

NOT MEASUREMENT SENSITIVEMIL-A-46106L  
AMENDMENT 3  
26 June 1992

## MILITARY SPECIFICATION

## ADHESIVE-SEALANTS, SILICONE, RTV, ONE-COMPONENT

This amendment forms a part of MIL-A-46106B, dated 11 December 1989, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 2

2.1.1: Add the following:

"QQ-S-698 Steel Sheet and Strip, Low Carbon"

PAGE 3

2.2: Delete "ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality"

PAGE 4

3.2.2: Delete and substitute:

"3.2.2 Primer. When required, each manufacturer of a silicone adhesive-sealant shall supply a suitable primer which shall be furnished with the product. The manufacturer shall certify that the primer, when used with the adhesive meets the requirements for primer within this specification (see 3.4.2)."

PAGE 12

4.2.2.6, line 5: Delete "steel conforming to ASTM A366, Temper 5" and substitute "steel conforming to QQ-S-698"

PAGE 14

4.5.2.2, line 5: Delete "adhesion test specimens shall be cured for 336 + 4 hours (14 days + 4 hours)" and substitute "adhesion test specimens shall be cured for 168 + 4 hours (7 days + 4 hours)"

AMSC No. F4847

1 of 2

FSC 8040

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PDR RC \* PDR  
SSD

*Rating low  
Flotm large  
See previous comment  
Why are there two different  
components?*

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Insert the following table IX immediately after table VIII.

TABLE IX. Comparison data for revision A to revision B.

| Revision A                  | Revision B   |
|-----------------------------|--|
| Type I<br>Type II           | Group I - General Purpose<br>Type I - Thixotropic paste<br>Type II - Self-leveling liquid    |
| MIL-A-47040 - High Strength | Group II - High Strength<br>Type I - Thixotropic paste<br>Type II - Self-leveling liquid     |
| MIL-R-47211A(MI) Type II    | Group III - High Temperature<br>Type I - Thixotropic paste<br>Type II - Self-leveling liquid |

Custodians:  
Army - Mk  
Navy - AS  
Air Force - 11

Preparing activity:  
Army - MR

Project 8040-0523

Review activities:  
Army - MK, MD, AT, MI, SM, AR  
Navy - YD  
Air Force - 11

User activities:  
Army - ME  
Navy - SH  
GSA - FSS (10FFE)

(KBWP# ID-0165A/DISC-0025A. FOR MTL USE ONLY.)

NOT MEASUREMENT SENSITIVE

MIL-A-46106B  
 11 December 1989  
 SUPERSEDING  
 MIL-A-46106A  
 18 September 1970

## MILITARY SPECIFICATION

## ADHESIVE-SEALANTS, SILICONE, RTV, ONE-COMPONENT

This specification is approved for use by all Departments and Agencies of the Department of Defense.

## 1. SCOPE

1.1 Scope. This specification covers three groups of one-part, room-temperature-vulcanizing (RTV), silicone adhesive-sealants which cure to durable, rubber adhesive-sealants upon reaction with moisture in the air. This specification also covers primers (see 6.1.3) for use with the silicone adhesive-sealants.

1.1.1 Limitations. The silicone adhesive-sealants covered by this specification have the following limitations:

- a. Silicone adhesive-sealants in Groups I, II and III are not fuel-resistant.
- b. Adhesive-sealants in each group liberate corrosive acid during cure and shall not be used on or near avionic, electrical, electronic equipment or corrosive-sensitive metals.
- c. None of these adhesive-sealants are low weight loss, or low volatile condensable types.

1.2 Classification.

1.2.1 Groups of silicone adhesive-sealants. The silicone adhesive-sealants shall be classified into groups according to their intended use and outstanding property (see 6.1 and 6.2):

- Group I - General purpose  
 Group II - High strength  
 Group III - High temperature

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Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Director, U.S. Army Laboratory Command, Materials Technology Laboratory, ATTN: SLCMT-MEE, Watertown, MA 02172-0001 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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ANSC No. F4847

FSC 8040

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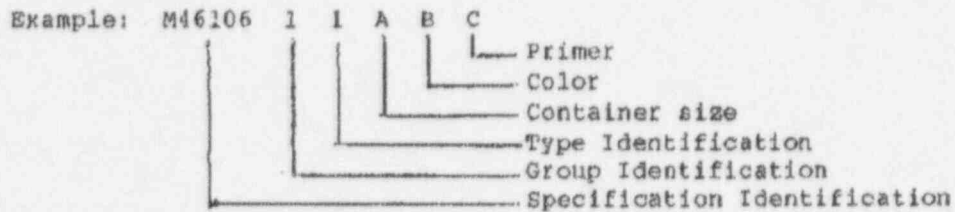
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1.2.2 Types of silicone adhesive-sealants. Each group of silicone adhesive-sealants shall be subdivided into types as follows (see 6.1 and 6.2):

- Type I - Thixotropic paste  
Type II - Self-leveling liquid

1.2.3 Primer. The primer (if required) shall be as recommended by the manufacturer of the silicone adhesive-sealant (see 6.1.3).

1.2.4 Designation. The silicone adhesive-sealants shall be designated as follows: (see 6.5)



## 2. APPLICABLE DOCUMENTS

### 2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

### SPECIFICATIONS

#### FEDERAL

- QQ-A-250/4 - Aluminum Alloy 2024, Plate and Sheet
- PPP-B-566 - Boxes, Folding, Paperboard
- PPP-B-601 - Box, Wood, Cleated-Plywood
- PPP-B-636 - Box, Shipping, Fiberboard
- PPP-B-676 - Boxes, Set-up
- PPP-C-96 - Can, Metal, 28 Gage and Lighter
- PPP-C-2020 - Chemicals, Liquid, Dry and Paste, Packaging of
- PPP-D-705 - Drum, Shipping and Storage, Steel, 16 and 30 Gallon Capacity
- PPP-D-729 - Drums, Shipping and Storage, Steel, 55 Gallon (208 Liters)
- PPP-D-732 - Drum, Metal, 55 Gallon Reconditioned, (For Shipment of Noncorrosive Materials).
- PPP-P-704 - Pails, Metal: (Shipping, Steel 1 through 12 Gallon)
- PPP-T-1637 - Tubes, Shipping, Collapsible

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## STANDARDS

## FEDERAL

FED-STD-313 - Material Safety Data Sheets, Preparation and the Submission of

## MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes  
 MIL-STD-129 - Marking for Shipment and Storage  
 MIL-STD-130 - Identification, Marking of U.S. Military Property  
 MIL-STD-147 - Palletized Unit Loads  
 MIL-STD-1190 - Minimum Guidelines for Level C Preservation, Packing and Marking

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.2 Non-Government publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality  
 ASTM D149 - Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies  
 ASTM D150 - A-C Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials  
 ASTM D257 - D-C Resistance or Conductance of Insulating Materials  
 ASTM D412 - Rubber Properties in Tension  
 ASTM D573 - Rubber-Deterioration in an Air Oven  
 ASTM D624 - Rubber Property-Tear Resistance  
 ASTM D746 - Brittleness Temperature of Plastics and Elastomers by Impact  
 ASTM D903 - Peel or Stripping Strength of Adhesive Bonds  
 ASTM D1084 - Viscosity of Adhesives  
 ASTM D2240 - Rubber Property-Durometer Hardness

(Application for copies should be addressed to ASTM, 1916 Race Street, Philadelphia, PA 19103.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services).

## OFFICIAL CLASSIFICATION COMMITTEE

## Uniform Freight Classification Rules.

(Application for copies should be addressed to the Uniform Classification Committee, 202 Union Station, 516 West Jackson Boulevard, Chicago, IL 60606).

## NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC.

## National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Association, Inc., 1616 P Street, N.W., Washington, DC 20036).

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 First article. When specified in the contract or purchase order, samples shall be subjected to first article inspection as specified in 4.2.1. The responsibility for the performance of the first article inspection shall be as specified by the procuring activity (see 6.2.1).

3.2 Material.

3.2.1 Silicone adhesive-sealant. The silicone adhesive-sealant shall be supplied in the Group and Type as specified (see 6.2.1) and shall vulcanize at room temperature (see 4.5.2.2) to produce a rubber adhesive-sealant which meets the physical and electrical properties of this specification.

3.2.2 Primer. When required each manufacturer of silicone adhesive-sealant shall supply a suitable primer which shall be furnished with the product. The manufacturer shall certify that the primer, when used with his adhesive meets the requirements for primer within this specification, particularly the peel strength requirement in table II.

3.3 Properties.

3.3.1 Uncured silicone adhesive-sealant. The uncured silicone adhesive-sealant shall meet the requirements of table I.

3.3.1.1 Storage life. The uncured silicone adhesive-sealants and primers shall meet all the requirements of this specification after 6 months of storage for the primer and 12 months of storage for the adhesive-sealant from date of shipment. Silicone adhesive-sealant that meets the requirements of extrusion rate or viscosity (as applicable) (3.3.1), tensile strength (3.3.2.1), elongation (3.3.2.1) and peel strength (3.3.2.1) may be considered to meet the storage life requirements when tested after storage as specified in 4.2.1.4 .

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TABLE I. Properties of the uncured silicone adhesive-sealants.

| Properties                         | Requirements |                   |          |           |         | Test paragraph |
|------------------------------------|--------------|-------------------|----------|-----------|---------|----------------|
|                                    | Group I      |                   | Group II | Group III |         |                |
|                                    | Type I       | Type II           | Type I   | Type I    | Type II |                |
| Total solids (percent)             | 92 min       | 92 min            | 92 min   | 92 min    | 92 min  | 4.2.2.1        |
| Application rate (grams/min)       | 100 min      | N/A <sup>1/</sup> | 40 min   | 100 min   | N/A     | 4.2.2.2        |
| Flow (inches)                      | 0.75 max     | N/A               | 0.75 max | 0.75 max  | N/A     | 4.2.2.3        |
| Viscosity (poises)                 | N/A          | 150-550           | N/A      | N/A       | 150-550 | 4.2.2.4        |
| Tack free time (hours)             | 1.0 max      | 1.0 max           | 1.0 max  | 1.0 max   | 1.0 max | 4.2.2.5        |
| <sup>1/</sup> N/A = Not applicable |              |                   |          |           |         |                |

3.3.2 Cured silicone adhesive-sealant.

3.3.2.1 Physical properties. The physical properties of the cured silicone adhesive-sealants shall be as specified in table II.

3.3.2.1.1 Heat resistance. The cured silicone adhesive-sealants for Group I and Group II, after exposure for  $168 \pm 4$  hours (7 days  $\pm$  4 hours) at  $392^\circ \pm 4^\circ\text{F}$  ( $200^\circ \pm 2^\circ\text{C}$ ) shall meet the requirements for hardness, tensile strength and elongation as specified in table IIIa when tested as specified in 4.2.1.2.

3.3.2.1.1a Heat resistance. The cured silicone adhesive-sealants for Group III, after exposure for 24 hours at  $600^\circ \pm 4^\circ\text{F}$  ( $316 \pm 2^\circ\text{C}$ ) shall meet the requirements for hardness, tensile strength and elongation as specified in table IIIb when tested as specified in 4.2.1.2.

3.3.2.1.2 Hydrolytic stability, physical. The cured silicone adhesive-sealants after exposure for 28 days  $\pm$  4 hours at  $200 \pm 4^\circ\text{F}$  ( $93 \pm 2^\circ\text{C}$ ) and  $95 \pm 2$  percent relative humidity shall meet the requirements for hardness, tensile strength and elongation as specified in table IIIa and table IIIb when tested as specified in 4.2.1.3.

3.4 Marking. A label or tag shall be attached to each container of silicone adhesive-sealant and each container of primer with data as follows: (see 5.3)

3.4.1 Adhesive-sealant.

- (a) Group and Type of silicone adhesive-sealant, and Type of primer as applicable.

TABLE II. Properties of the cured silicone adhesive-sealants.

| Property   | Requirements             |                          |                          |                          |                          | Test Method                     |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------------|
|  | Group I                  |                          | Group II                 | Group III                |                          |                                 |
|  | Type I                   | Type II                  | Type I                   | Type I                   | Type II                  |                                 |
| <b>Thermal property:</b>   |                          |                          |                          |                          |                          |                                 |
| Brittleness temperature (Brittle point) <u>1/</u>                            | -80°F<br>(-62°C)         | -80°F<br>(-62°C)         | -80°F<br>(-62°C)         | -80°F<br>(-62°C)         | -80°F<br>(-62°C)         | ASTM D746                       |
| <b>Mechanical properties:</b>  |                          |                          |                          |                          |                          |                                 |
| Hardness, Shore A Durometer Tensile strength <u>2/</u>                       | 20 min                   | 20 min                   | 22 min                   | 20 min                   | 15 min                   | ASTM D2240                      |
| (psi) min  | (220)                    | (150)                    | (500)                    | (220)                    | (150)                    |                                 |
| kPa min  | 1517                     | 1034                     | 3447                     | 1517                     | 1034                     | ASTM D412                       |
| Elongation (percent)   | 350 min                  | 150 min                  | 500 min                  | 350 min                  | 150 min                  | ASTM D412                       |
| Peel strength <u>3/</u>  |                          |                          |                          |                          |                          | ASTM D903                       |
| Aluminum   |                          |                          |                          |                          |                          |                                 |
| (lb/in) min  | (10)                     | (4)                      | (40)                     | (10)                     | (4)                      |                                 |
| kg/mm min  | 0.2                      | 0.1                      | 0.7                      | 0.2                      | 0.1                      |                                 |
| Steel  |                          |                          |                          |                          |                          |                                 |
| (lb/in) min  | (10)                     | (4)                      | (40)                     | (10)                     | (4)                      | ASTM D624                       |
| kg/mm min  | 0.2                      | 0.1                      | 0.7                      | 0.2                      | 0.1                      |                                 |
| Tear resistance <u>4/</u>  |                          |                          |                          |                          |                          |                                 |
| (lbf/in) min   | ---                      | ---                      | (75)                     | (35)                     | ---                      |                                 |
| kN/m   | ---                      | ---                      | 14                       | 6                        | ---                      |                                 |
| <b>Electrical properties:</b>  |                          |                          |                          |                          |                          |                                 |
| Volume resistivity [ohm-cm at 73 ± 30°F (23 ± 2°C)]                          | 1 x 10 <sup>13</sup> min | 1 x 10 <sup>13</sup> min | 1 x 10 <sup>13</sup> min | 1 x 10 <sup>13</sup> min | 1 x 10 <sup>13</sup> min | <u>Test Method</u><br>ASTM D257 |
| Dielectric constant (100 to 100,000 Hertz)                                   | 3.25 max                 | 3.25 max                 | 3.25 max                 | 3.25 max                 | 3.25 max                 | ASTM D150                       |
| Dissipation factor (100 to 100,000 Hertz)                                    | 0.02 max                 | 0.02 max                 | 0.02 max                 | 0.02 max                 | 0.02 max                 | ASTM D150                       |
| Dielectric strength [volts/mil at 77 ± 20°F (25 ± 1°C) and 75 mil thickness] | 300 min                  | 300 min                  | 300 min                  | 300 min                  | 300 min                  | ASTM D149                       |

1/ Brittle point should be temperature stated or below.

2/ 1 psi = 6.894757 x 10<sup>3</sup> Pa = 6.894757 kPa. (psi = pounds/square inch, Pa = Paschal, kPa = Kilopascal)

3/ 1 kg/mm = (lb/in) (4.535923 x 10<sup>-1</sup> kg/lb). (kg/mm = kilogram/milliliter, kg/lb = kilogram/pound)  
25.4 mm/in

4/ To convert from lbf/in to kN/m, multiply by 0.175. (kN/m = kilo-Newton/meter)

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- (b) Brief instructions for the storage and care of silicone adhesive-sealant or primer (as applicable) prior to use.
- (c) If required, a warning relative to toxicity (see 3.5).
- (d) A warning as to corrosion and fluid resistance (see 6.1.2).
- (e) Instructions for use.
- (f) Each label or tag attached to the containers of silicone adhesive-sealant shall contain application instructions as follows:

TABLE IIIa. Heat resistance - hydrolytic stability requirements. (See 3.3.2.1.1)

| Property                      | Requirements |         |          |
|-------------------------------|--------------|---------|----------|
|                               | Group I      |         | Group II |
|                               | Type I       | Type II |          |
| Elongation<br>percent, min    | 300          | 150     | 300      |
| Tensile strength<br>(psi) min | (175)        | (150)   | (250)    |
| kPa min                       | 1206         | 1034    | 1724     |
| Hardness<br>Shore A, min      | 20           | 15      | 25       |

TABLE IIIb. Heat resistance - hydrolytic stability requirements. (See 3.3.2.1.1a)

| Property                      | Requirements |         |
|-------------------------------|--------------|---------|
|                               | Group III    |         |
|                               | Type I       | Type II |
| Elongation<br>percent, min    | 300          | 150     |
| Tensile strength<br>(psi) min | (175)        | (150)   |
| kPa min                       | 1206         | 1034    |
| Hardness<br>Shore A, min      | 20           | N/A     |

Application. These one-component adhesive-sealants require moisture from the air to cure. When they are used, the following are required:

- (1) Good ventilation during cure.
- (2) Full cure before enclosure (7 days minimum for thicknesses up to 1/4 inch).
- (3) Sufficient moisture to complete cure.
- (4) Maximum thickness of 1/4 inch (6.0 mm).
- (5) Maximum glueline of 1/2 inch (12.0 mm) when used between non-porous substrates.
- (g) Batch number

- (h) Shelf life expiration
- (i) Mark for identification in accordance with MIL-STD-130 including military part number (see 6.5)

#### 3.4.2 Primer.

- a) Manufacturer's primer identification.
- b) Instructions for storage and storage life.
- c) Instructions for use.
- d) Toxicity warning (if required)
- e) NOTE: THIS PRIMER IS INTENDED FOR USE WITH MANUFACTURER'S ADHESIVE-SEALANT DESIGNATION ONLY.

3.4.3. Additional marking. Each unit container of primer shall be marked as follows:

"CAUTION: APPLY ONLY IN A WELL VENTILATED AREA. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME".

3.5 Toxicity. The silicone adhesive-sealant and primer shall have no adverse effect on the health of personnel when used for its intended purpose. Questions pertinent to this effect shall be referred by the contracting activity to the appropriate departmental medical service who will act as advisor to the contracting agency. A material safety data sheet will be submitted in accordance with procedures outlined in FED-STD-313.

3.6 Workmanship. The uncured silicone adhesive-sealant furnished under this specification shall be uniform in quality and consistency and shall be free of agglomerates or foreign particles. The cured adhesive-sealant shall present an appearance of smooth homogeneity. There shall be no other defect present which might render the end product unsuitable for its intended purpose. The primer shall be homogeneous with clear, non-cloudy appearance and contain no foreign matter.

### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection,

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as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2. Classification of tests. Tests for the silicone adhesive-sealants shall be classified as follows:

- a. First article tests (see 4.2.1)
- b. Lot acceptance tests (4.2.2)

4.2.1 First article tests. First article tests shall be conducted on the first article sample (see 3.1 and 6.2.1.d) at the discretion of the procuring activity (see 6.2). If a lot should fail a first article test, no further lot will be accepted until the supplier has presented sufficient evidence to show that the condition which caused the failure has been corrected. The first article tests shall consist of all tests of this specification, namely, the tests specified in tables IV and V.

4.2.1.1 Brittle temperature. Samples of uncured silicone adhesive-sealant shall be prepared as specified in 4.5.1. The silicone adhesive-sealant shall be allowed to cure for a minimum of  $72 \pm 4$  hours (3 days  $\pm 4$  hours) at  $74^\circ \pm 4.5^\circ\text{F}$  ( $23.3^\circ \pm 2.5^\circ\text{C}$ ) and  $50 \pm 5$  percent relative humidity. Modified T-50 specimens shall be die punched from the pads. Tests shall be in accordance with procedure B of ASTM Method D746. The brittle point should be that temperature stated in table II or below.

4.2.1.2 Resistance to heat. Specimens of the silicone adhesive-sealants prepared as specified in 4.5.1 and cured as specified in 4.5.2.2 shall be oven aged as specified in ASTM D573 for the duration and temperature as specified in 3.3.2.1.1. At the end of the exposure time the test specimens shall be brought to and tested at  $74^\circ \pm 4.5^\circ\text{F}$  ( $23.3^\circ \pm 2.5^\circ\text{C}$ ) and  $50 \pm 5$  percent relative humidity for compliance with the requirements of 3.3.2.1.1

TABLE IV. Additional tests for complete inspection.

| Property                                | Requirement | Test method |
|---|-------------|-------------|
| Storage life (uncured adhesive-sealant) | 3.3.1.1     | 4.2.1.4     |
| Brittleness temperature                 | 3.3.2.1     | ASTM D746   |
| Peel strength                           | 3.3.2.1     | ASTM D903   |
| Tear resistance                         | 3.3.2.1     | ASTM D624   |
| Volume resistivity                      | 3.3.2.1     | ASTM D257   |
| Dielectric constant                     | 3.3.2.1     | ASTM D150   |
| Dissipation factor                      | 3.3.2.1     | ASTM D150   |
| Dielectric strength                     | 3.3.2.1     | ASTM D149   |
| Heat resistance                         | 3.3.2.1.1   | ASTM D573   |
| Hydrolytic stability, physical          | 3.3.2.1.2   | 4.2.1.3     |

4.2.1.3 Hydrolytic stability, physical. Specimens of the silicone adhesive-sealant prepared as specified in 4.5.1 and cured as specified in 4.5.2.2 shall be placed vertically in a suitable holder on a tray in a

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suitable glass desiccator (250 mm). The bottom of the desiccator shall contain a glycerine (22 percent by weight) in water solution which will produce a relative humidity (RH) of 95 percent at the test temperature. The desiccator containing the specimens shall be closed and then placed in an air circulating oven maintained at  $200 \pm 3^{\circ}\text{F}$  ( $93 \pm 2^{\circ}\text{C}$ ) for a period of 28 days  $\pm$  4 hours. At the end of the exposure period, the desiccator shall be removed from the oven and cooled to  $74 \pm 4.5^{\circ}\text{F}$  ( $23.3 \pm 2.5^{\circ}\text{C}$ ) for 16 to 24 hours.

The specimens shall then be removed from the desiccator and tested for hardness, tensile strength and elongation as specified in tables IIIa, IIIb and 3.3.2.1.2.

4.2.1.4 Storage life. Unless otherwise specified, two samples of the uncured silicone adhesive-sealant and a sample of the primer (if required) in accordance with first article tests (see 4.2.1) shall be stored in their original containers for 6 months at a temperature of  $80^{\circ} \pm 5^{\circ}\text{F}$  ( $27^{\circ} \pm 2^{\circ}\text{C}$ ) and a relative humidity of  $50 \pm 5$  percent. The samples shall then be tested for compliance with 3.3.1.1.

4.2.2 Lot acceptance tests. A lot of silicone adhesive-sealant or primer shall consist of that quantity of material produced in one continuous or batch operation at one place of manufacture and offered for delivery at one time. Unless otherwise specified, for the purpose of lot acceptance tests, representative results shall be reported from results obtained on a frequency basis for grades of silicone adhesive-sealants which are monitored using process control systems and procedures which insure no defects and shall be the basis for acceptance or rejection of the lot. Lot acceptance tests shall consist of the tests indicated in table V.

TABLE V. Lot acceptance tests.

| Characteristic                  | Requirements |         | Test Method       |
|---------------------------------|--------------|---------|-------------------|
|                                 | Type I       | Type II |                   |
| <u>Uncured adhesive-sealant</u> |              |         |                   |
| Total solids content            | 3.3.1        | 3.3.1   | 4.2.2.1           |
| Application rate                | 3.3.1        | -       | 4.2.2.2           |
| Flow                            | 3.3.1        | -       | 4.2.2.3           |
| Viscosity                       | -            | 3.3.1   | 4.2.2.4           |
| Tack free time                  | 3.3.1        | 3.3.1   | 4.2.2.5           |
| <u>Cured adhesive-sealant</u>   |              |         |                   |
| Hardness                        | 3.3.2.1      | 3.3.2.1 | ASTM D2240        |
| Tensile strength                | 3.3.2.1      | 3.3.2.1 | ASTM D412 (Die C) |
| Elongation                      | 3.3.2.1      | 3.3.2.1 | ASTM D412 (Die C) |
| Peel strength                   | 3.3.2.1      | 3.3.2.1 | 4.2.2.6           |

4.2.2.1 Total solids (silicone adhesive-sealant). Three specimens shall be tested and the results averaged. Each specimen shall be tested as follows: transfer 5 to 10 grams of the uncured silicone adhesive-sealant as rapidly as possible to a weighed dish approximately 3 inches (76 mm) in diameter and 3/4 inch (19mm) in depth. Place a weighed fitted cover immediately over the dish and determine the initial weight of the sample accurately. Then remove the cover and heat the sealing adhesive-sealant for  $24 \pm 1$  hour at  $158^{\circ} \pm 2^{\circ}\text{F}$  ( $70^{\circ} \pm 1^{\circ}\text{C}$ ). Cool the sealing

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adhesive-sealant and dish in a desiccator, allow to cool to  $74 \pm 4.5^{\circ}\text{F}$  ( $23.3^{\circ} \pm 2.5^{\circ}\text{C}$ ) for 2-3 hours. Replace cover over dish containing sealing adhesive-sealant and remove from desiccator. Determine the final weight to the nearest milligram. Calculate the percent of total solids as follows:

$$\text{Solids (percent)} = \frac{(A-B)}{C} \times 100$$

where

- A = Final weight of dish and residue
- B = Weight of dish
- C = Weight of silicone adhesive-sealant (sample)

4.2.2.2 Application rate (Type I sealant only). The uncured silicone adhesive-sealant and application gun shall be stabilized at  $74 \pm 4.5^{\circ}\text{F}$  ( $23.3 \pm 2^{\circ}\text{C}$ ) and  $50 \pm 5$  percent relative humidity for at least 8 hours. A minimum of 250 grams of the adhesive-sealant shall be promptly used to fill a standard Semco or equal sealing-adhesive-sealant-gun cartridge having a Semco 440 nozzle (or equivalent), with an orifice diameter of  $0.125 \pm 0.005$  inch ( $3.1 \pm 0.1$  mm) with sealing adhesive-sealant. The gun shall be attached to a constant air supply of  $90 \pm 5$  psi ( $620 \pm 35$  kPa). From 2 to 3 inches of sealing adhesive-sealant shall be extruded initially to clear trapped air. The sealing adhesive-sealant shall be extruded onto a suitable receptacle for a minimum of 10 sec and the amount of extruded sealing adhesive-sealant determined. Calculate the application rate in grams per minute.

4.2.2.3 Flow (Type I sealant only). The flow test shall be conducted with a flow test jig as shown in figure 1. The uncured silicone adhesive-sealant and the jig shall be stabilized at  $74^{\circ} \pm 4.5^{\circ}\text{F}$  ( $23.3^{\circ} \pm 2.3^{\circ}\text{C}$ ) and  $50 \pm 5$  percent relative humidity for at least 6 hours. Depth of plunger tolerance is critical and shall be controlled within the tolerance during all tests. The flow test jig shall be placed on a table with the front ace upward and with the plunger depressed to the limit of its travel. Enough of the silicone adhesive-sealant to fill the recessed cavity of the jig shall be rapidly transferred from a representative sample container. The adhesive-sealant shall not be worked with a spatula but shall be leveled off even with block by scraping with a spatula in two passes, each starting in the center and moving toward the sides of the jig. Within 10 seconds after the leveling operation, the jig shall be placed on its base and the plunger immediately advanced to the limit of its forward travel. The cylindrical section formed in the flow-test jig shall be allowed to flow under its own weight on a vertical surface. The flow test shall begin when the plunger is advanced to the limit of its forward travel, and the flow measurement shall be taken immediately after the expiration of a minimum of 3 minutes or when the flow has ceased. The flow shall be measured from tangent to the lower edge of the plunger to the farthest point to which flow has occurred. The measurement after the indicated interval shall be considered the initial flow of the silicone adhesive-sealant.

4.2.2.4 Viscosity (Type II sealant only). The viscosity of the sealing adhesive-sealants shall be determined in accordance with ASTM D1084, Method B. The uncured silicone adhesive-sealant and viscosimeter shall be stabilized at  $74^{\circ} \pm 4.5^{\circ}\text{F}$  ( $23.3^{\circ} \pm 2.3^{\circ}\text{C}$ ) and  $50 \pm 5$  percent relative humidity for at least 6 hours. The viscosimeter model (Brookfield model or equivalent)

spindle number and speed (Brookfield HAF, #4, 5 RPM or equivalent) shall be reported as part of the viscosity determination.

4.2.2.5 Tack-free time. At the end of the rated tack-free time (see Table I) of the uncured silicone adhesive-sealant, a 1 inch by 6 inch (25 mm by 152 mm) polyethylene film measuring  $0.004 \pm 0.002$  inch ( $0.10 \pm 0.05$  mm) thick shall be applied and held in place at a pressure of 1/2 ounce per square inch (215 Pa) for 2 minutes on each of the silicone adhesive-sealant specimens. The film shall then be slowly withdrawn at right angles to the surface of the sealing adhesive-sealant. The polyethylene shall come away clean and free of sealing adhesive-sealant.

4.2.2.6 Peel strength. Peel strength shall be determined in accordance with ASTM D903. Laboratory conditions shall be  $74^{\circ} \pm 4.5^{\circ}\text{F}$  ( $23.3^{\circ} \pm 2.3^{\circ}\text{C}$ ) and  $50 \pm 5$  percent relative humidity. Panels shall be of aluminum alloy conforming to QQ-A-250/4 and of cold rolled No. 1 finish (dull) sheet steel conforming to ASTM A366 Temper 5. Clean, prime (if required) and air-dry the panels in accordance with directions from the manufacturer. Examine the primer (if required) for compliance with 3.2.2. Coat each panel with approximately 1/16 inch (1.0 mm) of silicone adhesive-sealant. Place primed (if primer is required) 20-mesh stainless steel screens or cold rolled steel strip number SAE 1008 or SAE 1010 (1/4" x 0.010" x 12") (6.3 mm x 0.3 mm x 304 mm) on the silicone adhesive-sealant immediately. If screen method is used, apply a second coat 1/16 inch (1.0 mm) thick. Cure as specified in 4.5.2.2. Apply a second coat 1/16 inch (1.0 mm) thick and cure as specified in 4.5.2.2. Test the peel strength in accordance with ASTM D903. The rate of separation shall be 2 inches (50 mm) per minute.

4.2.2.7 Certification. A Material Safety Data Sheet and other appropriate documentation shall be supplied for each shipment as required by law. This information shall be signed by a responsible agent of the organization authorized to submit this material information. The Government reserves the right to check test material submitted by the supplier (see 6.2.2).

4.2.2.8 Toxicity. The supplier shall either (1) furnish the toxicological data and formulations required to evaluate the safety of the silicone adhesive-sealant and primer (when required) for the proposed use or (2) the supplier shall provide assurance that the silicone adhesive-sealant and primer (when required) comply with the following:

- a. An acceptable toxicologic study has been made (see 6.7).
- b. The product is not toxic to personnel when used as specified (see 3.5).

#### 4.3 Sampling.

4.3.1 For examination. Unless otherwise specified, a random sample of filled containers shall be selected for examination in accordance with level 1 of MIL-STD-105.

4.3.2 Sampling for tests. Two representative containers of one type of silicone adhesive-sealant and a representative container of primer shall be selected from each lot for all required tests (see 4.2).

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4.4 Examination.

4.4.1 Silicone adhesive-sealant and primer (if required). Sample units selected in accordance with 4.3.1 shall be examined for defects shown in table VI.

TABLE VI. Classification of defects.

| Item   | Classification of defect | Defect  | Method of inspection |
|--|--------------------------|---|----------------------|
|  | <u>Critical</u>          | <u>None defined</u>                             |                      |
| Silicone adhesive-sealant<br>(see 4.3.1, 3.2.1, and 3.6) | Major 101                | Wrong type                                      | Visual               |
|  | Major 102                | Wrong color                                     | Visual               |
|  | Major 103                | Not uniform                                     | Visual               |
|  | Major 104                | Not free from agglomerates or foreign particles | Visual               |
|  | Major 105                | Not homogeneous                                 | Visual               |
| Primer (see 4.3.1 and 3.6)                               | Major 106                | Wrong type                                      | Visual               |
|  | Major 107                | Not homogeneous                                 | Visual               |
|  | Major 108                | Contains foreign matter 1/                      | Visual               |

1/ Some white precipitate is normal, and this should not be considered foreign matter.

4.5 Tests.

4.5.1 Preparation of specimens. Samples of uncured silicone adhesive-sealant selected as specified in 4.3.2 and conditioned as specified in 4.5.2.1 shall be used for the test. The equipment shall consist of a hydraulic or mechanical press and an open-face mold with a cavity  $0.075 \pm 0.01^{\circ}$  inch deep ( $1.9 \pm 0.25$ mm). The mold cavity shall be not less than 6 inches long by 4 inches wide (152 mm X 102 mm). The procedure shall be as follows:

4.5.1.1 Procedure A.

- a. Lay a piece of polyethylene coated paper with polyethylene surface up that is larger than the face of the mold against the bottom of the mold.
- b. Apply a solution of Dupanol WAQ or equivalent (see 6.7) diluted with 5 to 10 percent methanol to the polyethylene coated paper to act as a release agent and allow to air dry for a minimum of 5 minutes. The mold release shall be of uniform thickness and free of entrapped air and imperfections.
- c. Place the chase frame on the mold.
- d. Fill the mold with the silicone adhesive-sealant and spread it to fill the chase (knife spread if Type I thixotropic paste). Molded sheet shall be of uniform thickness and free of entrapped air and surface irregularities.

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- e. Type I. For Type I (thixotropic paste) silicone adhesive-sealant, remove the chase when the sample has been spread into the chase and place the material on a rack that provides air exposure.

Type II. For Type II (self-leveling liquid) silicone adhesive-sealant, keep the chase frame in position until the adhesive-sealant is cured, then remove the chase and place the paper with the material on a rack that provides air exposure.

#### 4.5.1.2 Procedure B.

- a. Spray mold with release agent.
- b. Prepare release paper by soaking a sheet of Ozalid reproduction paper (APBCO Positive Paper No. 2, or equivalent) in distilled water for 1 to 5 min.
- c. Place the wet release paper on upper face of mold with gelatin surface facing the silicone adhesive-sealant. Wipe excess water from the release paper.
- d. Fill the mold cavity with silicone adhesive-sealant. Close the mold and apply approximately 50 psi (345 kPa) pressure.
- e. After 1 hour, release the pressure, lift the upper face of the mold and carefully remove the paper from the silicone molded sheet. Leave the sheet in the mold with the upper face exposed to the air until the sheet is well cured. This usually requires 6 to 18 hours. Leave the sheet in the mold no longer than 24 hours.

#### 4.5.2 Conditioning of specimens.

4.5.2.1 Uncured silicone adhesive-sealants. The uncured silicone adhesive-sealants before being tested shall be conditioned at  $74^{\circ} \pm 4.5^{\circ}\text{F}$  ( $23.3^{\circ} \pm 2.5^{\circ}\text{C}$ ) and  $50 \pm 5$  percent relative humidity.

4.5.2.2 Cured silicone adhesive-sealants. The silicone adhesive-sealants, prepared as specified in 4.5.1 and before being tested for conformance with cured property requirements, shall be cured at  $74^{\circ} \pm 4.5^{\circ}\text{F}$  ( $23.3^{\circ} \pm 2.3^{\circ}\text{C}$ ) and  $50 \pm 5$  percent relative humidity for maximum  $72 \pm 4$  hours. Peel adhesion test specimens shall be cured for  $336 \pm 4$  hours (14 days  $\pm 4$  hours).

4.5.3 Toxicity. The contractor shall have the toxicological formulations and associated information available for review by the contracting activity to evaluate the safety of the material for the proposed use (see 6.7)

4.5.4 Rejection criteria. Failure of any test specimen or sample to meet the test requirements specified herein shall be cause for rejection of the lot represented.

#### 4.6 Inspection of packaging.

##### 4.6.1 Quality conformance inspection of pack.

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4.6.1.1 Unit of product. For the purpose of inspection, a completely processed pack prepared for shipment shall be considered a unit of product.

4.6.1.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

4.6.1.3 Examination. Samples selected in accordance with 4.6.1.2 shall be examined for the defects indicated in table VII.

## 5. PACKAGING

5.1 Preservation. Preservation shall be level A or C as specified (see 6.2).

### 5.1.1 Level A.

5.1.1.1 Silicone adhesive-sealant. The silicone adhesive-sealant shall be packaged in tubes, cartridges, pails or drums as specified (see 6.2). The tubes shall conform to requirements of PPP-T-1637, Group and Type as specified (see 6.2), and the filled tubes shall be packaged in accordance with the level A requirements of PPP-T-1637. The dispensing gun cartridge shall be aluminum foil wrapped or plastic cartridge. Pails shall be 5-gallon capacity and shall conform to PPP-P-704, type 1, class 2. The drums shall be 30-gallon capacity conforming to PPP-D-705 or 55-gallon capacity conforming to either PPP-D-729 or PPP-D-732. Pails and drums shall have sufficient outage to prevent leakage of contents or distortion of containers as a result of expansion of contents during transit or storage.

5.1.1.1.1 Intermediate packaging. Tubes and dispensing gun cartridges of the same size shall be packaged in snug-fitting boxes conforming to the water resistant variety of either PPP-B-566 or PPP-B-676 at the option of the contractor. Quantities and arrangement shall be in accordance with commercial practice. Box closures shall be as specified in the box specification.

5.1.1.2 Primer. The primer (when required) shall be packaged in either cans or bottles of the size specified (see 6.2). The cans shall conform to PPP-C-96 type V, class 4 and the cans shall be packaged in accordance with the level A requirements of the appendix to PPP-C-96. Bottles and their packaging shall be in accordance with level A requirements of PPP-C-2020.

### 5.1.2 Level C.

5.1.2.1 Silicone adhesive-sealant and primer. The silicone adhesive-sealant and primer (if required) in the size containers and quantities specified (see 6.2) shall be packaged to provide adequate protection against deterioration and damage from the supplier to the initial destination. The suppliers commercial practice may be used when it meets these requirements. (For Army use only, MIL-STD-1190)

5.2 Packing. Packing shall be level A, B, or C as specified (see 6.2).

### 5.2.1 Level A.

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TABLE VII. Classification of defects, preparation for packaging requirements.

| Item  | Classification of defect | Defect                                | Method of inspection     |
|---|--------------------------|---------------------------------------|--------------------------|
|   | <u>Critical</u>          | <u>None defined</u>                   |                          |
| Unit containers of silicone adhesive-sealant and primer (see 5.1) | Major 110                | Improper type                         | Visual                   |
|   | Major 111                | Improper size                         | Visual                   |
|   | Major 112                | Improper fill <u>1/</u>               | Approved scale <u>2/</u> |
|   | Major 113                | Leakage                               | Visual                   |
|   | Major 114                | Improper closure                      | Visual                   |
| Intermediate <u>3/</u> packaging (see 5.1.1.1.1)                  | Major 115                | Wrong type                            | Visual                   |
|   | Major 116                | Wrong size                            | Visual                   |
|   | Major 117                | Improperly closed                     | Visual                   |
| Box open (see 4.3.1 and 5.2)                                      | Major 118                | Wrong type                            | Visual                   |
|   | Major 119                | Improper size                         | Visual                   |
|   | Major 120                | Wrong quantity                        | Visual                   |
|   | Major 121                | Pads or separators missing <u>3/</u>  | Visual                   |
| Box closed (see 4.3.1, 5.2 and 5.3)                               | Major 122                | Lack of or improper strapping         | Visual                   |
|   | Major 123                | Improperly closed                     | Visual                   |
|   | Major 124                | Gross weight, <u>max.</u>             | Approved scale <u>2/</u> |
|   | Major 125                | Pallets missing or improper <u>3/</u> | Visual                   |
|   | Major 126                | Improper marking                      | Visual                   |

1/ The actual weight of a container filled with the minimum required quantity of silicone adhesive-sealant or primer shall be the basis for determining the acceptable weight of subsequent containers.

2/ Approved by procuring activity.

3/ When applicable.

5.2.1.1 Silicone adhesive-sealant. Silicone adhesive-sealant tubes or cartridges packaged as specified (see 5.1) shall be packed in boxes conforming to PPP-B-601, overseas type, style I in quantities as specified (see 6.2). Pails and drums will not require any additional packing.

5.2.1.2 Primer. Primer (when required) packaged in cans as specified in 5.1 shall be packed in accordance with level A requirements of the appendix to PPP-C-96 except that the exterior shipping containers shall conform to the requirements of PPP-B-601 overseas type, style I. Primer packaged in bottles as specified in 5.1 shall be packed in accordance with the level A requirements of PPP-C-2020.

5.2.1.3 Palletization. When specified, (see 6.2), 5-gallon pails of the silicone adhesive-sealant shall be palletized in accordance with requirements of MIL-STD-147, load type IV.

#### 5.2.2 Level B.

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5.2.2.1 Silicone adhesive-sealant. Silicone adhesive-sealant in tubes or cartridges and packaged as specified (see 5.1) shall be packed in fiberboard boxes conforming to PPP-B-636 style W5c. Fiberboard boxes shall not exceed the weight limitation of the box specification. Pails and drums will require no overpacking.

5.2.2.2 Primer. Primer (when required) packaged in cans or bottles as specified in 5.1 shall be packed in accordance with level A requirements of the appendix to PPP-C-96 (for cans) or in accordance with level A requirements of PPP-C-2020 (for bottles) as applicable.

5.2.2.3 Palletization. When specified (see 6.2) 5-gallon pails of the silicone adhesive-sealant shall be palletized as specified in 5.2.1.3.

5.2.3 Level C. Silicone adhesive-sealant and primer shall be packed to assure carrier acceptance and safe delivery to destination at lowest rates in compliance with Uniform Freight Classification Rules and National Motor Freight Classification. (For Army use only, MIL-STD-1190)

5.3 Marking. In addition to any special marking required by the contract or order or herein, interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129. A label or tag shall be attached to each exterior container of silicone adhesive-sealant and primer (if required) with additional data as follows:

- (a) Number and title of this specification.
- (b) Group, type and nomenclature.
- (c) Expiration date of shelf life.
- (d) Brief instructions for the storage and care of the silicone adhesive-sealant or primer as applicable prior to use.
- (e) Cure time if other than that specified (see 4.5.2.2).
- (f) Group and type of silicone adhesive-sealant or primer (as applicable).
- (g) Warning: relative to toxicity (see 3.5)
- (h) Warning: This adhesive-sealant may cause slight corrosion to various metals. (See label or tag attached to each container.)
- (i) Warning as to corrosion and fluid resistance. (see 6.1.2)
- (j) Label or tag attached to the containers of silicone adhesive-sealant shall contain application instructions. (see 3.4)
- (k) Mark for identification to include military part number (see 3.4)
- (l) Each unit container of primer shall be marked as follows:

"CAUTION: APPLY ONLY IN A WELL VENTILATED AREA. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME"

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The one-component, RTV, silicone adhesive-sealants covered by this specification have outstanding resistance to ultraviolet radiation and ozone, chemical inertness, thermal stability, low-temperature flexibility and general long-term aging characteristics. Since the silicone

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adhesive-sealants are available as thixotropic pastes or as self-leveling liquids, they lend themselves to a variety of application techniques which are easily adapted to specialty uses as well as to production line methods. The materials are currently used in a wide variety of applications in the automotive, marine-appliance, metal working, aerospace, aircraft, building construction, communication, computer, and other industries. The silicone adhesive-sealants covered by this specification are divided into groups according to the intended use and the outstanding property which makes the RTV silicone adhesive-sealants suitable for a specific application (see 1.2).

- Group I Silicone adhesive-sealants are intended for general-purpose adhesive-sealant applications.
- Group II Silicone adhesive-sealants are intended for use in applications requiring very high mechanical bond strength and tear strength, such as mechanical bonding and sealing, aerospace, automotive and industrial assembly sealing and gasketing, and other high stress applications.
- Group III Silicone compounds are intended for use in applications requiring very high temperature resistance such as encapsulating and sealing of heating elements in appliances, aerospace gasketing and sealing, and other critical bonding, sealing, potting, insulating, encapsulating and protective coating applications where parts must perform at high temperatures 401°-500°F (205-260°C).

Each group of silicone adhesive-sealant is subdivided into two Types according to physical state (see 1.2).

- Type I Pastelike RTVs are intended for use on horizontal, vertical or overhead surfaces for applications such as bonding, sealing, and formed-in-place gaskets.
- Type II Self-leveling liquid (pourable) RTVs are intended for use in applications requiring flow into small surface crevices or hard-to-reach places.

6.1.1 Caution in electrical and spacecraft applications. Silicone adhesive-sealant selection should be made by individuals having expertise in silicone chemistry after careful consideration of the design and the performance required in the application, and the environment to which it will be exposed. The RTV adhesive-sealants covered by this specification give off acetic acid and are highly corrosive to wiring, connectors, solder joints, printed wiring boards and other components of avionic, electronic and electrical equipment. These RTVs are also prohibited from use on spacecraft because of stringent outgassing requirements in space environments. For avionic, electronic and electrical equipment and spacecraft applications, consideration should be given to silicone RTV adhesive sealants covered by MIL-A-46146.

6.1.2 Precaution. These adhesive-sealants are not resistant to many types of fluid such as fuel, and hydraulic fluid. Materials meeting this specification utilize atmospheric moisture and liberate acetic acid during

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cure. When cured in contact with certain metals such as copper and other sensitive metals, a slight corrosion may occur. It has also been shown that this type material can cause fracture of stressed high strength steel when applied under high relative humidity conditions. These factors should be thoroughly investigated prior to the use of these materials.

6.1.3 Primer. The use of a primer is recommended for various substrates to achieve consistent results and obtain optimum adhesion when the silicone adhesive-sealant is exposed to water, high humidity and elevated temperature conditions. Primers should be used only as directed by the manufacturer, and should be used only with the adhesive-sealant for which the primer was supplied. The use of silicone adhesive-sealant and primer combinations other than those recommended by the manufacturer may lead to loss of adhesion or bond failure.

6.1.4 Thickness and glue lines. With these one component silicone adhesive-sealants, which require moisture from the air to cure, the thicknesses should be limited to 1/4 inch (6 mm), and the glue lines which is 1 inch (25 mm) maximum between non-porous substrates. (The glue line or bond line is the layer which attaches two adherends.)

## 6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification.
- b. Group (see 1.2.1), Type (see 1.2.2) of silicone adhesive-sealant required.
- c. Quantity of silicone adhesive-sealant required.
- d. Responsibility for the performance of first article inspection (see 3.1 and 4.2.1).
- e. Lot acceptance tests required (see 4.2.2).
- f. Responsibility for delivery requirements (see 5.)
- g. Levels of preservation and packing (see 5.1 and 5.2)
- h. Group of silicone adhesive-sealant and type of primer (as applicable) (see 3.2.1, 3.2.2).
- i. Type of container required. If tubes are used, type and class required (see 5.1.1.1).
- j. For primer, if required, the size of the cans or bottles required (see 5.1.1.2).
- k. Quantities required (see 5.2.1.1).
- l. Palletization required (see 5.2.1.3 and 5.2.2.3).
- m. Size of containers and quantities specified (see 5.2.2.1).

6.2.2 Consideration of data requirements. The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

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| Reference Paragraph | DID Number | DID Title                 | Suggested Tailoring |
|---------------------|------------|---------------------------|---------------------|
| 4.2.2.8             | DI-E-2121  | Certificate of Compliance |                     |

The above DID's were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

(Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Form Center or as directed by the contracting officer.)

6.2.2.1 First article data. When first article samples are submitted (see 5.2.1), they should be accompanied by a complete inspection report showing the results of the contractor's inspections. The inspection report shall include the following:

- a. Report of inspections graphically presented, when possible, together with a detailed statement indicating compliance or extent of noncompliance with all requirements of this specification, referring specifically to paragraph numbers. Wherever a requirement is considered to be not applicable, the report shall so state.
- b. Diagrams of inspection set-ups. A complete description of inspection equipment and inspection procedures.
- c. Reproducible outline and description conditions. Where inspections specified in this specification are not considered applicable, the reason, and the substituted inspection should be clearly described.
- d. Copies of inspection log sheets.
- e. Photographs when available.

6.3 First article. When a first article inspection is required, the item will be tested and should be a first article sample. The first article sample should consist of two representative containers of the silicone adhesive-sealant and two representative containers of the primer (if required). The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, tests and approval of the documents first article.

6.4 Supersession data. This specification supersedes the following military specifications:

- a. MIL-A-461068 (18 September 1970)
- b. MIL-A-47040(MI) (26 April 1974)
- c. MIL-R-47211(MI) (12 July 1974) Type II only

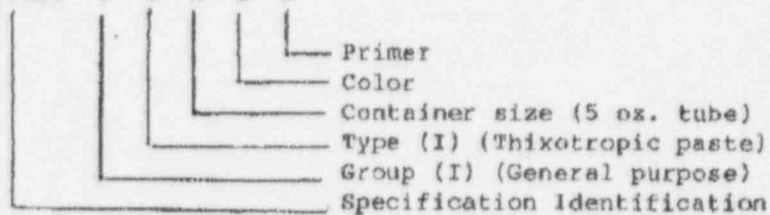
6.5 Military part number coding. Table VIII describes the military part number coding for one-component silicone RTV's that correspond to the types covered by this specification.

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TABLE VIII. Military part number coding.

| Group Code | Type Code | Container Size | Code | Color           | Code | Primer Required | Code |
|------------|-----------|----------------|------|-----------------|------|-----------------|------|
| I          | 1         | I              | 1    | 3 oz tube       | A    | Black           | B    |
|            |           |                |      | 5 oz tube       | B    | Red             | R    |
|            |           |                |      | 6 oz cartridge  | C    | Translucent     | T    |
|            |           |                |      | 10 oz tube      | D    | White           | W    |
|            |           |                |      | 12 oz cartridge | E    | Aluminum        | A    |
| II         | 2         | II             | 2    | 5 gal pail      | F    | Gray            | C    |
|            |           |                |      | 30 gal drum     | G    |                 |      |
| III        | 3         |                |      | 55 gal drum     | H    |                 |      |

Example: M46106 1 1 A B C



6.6 Trade name. Dupanol WAQ is manufactured by E. I. Dupont De Nemours & Co., Inc., Wilmington, Delaware, 19807

6.7 Toxicity. Questions pertinent to the effect of the material on the health of personnel will be referred by the procuring activity to the appropriate department medical service who will act as an advisor to the procuring activity.

6.8 Keywords.

Silicone RTV  
 Adhesive-sealant  
 One-component

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Custodians:

Army - MR  
Navy - AS  
Air Force - 11

Preparing activity:

Army - MR

Project 8040-0466

Review activities:

Army - ME, MD, AT, MI, SM  
Navy - YD  
Air Force - 11

User activities:

Navy - SH,  
GSA - PSS (10PTE)

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