

4.3.2 Sampling for Acceptance Tests: Each lot of sealing compound shall be subjected to acceptance tests. A sufficient number of containers shall be selected at random from each lot to conduct the acceptance tests specified in 4.2.1.

4.3.3 Sampling for Qualification Tests: The sealing compound for qualification shall be subjected to full specification tests.

4.4 Approval:

4.4.1 Sealing compound shall be approved by purchaser before the sealing compound for production use is supplied, unless such approval is waived by purchaser. Results of tests on production sealing compound shall be essentially equivalent to those on the approved sample.

4.4.2 Manufacturer shall use ingredients, manufacturing procedures, manufacturing location, 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, manufacturer 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:

4.5.1 Standard Conditions: Standard laboratory conditions shall be 77 °F ± 2 (25 °C ± 1) and 50% ± 5 relative humidity. Unless otherwise specified for elevated temperature cure or test, test specimens shall be cured under these conditions. Test specimens shall be prepared at 77 °F ± 5 (25 °C ± 3) and immediately upon completion of preparation, shall be placed into standard laboratory conditions for cure. Except as otherwise specified herein, tests shall be performed at 77 °F ± 5 (25 °C ± 3).

4.5.1.1 Standard Tolerances: Unless otherwise specified herein, standard tolerances shown in Table 2 shall apply.



TABLE 2 - Standard Tolerances

| Measurement Units | Tolerances |
|---|---|
| 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: The construction and cleaning of test panels shall be in accordance with Table 3 and methods in AS5127.

TABLE 3 - Construction and Cleaning of Test Panels

| Panel Material/Construction | Cleaning Method, AS5127 (paragraph) |
|---|---|
| AMS 4037 and 4045 Aluminum alloys conversion coated per AS5127 (6.1) "Chemical Conversion Coating" | (1.1) Preparation of Aluminum Panel Test Surface |
| AMS 4045 Aluminum alloy, anodized per AMS 2471 | (6.1.1) "Preparation of Aluminum Panel Test Surfaces" |
| AMS 4045 Aluminum alloy, anodized per AMS 2471 coated with MIL-C-27725 | (6.2.1.1) "Cleaning of MIL-P-23377 Surface for Sealing" |
| AMS 4045 Aluminum alloy, anodized per AMS 2471 coated with MIL-P-23377, Type I, Class C cured 7 days at standard laboratory conditions | (6.2.2.1) "Cleaning of MIL-P-23377 Surface for Sealing" |
| AMS 4045 Aluminum alloy, anodized per AMS 2471 coated with MIL-P-23377, Type I, Class C cured at 200 °F (93 °C) for 2 hours | (6.2.2.1) "Cleaning of MIL-P-23377 Surface for Sealing" |



4.5.2.1 Preparation of Chemical Conversion Coating: 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. Mix the conversion coating solution in either 18-8 type stainless steel, polyethylene or other compatible container. Do not mix in glass container.

4.5.2.2 Preparation of Aluminum Alloy Test Panels: Aluminum alloy test panels shall conform to AMS 4037 or AMS 4045 as specified in the respective test methods. Panel sizes are specified in the respective test methods. Vapor or solvent degrease and alkaline detergent clean using MIL-C-87936, Type 1 compound or equivalent commercially available alkaline cleaner. The cleaning may be accomplished by brushing, swabbing or soaking the panels in detergent solution or by a combination of the above techniques. Rinse the clean 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:

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

4.5.2.2.1 Acid deoxidizer conforming to MIL-C-38334 may also be used. Allow the panels to remain in the above solution of 4.5.2.2 for 3 to 5 minutes. Rinse the panels thoroughly under flowing tap water.

4.5.2.2.2 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) 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.

4.5.2.3 Preparation of Stainless Steel and Titanium Test Panels: Stainless steel test panels shall conform to AMS 5516. Titanium test panels shall conform to AMS 4901. Panel sizes are specified in the respective test methods. 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. 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, then wiped dry. The abrasive mats shall conform to MIL-A-9962, Type I, Class 1, Grade A for stainless steel panels and MIL-A-9962, Type III, Class 1, Grade A for titanium panels.

4.5.2.4 Preparation of Expoxy/Graphite Composite Panels: AS4/3501-6 test panels shall be fabricated using eight plies 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). 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 375 °F ± 10 (190 °C ± 5) at a rate of 1 to 4 F (0.5 to 2 C) degrees per minute. From 320 °F (160 °C) to 375 °F (190 °C), heat at a rate of less than 1 F (0.5 C) degrees per minute. Keep free air temperature at or below 390 °F (199 °C). Hold laminate at 375 °F (190 °C) for 6 hours ± 20 minutes. Cool laminate to 150 °F (65 °C) or below at an average rate equal to or less than 5 F (3 C) degrees per minute while maintaining a minimum of 25 psi (172 kPa) pressure. Remove peel ply. Prior to sealant application, clean, scrub and rinse panels using MIL-C-38736 solvent, AMS, Grade A cloths and MIL-A-9962, Type I, Class 1, Grade A abrasive mats as described in 4.5.2.3.

4.5.2.5 Application of Organic Coatings: When organic coatings are specified for the test panels, the coatings shall be fully cured as defined by the applicable coating specification before cleaning. The applied coating shall not be less than 14 days old and not more than six months old stored at ambient indoor temperatures.

4.5.2.6 Application of Adhesive Primer: When an adhesive primer is included or specified as a component of the sealing compound system, the panel surface shall be treated with the recommended primer. Prime the panels immediately after the panel is cleaned and dried. Apply the primer and allow primer to dry for a minimum 30 minutes or according to manufacturer's recommendation. Apply sealing compound before two hours elapsed time.

4.5.2.7 Preparation Sealing Compound: Conditioning of the components or mixed compound for test is specified in the respective test methods. The sealing compound components shall be combined and thoroughly mixed in accordance with the manufacturer's instructions.

4.5.2.8 Application of Sealing Compound: Application of sealing compound to test panels varies according to the testing requirement. Sealing compound shall be applied to the test panels according to the procedures and coating thicknesses as specified in the respective test methods.

4.5.2.9 Cure of Sealing Compound: For full 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 may 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 completion of the specified cure schedule.

4.6 Test Methods:

4.6.1 Nonvolatile Content: Within five minutes after mixing, 3 to 5 grams of sealing compound shall be transferred as rapidly as possible to each of 3 previously weighed (W1) aluminum dishes approximately 2-3/4 inches (70 mm) in diameter, filling the bottom to a uniform depth. Cure the samples in the dishes for 3 hours ± 5 minutes at 68 to 86 °F (20 to 30 °C) and weigh (W2). Place samples and dishes in a circulating air oven preheated to 160 °F (71 °C) for 24 hours. Remove samples and dishes from oven and allow to cool to 68 to 86 °F (20 to 30 °C) in a desiccator. Remove samples and dishes and reweigh (W3). All weights shall be determined using an analytical balance accurate within ± 1 milligram. All weighings shall be accomplished on the same balance and shall be recorded to the nearest milligram. Percent nonvolatile content shall be determined from the average of three samples and shall be calculated using Equation 1.

$$\% \text{ nonvolatile} = \frac{(W_3 - W_1) \times 100}{W_2 - W_1} \qquad \text{(Eq. 1)}$$

4.6.2 Viscosity of Base Compound: The viscosity shall be determined with base compound placed in a 1-quart or 1-liter can. The can shall be filled with the base compound to within 1/2 inch (12 mm) of the top, covered and stored at standard laboratory conditions for not less than 8 hours. The base compound shall then be thoroughly stirred slowly for not less than 3 minutes after which the can shall be closed and the base compound allowed to stand for not less than 3 minutes after which the can shall be closed and the base compound allowed to stand for not less than 1 hour. The Brookfield model RVF viscometer, or equal, shall be used. The Number 7 spindle, at 2 rpm, shall be used. The highest reading shall be taken after the instrument has run in the base compound for not less than 1 minute. The reading obtained shall be converted to poises (Pa·S).

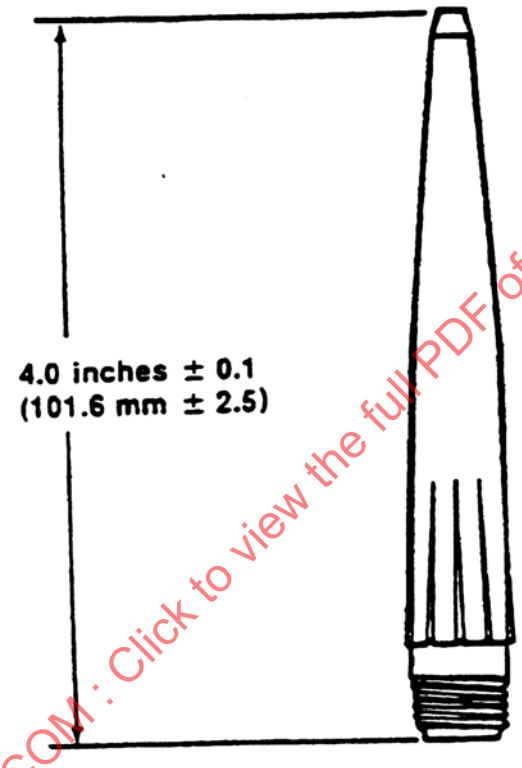
4.6.3 Application Time: The base compound, curing agent, and application gun shall be stabilized at standard laboratory conditions (4.5.1) for not less than eight hours before base compound is mixed with the curing agent. Mix not less than 250 grams with the proper amount of curing compound.

4.6.3.1 The base compound shall be placed into a standard sealing gun cartridge, having a nozzle (Figure 1) with an orifice of 0.125 inch ± 0.004 (3.18 mm ± 0.10). Take care to avoid air entrapment. The gun cartridge and sealing compound shall be maintained at standard conditions throughout the test. The gun shall be attached to a constant air supply of 90 psi ± 5 (621 kPa ± 34).

4.6.3.2 From 2 to 3 inches (51 to 76 mm) of sealing compound shall be extruded initially to clear any trapped air. At the end of 2 hours, measured from the beginning of mixing operation, extrude the sealing compound for 1 minute into a previously weighed suitable receptacle. Determine and record the weight of the extruded sealing compound.

4.6.4 Tack Free Time: An AMS 4045 aluminum alloy panel, 0.040 x 2.75 x 6 inch (1.02 x 70.0 x 152 mm) shall be cleaned in accordance with 4.5.2.2. Sealing compound shall be applied to produce a coating having a total thickness of 0.125 inch ± 0.02 (3.18 mm ± 0.5) when cured. The sealing compound shall be allowed to cure at standard laboratory conditions. After ten hours, two 1 x 6-inch (25 x 152-mm) strips of polyethylene film conforming to L-P-378 and 0.004 ± 0.0002 inches (100 µm ± 5) thick shall be applied to the sealing compound and held in place with a pressure of 0.5 ounce force per square inch (0.02 N/cm$^2$) for two minutes. The strips shall then be slowly and evenly peeled back at a right angle to the sealing compound surface. The polyethylene film shall come away clean and free of sealing compound.

4.6.5 Peel Strength: The type, quantity, and thickness of panels shown in Table 4 shall be used for evaluation of peel strength. All 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 inches (127 mm), of the panel with sealant (See Figure 2). A 2.75 x 12 inch (7 x 305 mm) strip of wire screen [20 to 40-mesh (850 to 425 mm)] mesh aluminum or monel wire fabric) or cotton duck cloth conforming to CCC-C-419, Type 3, cotton duck cloth shall be impregnated with the sealing compound so that approximately 5 inches (12 mm) at one end is completely covered on both sides. The 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. Sealant must be worked well into the fabric. An additional 1/32 inch (1 mm) coating of sealing compound shall be applied over the fabric approximately 0.031 inch (0.79 mm) thick. The sealant shall be given one of the cure schedules, as appropriate, in accordance with 4.5.2.5. At the end of the sealing compound cure, 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. 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 of 2 inches (51 mm) per minute. During the 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 shall be the numerical average of the peak loads during cohesive failure. Bond failures between sealing compound and fabric shall not be included in the peel strength values.

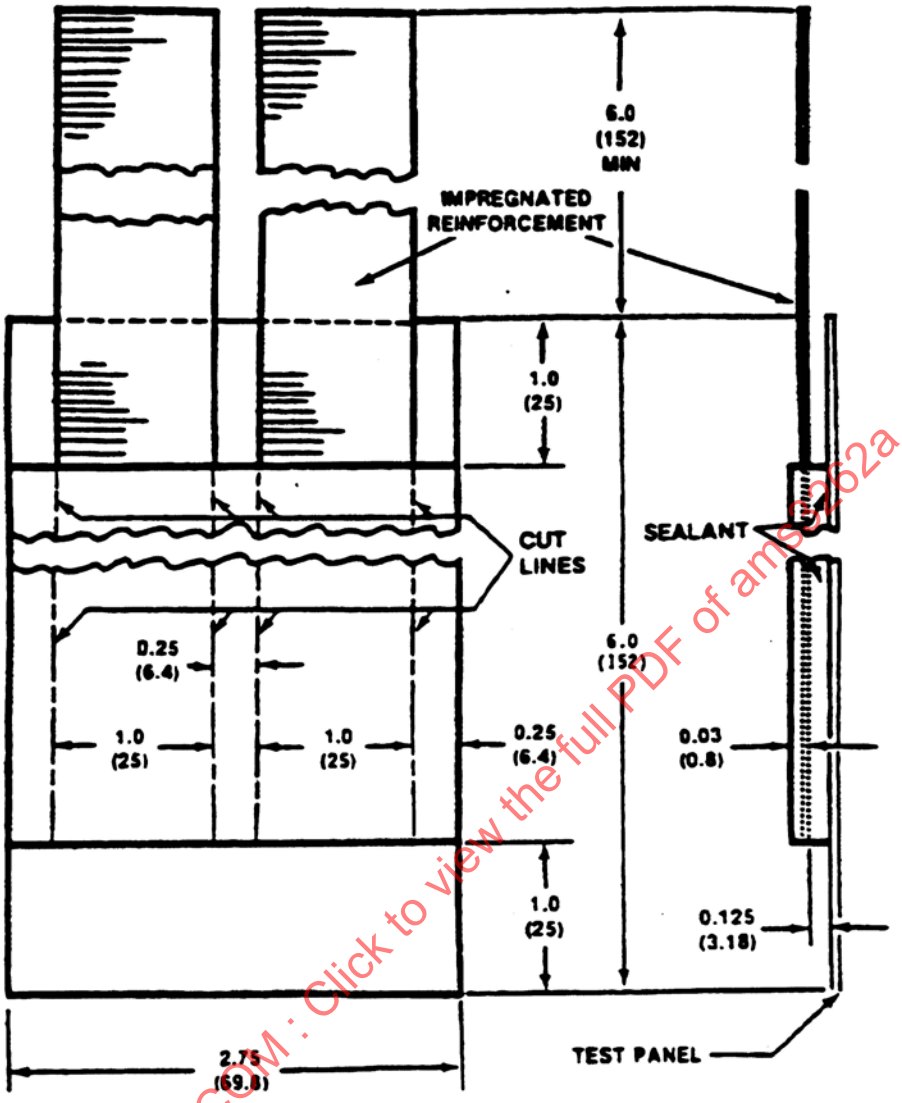





NOTES:

1. Orifice diameter shall be 0.125 inch ± 0.004 (3.18 mm ± 0.10)
2. Material shall be polyethylene conforming to L-P-390

FIGURE 1 - Standard Test Nozzle






NOTES:

1. Dimensions are in inches (millimeters).
2. Unless otherwise specified, dimensions shown shall be nominal.
3. Sealant and fabric covers lower 1 inch (25 mm) of panel in the optional specimen.

FIGURE 2 - Peel Specimen Configuration

TABLE 4 - Peel Strength Panels

| Quantity | Panel Material | Panel Thickness |
|---|---|---|
| 2 | AMS 4045 aluminum alloy<br>conversion coated per 4.5.2.2 | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | AMS 4045 aluminum alloy,<br>anodized per AMS 2471 | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | AMS 4045 aluminum alloy,<br>anodized per AMS 2471,<br>coated with MIL-C-27725 | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | AMS 4045 aluminum alloy,<br>anodized per AMS 2471,<br>coated with MIL-P-23377, Type 1, Class C,<br>cured 7 days at standard laboratory conditions | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | AMS 4045 aluminum alloy,<br>anodized per AMS 2471,<br>coated with MIL-P-23377, Type 1, Class C,<br>cured at 200 °F (93 °C) for 2 hours | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | AMS 4045 aluminum alloy,<br>anodized per AMS 2471,<br>coated with MIL-P-23377, Type 1, Class C,<br>and MIL-C-85285 polyurethane topcoat | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | AMS 4045 aluminum alloy,<br>anodized per AMS 2471,<br>coated with MIL-P-85582 primer | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | AMS 5516 stainless steel | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | AMS 4901 titanium | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |
| 2 | Graphite/epoxy composite,<br>4.5.2.4 and Table 3 | 2.75 x 6 x 0.040 inches<br>(70 x 150 x 1.02 mm) |

4.6.6 Hardness: 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 in accordance with 4.5.2.5. The instantaneous hardness shall be determined in accordance with ASTM 2240 after the sealing compound is cured per 4.5.2.5. The reading shall be taken on a double layer of 0.125 inch ± 0.010 (3.18 mm ± 0.25) thick specimens, making the total test thickness of 0.25 inch (6.4 mm).

4.6.7 Tensile Strength and Elongation: 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 in accordance with 4.5.2.5. Three tensile specimens shall be cut from the sheet using Die C as specified in ASTM D 412. The specimens shall be cured under standard laboratory conditions (4.5.1). The tensile and elongation tests shall be conducted at standard laboratory conditions (4.5.1), in accordance with ASTM D 412, Method A, at a jaw separation rate of 20 inches per minute (8.5 mm/s).

4.6.8 Tensile Shear: Tensile shear strength shall be determined in accordance with ASTM D 1002 with the following modifications. Individual test specimens shall be AMS 4037 aluminum alloy, or equivalent, nominally 1/8 x 1 x 5 inches (3.2 x 25 x 127 mm). The tensile holding fixture shall allow sufficient offset to account for the metal thickness. A through-pin holding arrangement shall be allowable when 1/8 inch (3.2 mm) thick test specimen are used. The test specimen width shall be 1 inch ± 0.1 (25 mm ± 0.2) and the overlap area shall be 1 square inch (645 $mm^2$). Bonding fixtures shall include shims to control the bondline thickness between 0.005 and 0.010 inch (0.13 mm and 0.25 mm). Bonding surface shall be freshly prepared per 4.5.2.2 a uniformly roughened surface and shall be thoroughly washed with a suitable solvent. Apply adhesive primer to the metal surface in accordance with manufacturer's instructions if primer is appropriate for the material under test.

4.6.9 Thermal Stability: Specimens, prepared and cured in accordance with 4.6.6 shall be tested for hardness in accordance with ASTM D 2240. Heat age the specimens for 48 hours at 250 °F ± 2 (121 °C ± 1) in a circulation air oven. On removal from the oven, the specimens shall be cooled to 77 °F ± 2 (25 °C ± 1). Inspect the condition of the sealing compound and remeasure the hardness.

4.6.10 Low Temperature Brittleness: Specimens, prepared and in accordance with 4.6.6 shall be tested for low temperature brittleness in accordance with ASTM D 2137, Method A, at a temperature of -65 °F (-55 °C).

4.6.11 Direct Current Resistance: A test joint conforming to Figure 3 shall be prepared. The total area of the faying surfaces shall not exceed 18 square inches (116 $cm^2$). The test joints shall allow the sealing compound to be applied to one or both surfaces. The AMS 4045 aluminum alloy plates shall be fastened together at a torque of 13 inch-pounds (1.5 N·m). The fasteners shall be electrically insulated such that conductivity is achieved solely through the sealant material. All seams shall be exposed and visible to the naked eye. Resistance shall be measured with a suitable milliohm meter (Kelvin Bridge type) capable of measuring values less than 2.5 milliohms with a minimum accuracy of ±0.1 milliohm. Instrument probes shall be in direct contact with the aluminum base plates.