

MIL-S-38228(USAF)

28 July 1964

MILITARY SPECIFICATION

SEALING COMPOUND, ENVIRONMENTAL, FOR AIRCRAFT SURFACES

1. SCOPE

1.1 This specification covers temperature-resistant and weather-resistant synthetic rubber compounds for filling and sealing exterior surfaces of aircraft and missiles.

1.2 Classification.- The sealing compound shall be of the following types as specified (see 6.2).

Type I - For applications in the temperature range of -65° F to +250° F

Type II - For applications in the temperature range of -65° F to +500° F

1.2.1 Dash numbers.- Dash numbers, -1/2, -2 and -4, shall be used to designate the minimum application time in hours for both types.

Example: Type I-1/2 shall designate the material having an application time of 1/2 hour, type II-2 an application time of 2 hours.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein.

SPECIFICATIONS

Federal

P-D-680	Dry Cleaning Solvent
QQ-A-283	Aluminum Alloy, Plate and Sheet 7075
QQ-A-287	Aluminum Alloy Plate and Sheet; Alclad 7075
TT-E-751	Ethyl Acetate, Technical, Organic Coatings Use
TT-M-261	Methyl-Ethyl-Ketone (For Use in Organic Coatings)
TT-N-97	Naptha, Aromatic
CCC-C-419	Cloth, Cotton, Duck, Unbleached, Plied-Yarns (Army and Numbered)
PPP-C-96	Cans, Metal, 28 Gage and Lighter

FSC 8030

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Military

MIL-H-3136	Standard Test Fluids; Hydrocarbon
MIL-S-4383	Sealing Compound, Topcoat, Fuel Tank, Buna-N Type
MIL-S-5059	Steel, Corrosion-Resistant (18-8), Plate, Sheet and Strip
MIL-F-5566	Fluid; Anti-Icing (Isopropyl Alcohol)
MIL-T-7993	Titanium, Sheet, Strip and Plate (Unalloyed)
MIL-P-8184	Plastic Sheet, Acrylic. Modified

STANDARDS

Federal

Federal Test Method Std.
No. 601 Rubber: Sampling and Testing

Military

MIL-STD-129 Marking for Shipment and Storage

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications.- The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

Consolidated Classification Committee

Uniform Freight Classification Rules

(Application for copies of the above publication should be addressed to the Consolidated Classification Committee, 202 Chicago Union Station, Chicago, Illinois 60606.)

3. REQUIREMENTS

3.1 Preproduction.- This specification makes provisions for preproduction testing.

3.2 Materials.- The basic ingredient used in the manufacture of the sealing compound shall be a synthetic rubber. The sealing compound shall cure by the addition of a separate curing compound to the base compound and shall not depend on solvent evaporation for curing. Manufacturers will be given a wide latitude in the selection of materials and curing systems.

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3.2.1 Color.- The color of the cured sealing compound shall be gray.

3.2.2 Appearance.- The base compound and curing compound (accelerator) shall be of a contrasting color, shall each be of a uniform blend and shall be free of skins, lumps, and gelled or coarse particles. There shall be no separation of ingredients which cannot be readily dispersed.

3.2.3 Toxicity.- The material shall have no adverse effect on the health of personnel when used according to provided instructions and for its intended purpose. Questions pertinent to this effect shall be referred by the procuring activity to the appropriate department medical service who will act as an advisor to the procuring agency.

3.3 Physical properties

3.3.1 Specific gravity.- When tested in accordance with 4.7.1, the specific gravity of the cured sealing compound shall not exceed 1.65 at standard conditions (see 4.5).

3.3.2 Nonvolatile content.- When tested in accordance with 4.7.2, the nonvolatile content of the freshly mixed compounds (types I and II) shall not be less than 97 percent by weight.

3.3.3 Viscosity of the base compound.- The sealing compounds shall be suitable for application by extrusion gun or spatula and the viscosity of the base compound shall be within the range of 6000 to 16,000 poises when tested as specified in 4.7.3.

3.3.4 Flow.- When tested in accordance with 4.7.4, the freshly mixed sealing compound shall exhibit an initial flow within the limits of 0.10 to 0.50 inch when a cylindrical section formed in the flow test jig is allowed to flow under its own weight on a vertical surface. In addition, the compound shall retain a flow within the limits of 0.10 to 0.50 inch throughout the entire application time.

3.3.5 Application time.- When tested in accordance with 4.7.5, the mixed sealing compound shall have an application time as specified in table I and shall remain suitable for application during that period. The end of the application time shall be when the extrusion rate has diminished to 15 grams per minute.

TABLE I - Application Time

Type I	Hours	Type II	Hours
I - 1/2	1/2	II - 1/2	1/2
I - 2	2	II - 2	2
I - 4	4	II - 4	4

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3.3.6 Tack-free time.- When tested in accordance with 4.7.6, the mixed compound shall cure to a tack-free condition as specified in table II.

TABLE II - Tack-free Time and Curing Rate

Type I	Tack-free Time (Hr)(Max)	Curing Rate (Hr)(Max)	Type II	Tack-free Time (Hr)(Max)	Curing Rate (Hr)(Max)
I - 1/2	10	24	II - 1/2	5	24
I - 2	24	48	II - 2	24	48
I - 4	48	72	II - 4	36	72

3.3.7 Curing rate.- When tested in accordance with 4.7.7, the sealing compound shall have a Rex hardness of not less than 35 after curing under standard conditions (see 4.5) for not more than the time specified in table II.

3.3.8 Low temperature flexibility.- When tested in accordance with 4.7.8, the sealing compound shall withstand the low temperature flexibility test at $-67^{\circ} \pm 2^{\circ}$ F without cracking, checking, or loss of adhesion.

3.3.9 Peel strength.- When tested in accordance with 4.7.9, the unaged cured sealing compound shall have a minimum peel strength of 20 pounds. It shall exhibit 100 percent cohesive failure, except for bubbles, knife cuts, and other causes that are obviously not the fault of the compound. The aged sealing compound shall conform to values specified in table III.

3.3.10 Corrosion.- When tested in accordance with 4.7.10, the sealing compound shall cause no visible corrosion of the aluminum panels and shall show no sign of deterioration.

3.3.11 Tensile strength and elongation.- When tested in accordance with 4.7.11, the ultimate tensile strength and elongation of the cured compound shall be as specified in table III.

3.3.12 Accelerated storage stability.- After storing in accordance with 4.7.12, the base compound shall show no skinning, hardening, separation, nor settling of the material. It shall also conform to the original viscosity specified in 3.3.3. The aged curing compound shall not be adversely affected and shall be restorable by normal agitation to a condition suitable for use. The aged base compound and the aged curing compound, when mixed, shall be in accordance with conditions for flow, application time, tack-free time and peel strength as specified in 3.3.4, 3.3.5, 3.3.6 and 3.3.9.

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TABLE III - Physical Properties

Properties	Type I	Type II
Original		
Tensile strength, psi	200	450
Elongation, percent	150	100
72 Hours immersion in MIL-H-3136, type III at 75° F		
Tensile strength, psi	150	---
Elongation, percent	125	---
Peel strength (lb/in.)(minimum)	15	---
72 Hours immersion in Di-2-ethylhexyl sebacate with 1/2 percent phenothiazine at 140° F		
Tensile strength, psi	150	---
Elongation, percent	125	---
Peel strength (lb/in.)(minimum)	15	---
7 Days at 250° F		
Tensile strength, psi	125	---
Elongation	75	---
7 Days at 500° F		
Tensile strength, psi	---	400
Elongation, percent	---	75

3.3.13 Accelerated crazing.- The sealing compound shall not contain ingredients that will cause acrylic plastic sheet conforming to Specification MIL-P-8184 to craze or crack, when tested in accordance with 4.7.13.

3.3.14 Shrinkage.- Linear shrinkage, based on an initial measurement made after the appropriate cure time listed in 4.7.14 and a final measurement made after 60 days, shall not exceed 1.0 percent.

3.3.15 Shaving and sanding.- The sealing compound shall be suitable for shaving and sanding, after cure in accordance with 4.7.15.

3.3.16 Weathering.- The sealing compound, mixed with accelerator, shall not exhibit cracking, chalking, peeling or loss of adhesion after 30 days accelerated weathering in accordance with 4.7.16.

3.4 Workmanship.- The workmanship shall be in accordance with high grade manufacturing practice covering this type of material. It shall be suitable for its intended use and free of defects which may affect its functionability.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.- Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of tests.- The inspection and testing of the sealing compound shall be classified as follows:

- a. Preproduction tests
- b. Quality conformance tests.

4.3 Preproduction tests.- Preproduction tests shall consist of all the tests specified in 4.7.

4.3.1 Sampling.- The preproduction samples shall consist of a sufficient quantity of the sealing compound to perform the tests specified in 4.7. Samples shall be tested in a laboratory designated by the procuring activity, or, when so stated in the contract or order, at the contractor's plant under the inspection of the procuring activity (see 6.2).

4.3.2 Previous approval.- At the discretion of the procuring activity preproduction testing may be waived for sealing compound which has been accepted under a previous contract.

4.4 Quality conformance tests.- The quality conformance tests shall consist of the tests specified in 4.7.1 through 4.7.7 and 4.7.11.

4.4.1 Sampling

4.4.1.1 Lot.- Unless otherwise specified a lot shall consist of all sealing compound manufactured at one time from one batch, forming part of one contract or order for delivery. A batch is defined as the end product of all raw material mixed or blended in a single operation.

4.4.1.2 Tests.- Three 1-quart samples, representing each lot of sealing compound on order, shall be selected from each lot and subjected to the tests listed below.

Specific gravity	(4.7.1)	Application time	(4.7.5)
Nonvolatile content	(4.7.2)	Tack-free time	(4.7.6)
Viscosity of base compound	(4.7.3)	Curing rate	(4.7.7)
Flow	(4.7.4)	Tensile strength	
		and elongation	(4.7.11)

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4.5 Test conditions.- Standard laboratory testing conditions shall be $77^{\circ} \pm 2^{\circ}$ F and 50 ± 5 percent relative humidity. Except as otherwise specified herein, all test specimens shall be prepared, cured and tested under these conditions.

4.6 Preparation of test specimens

4.6.1 Cleaning of test panels.- All test panels shall be cleaned by scrubbing and rinsing with soap-free and grease-free rags or paper towels, using solvent formulation in accordance with table IV. Immediately after rinsing, the panels shall be wiped dry with a clean, lintfree cloth.

TABLE IV - Formulation of Cleaner

Ingredient	Specification	Percent by Volume
Aromatic petroleum naptha	TT-N-97, type I grade B	50
Ethyl acetate	TT-E-751	20
Methyl-ethyl-ketone	TT-M-261	20
Isopropyl alcohol	MIL-F-5566	10

4.6.2 Preparation of sealing compound.- The quantity of sealing compound required for the test shall be mixed as thoroughly as practicable. A Semco Model 1384 or Model SP-1350 mixer, or equal, shall be used. The mixed compound shall have a minimum inclusion of air. Where applicable, the sealing compound, immediately after mixing, shall be placed into cartridges for extrusion from a Semco No. 250 gun, or equal.

4.6.3 Application of sealing compound.- Unless otherwise specified herein, test panels shall be given an application of sealing compound to produce a coating having a thickness of $1/8 \pm 1/64$ inch when cured. All test specimens subjected to 250° F or higher shall receive a 14-day cure. Tests on the cured compound shall commence not later than 2 days after completion of the specified cure.

4.7 Test methods

4.7.1 Specific gravity.- Three specimens approximately $1/8$ by 1 by 1 inch in size shall be cut with a sharp razor blade from a sheet of the sealing compound that has been cured for 14 days. The specimens shall be weighed accurately to 3 decimal places after which they shall be dipped in methyl alcohol and then, while wet, immediately suspended in distilled water at standard conditions and reweighed. The specific gravity shall be computed from the following formula:

$$\frac{\text{Weight in air}}{\text{Weight in air minus weight in water}} = \text{Specific gravity}$$

4.7.2 Nonvolatile content.- Five to 10 grams of freshly mixed sealing compound shall be transferred as rapidly as possible to a cup approximately 3 inches in diameter and $3/4$ inch in depth. A

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fitted cover shall immediately be placed over the cup and the weight determined accurately, using an inclosed beam balance which will weigh accurately to the nearest milligram. The weight of the cup and cover shall be determined accurately prior to using, and subtracted from the initial and final weights in order to calculate the new sample weights. The cover shall then be removed and the compound heated in an oven for 7 days at $160^{\circ} \pm 2^{\circ}$ F. It shall be cooled in a desiccator, the cover replaced, and the weight determined accurately. The percentage of total nonvolatile content shall be calculated as follows:

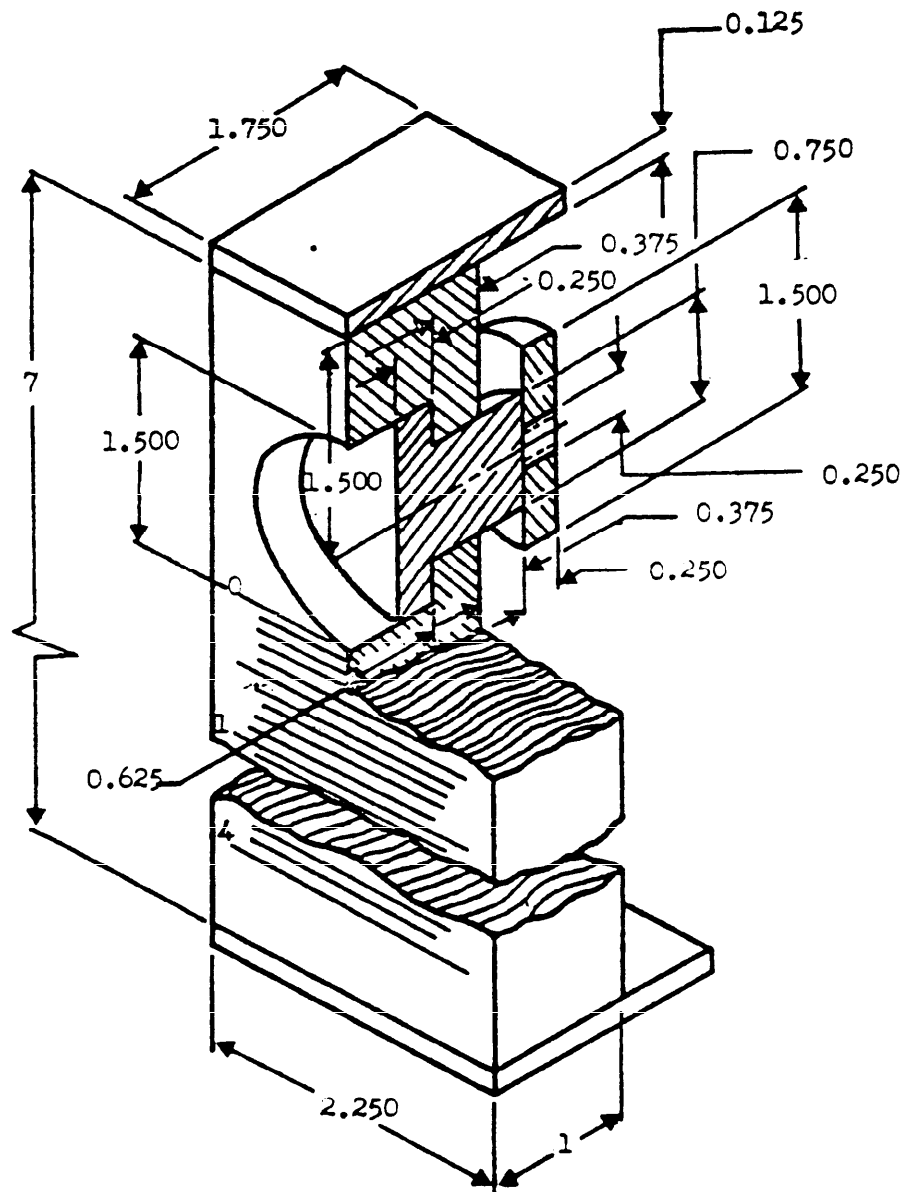
$$\text{Percent of nonvolatile content} = \frac{\text{Final weight}}{\text{Initial weight}} \times 100$$

4.7.3 Viscosity of base compound.- The viscosity shall be determined with samples of the base compound placed in two 1-quart cans. The cans shall be filled with base compound to within 1/2 inch of the top, covered, and stored at room temperature for at least 8 hours. The base compound shall then be thoroughly mixed by stirring slowly for 3 minutes after which the cans shall be closed and the material allowed to stand for 1 hour. The Brookfield Model RVF viscosimeter, or equal, shall be used and the readings obtained converted to poises. The No. 7 spindle at 2 rpm shall be used. The highest reading shall be taken from each sample after the instrument has run in the material for 1 minute.

4.7.4 Flow.- The base compound, accelerator, and application gun shall be stabilized at standard conditions for at least 8 hours before a minimum 250-gram lot of base compound is mixed with a proper amount of accelerator. The mixed sealing compound shall be promptly used to fill a standard Semco No. 250 gun cartridge, or equal, having a Semco 440 nozzle, or equal. The gun and sealing compound shall be maintained at standard conditions throughout the test. The test shall be conducted with a flow-test jig as shown in figure 1 and under flow conditions specified in 3.3.4. Depth of plunger tolerance is critical and shall be controlled within the tolerance during all tests.

4.7.4.1 The flow-test jig 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 jig and leveled off even 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 jig shall be placed on its end and the plunger immediately advanced to the limit of its forward travel. The flow measurement shall be taken 30 ± 1 minute after the compound has been applied to the test jig. The flow shall be measured from tangent to the lower edge of the plunger to the farthest point to which flow has advanced.

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MATERIAL: ALUMINUM ALLOY

DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS ± 0.016

Figure 1. Flow-Test Jig

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4.7.4.2 As the sealing compound progresses in its application time, the flow test shall be repeated at the time intervals specified in table V. All time intervals, other than for the initial test, shall be measured from the end of the mixing period.

TABLE V - Flow-test Intervals

Minimum specified application time	Intervals at which flow tests shall be conducted
1 hour	Initial reading only
3 hours	Initial, 50 and 90 minutes
6 hours	Initial, 2 and 4 hours

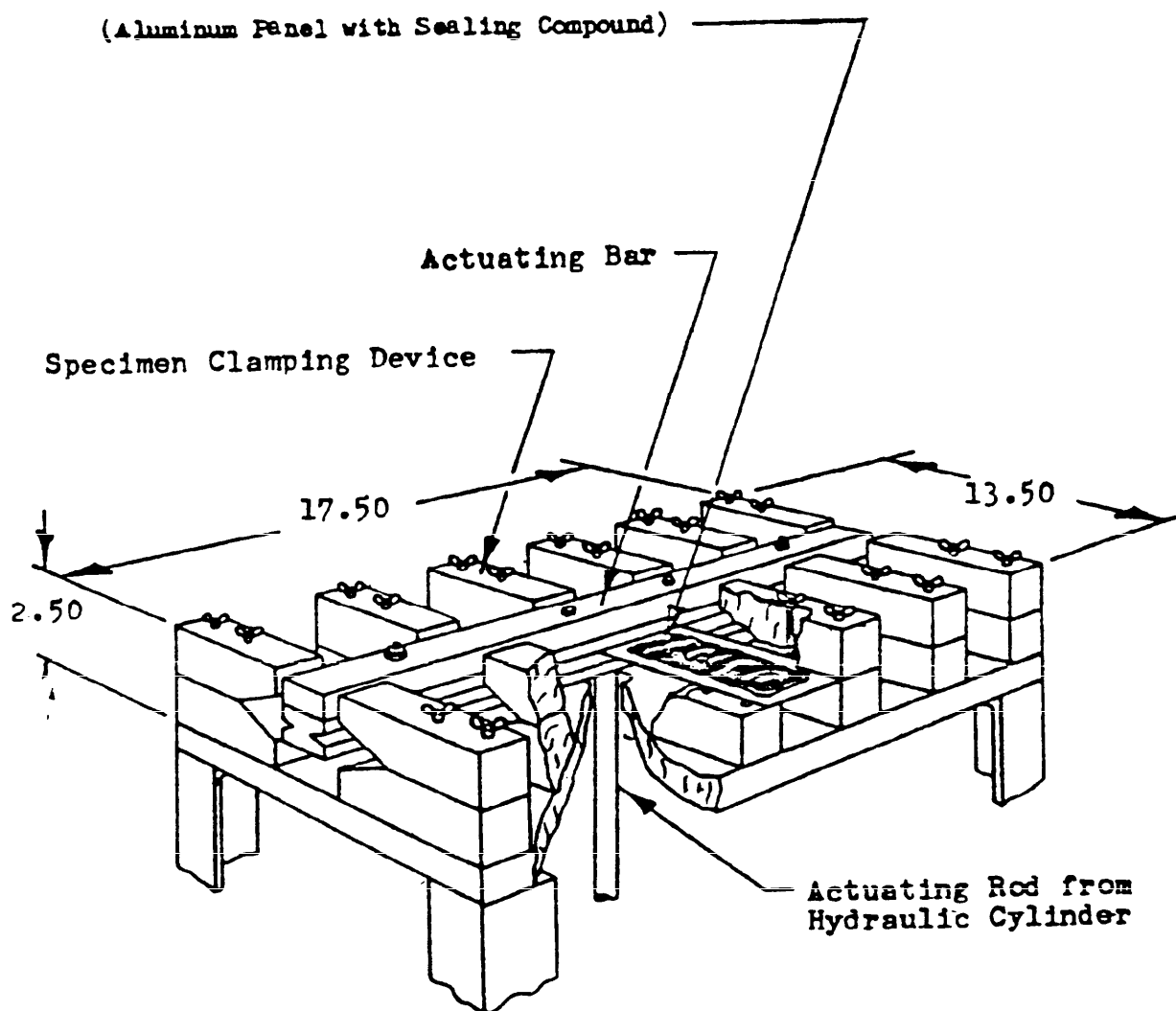
4.7.5 Application time.- The base compound, accelerator, and application gun shall be stabilized at standard conditions for at least 8 hours before a minimum of 250 grams of base compound are mixed with the proper amount of accelerator. The mixed sealing compound shall be promptly used to fill a standard Semco sealing compound gun cartridge, or equal, having a Semco 440 nozzle with an orifice chamber of 0.125 ± 0.005 inch. The gun and compound shall be maintained at standard conditions throughout the test. The gun shall be attached to a constant air supply of 90 ± 5 pounds per square inch gage (psig), for line variation or gage error. From 2 to 3 inches of sealing compound shall be extruded initially to clear trapped air. At the end of the rated application time, measured from the beginning of the mixing period, the compound shall be extruded onto a suitable receptacle for 1 minute and the amount of extruded compound determined.

4.7.6 Tack-free time.- An aluminum test panel conforming to temper T6 of Specification QQ-A-287, and measuring 0.040 by 2-3/4 by 6 inches in size shall be cleaned in accordance with 4.6.1 and covered with freshly mixed sealing compound to a depth of $1/8 \pm 1/16$ inch. The compound shall be allowed to cure at standard conditions and at the rate specified in 3.3.6. At the end of the specified tack-free time, two 1-inch by 6-inch pieces of polyethylene film 0.004 ± 0.002 inch thick shall be applied to the smoothing compound and held in place at a pressure of 1/2 ounce per square inch for 2 minutes. The strips shall then be slowly and evenly withdrawn at right angles to the compound surface. The polyethylene shall come away clean and free of compound.

4.7.7 Curing rate.- The hardness shall be determined with a Rex instrument in accordance with Method 3021 of Federal Test Method Standard No. 601, after the smoothing compound is allowed to cure as specified in 3.3.7. The reading shall be taken on a doubled back-to-back, 0.125-inch thick, or on a 0.25-inch thick specimen.

4.7.8 Low-temperature flexibility.- Four test panels 0.040 by 2 3/4 by 6 inches in size shall be prepared from aluminum alloy conforming to temper T6 of Specification QQ-A-287 (see figure 2). A coating of

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DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: ± 0.015

FIGURE 2. Low Temperature Flexibility Jig

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the sealing compound 0.094 inch thick by 1 1/2 inches wide by 4 inches long shall be applied to the center of each of the 4 panels. Care shall be taken to maintain an accurate sample thickness of 0.094 inch. Panels shall be cured for 28 days. All 4 panels shall then be immediately placed in a low-temperature flexibility jig consisting of a clamp support that will grip both sides of both 6-inch edges of the panel for a distance of 3 inches from 1 end without touching the sealant. The jig shall be capable of flexing the panel through a 30-degree arc (15 degrees each side of the center) at a constant speed of 1 cycle per 5 seconds. The temperature shall be reduced to $-67^{\circ} \pm 2^{\circ}$ F, stabilized at this temperature for 2 hours, and the panels flexed through 130 consecutive cycles (see 3.3.8).

4.7.9 Peel strength.- Four 0.040 by 2 3/4 by 6 inches aluminum-alloy test panels conforming to temper T6 of Specification QQ-A-287; four 0.025 by 0.040 by 2 3/4 by 6 inches stainless steel panels conforming to composition 302, annealed, finish 2B of Specification MIL-S-5059; and four 0.025 by 0.040 by 2 3/4 by 6 inches titanium panels conforming to class 1 of Specification MIL-T-7993 shall be coated with a $1/8 \pm 1/64$ inch thickness of sealing compound. After the compound has immobilized, 1 end of a 3- by 12-inch strip of wire screen, 20- to 40-mesh aluminum or monel wire fabric, or cotton duck conforming to type III of Specification CCC-C-419 shall be placed on each panel, leaving a loose end 6 inches in length. An additional 1/32 inch thick coating of sealing compound shall be applied over the screen or fabric strips and the panels allowed to cure for 14 days. A 1-inch wide section shall be cut through the strip and compound on each test panel to provide the center inch for the peel test. 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. The results shall be the numerical average of the peak loads.

4.7.10 Corrosion.- One aluminum panel conforming to Specification QQ-A-283 and measuring 0.040 by 2 3/4 by 6 inches in size shall be prepared with 2 parallel sealing compound fillets approximately 1 inch apart. The fillets shall be applied 3/16 inch thick by 3/4 inch wide by 5 inches long and shall extend to within 1/2 inch of the edges of the panel. The panel shall have a 14-day cure. At least 48 hours before the cure time has expired, the panel shall be dipped in a sealing compound topcoat conforming to Specification MIL-S-4383 and the cure allowed to continue. At the end of the 14-day curing period, the fillets shall be cut down to 1/16 inch and immersed vertically for 20 days in a covered glass vessel containing a 3 percent aqueous sodium chloride solution. The temperature during the test shall be maintained at $140^{\circ} \pm 2^{\circ}$ F. Immediately upon removal from the liquid, the panel shall be examined for compliance with 3.3.10.

4.7.11 Tensile strength and elongation.- Mixed sealing compound 0.125 ± 0.015 inch thick shall be prepared by pressing between 2 polyethylene sheets, removing the top sheet at the end of the rated tack-free time, and allowing the compound to cure at standard conditions. Tensile test specimens shall be cut from the sheet after

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a 28-day cure, using die VI as specified in method 4111 of Federal Test Method Standard No. 601. Three specimens shall be exposed to each of the environmental conditions specified in table III. Where fluid immersion is specified, the 3 specimens shall be immersed in 400 cc of the fluid. After 72 hours of fluid immersion, specimens shall be cooled in the fluid for 24 hours at standard conditions and tested within 5 minutes after removal from the fluid. Specimens that are tested immediately after oven aging shall be allowed to cool for 16 to 24 hours at standard conditions. The tensile and elongation tests shall be conducted at standard conditions in accordance with methods 4111 and 4121, respectively, of Federal Test Method Standard No. 601.

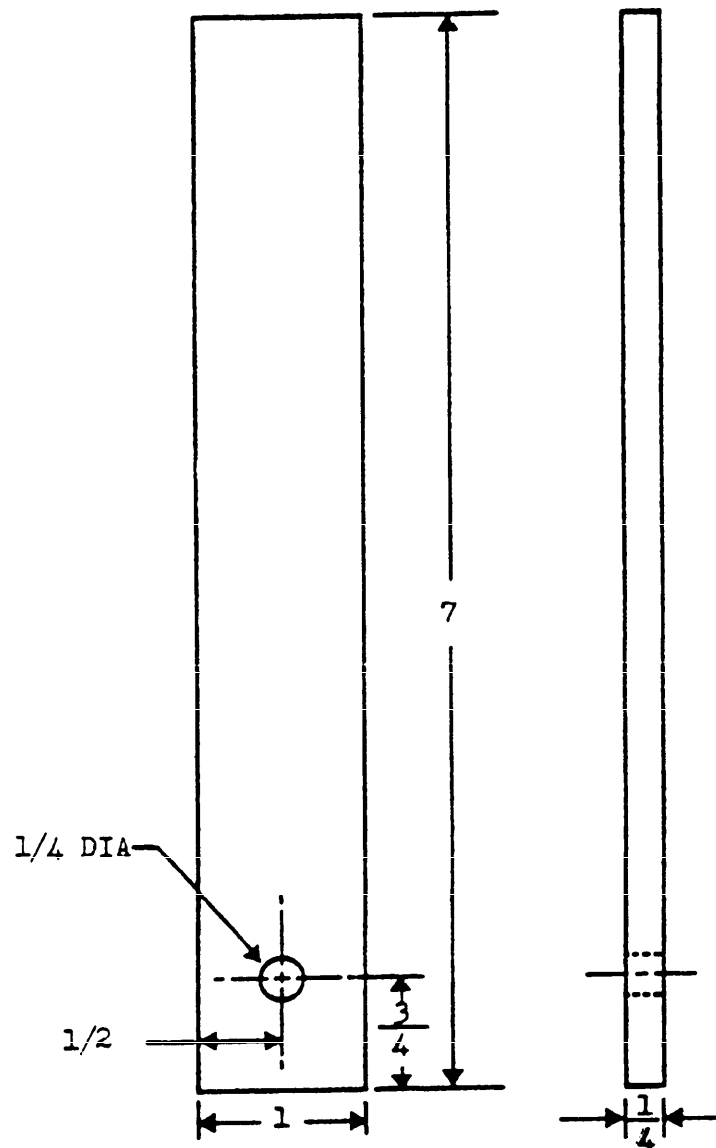
4.7.12 Accelerated storage.- An original, unopened, 1-quart container of base compound and an original, unopened container of the curing compound shall be stored for 14 days at $120^{\circ} \pm 2^{\circ}$ F in a suitable ventilated oven. After cooling at standard conditions for at least 24 hours, tests shall be conducted in accordance with 4.7.3, 4.7.4, 4.7.5, 4.7.6 and 4.7.9. Two aluminum alloy peel panels shall also be prepared and tested, without fluid immersion, in accordance with 4.7.9.

4.7.13 Accelerated crazing.- A plastic panel conforming to MIL-P-8184, having dimensions as specified in figure 3 and cleaned with a dry cleaning solvent conforming to Specification P-D-680, shall be inserted into the test apparatus (figure 4) with the hole end outward. The upper surface of the panel directly above the central fulcrum shall be coated with a thin layer of the sealing compound and covered with a piece of kraft paper. Weights totaling 5.20 ± 0.05 pounds shall be suspended from a hook thrust through the hole in the plastic. The outer fiber tensional stress under these conditions is 2,000 pounds per square inch. The panel shall be allowed to remain under the stress in the manner indicated for a period of 24 hours.

4.7.14 Shrinkage.- Strips of the sealing compound, mixed with accelerator, $1/4$ by $1/4$ by 6 inches shall be cast in the mold shown in figure 5. The mold shall be coated with a suitable parting agent to aid in removal of the cast strips. After the appropriate cure time, the strips shall be removed from the mold, the ends squared if necessary, and the length measured. The strips shall be stored at $77^{\circ} \pm 2^{\circ}$ F for 60 days and the length measured. The shrinkage shall be reported as percent of the original length.

4.7.15 Shaving and sanding.- The sealing compound, mixed with accelerator, shall be applied to the test panel as shown in figure 6. The gap and screw heads shall be filled and a small excess allowed for shaving. After appropriate cure time, the excess compound shall be shaved off with a sharp razor blade and the surface sanded with 400 grit abrasive paper on a sanding block. Accomplishment of shaving and sanding shall be considered satisfactory if a smooth finish is obtained and unsatisfactory if the material rolls or tears while being worked.

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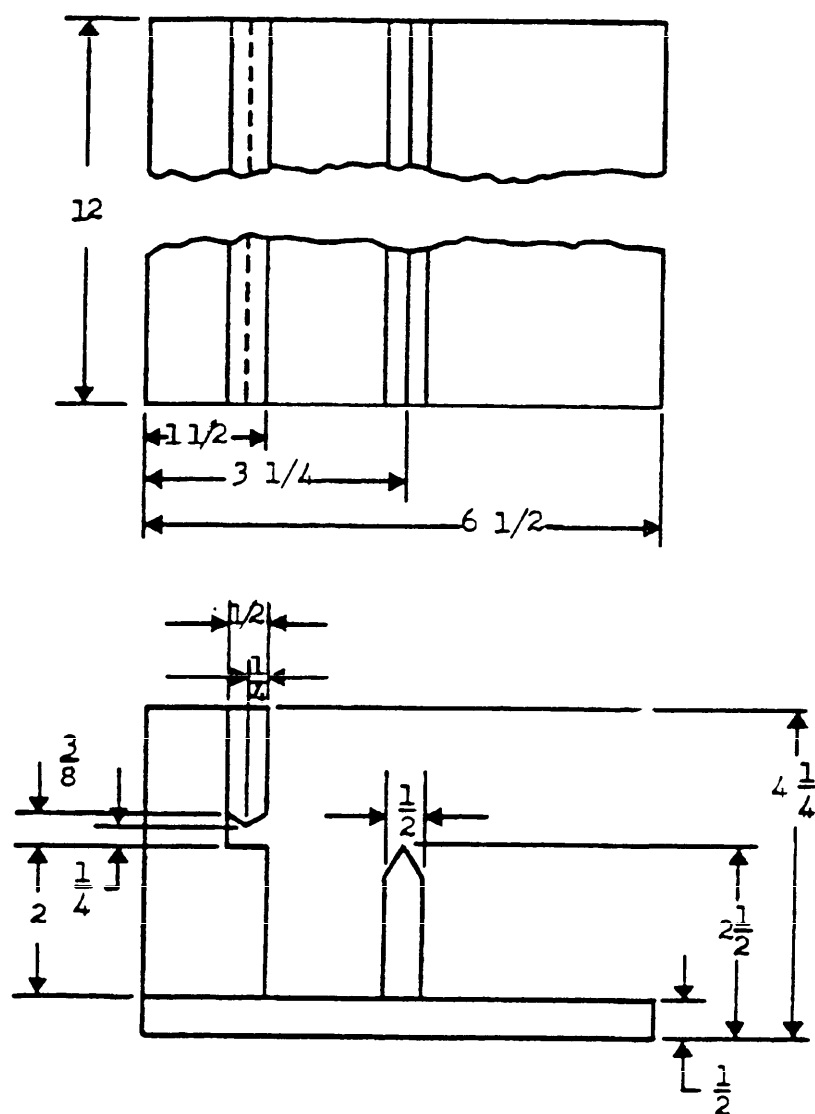


MATERIAL: PLASTIC, SPECIFICATION MIL-P-8184

DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES:
FRACTIONS $\pm 1/64$

FIGURE 3 Design of Plastic Plan Used in Accelerated Crazing Test

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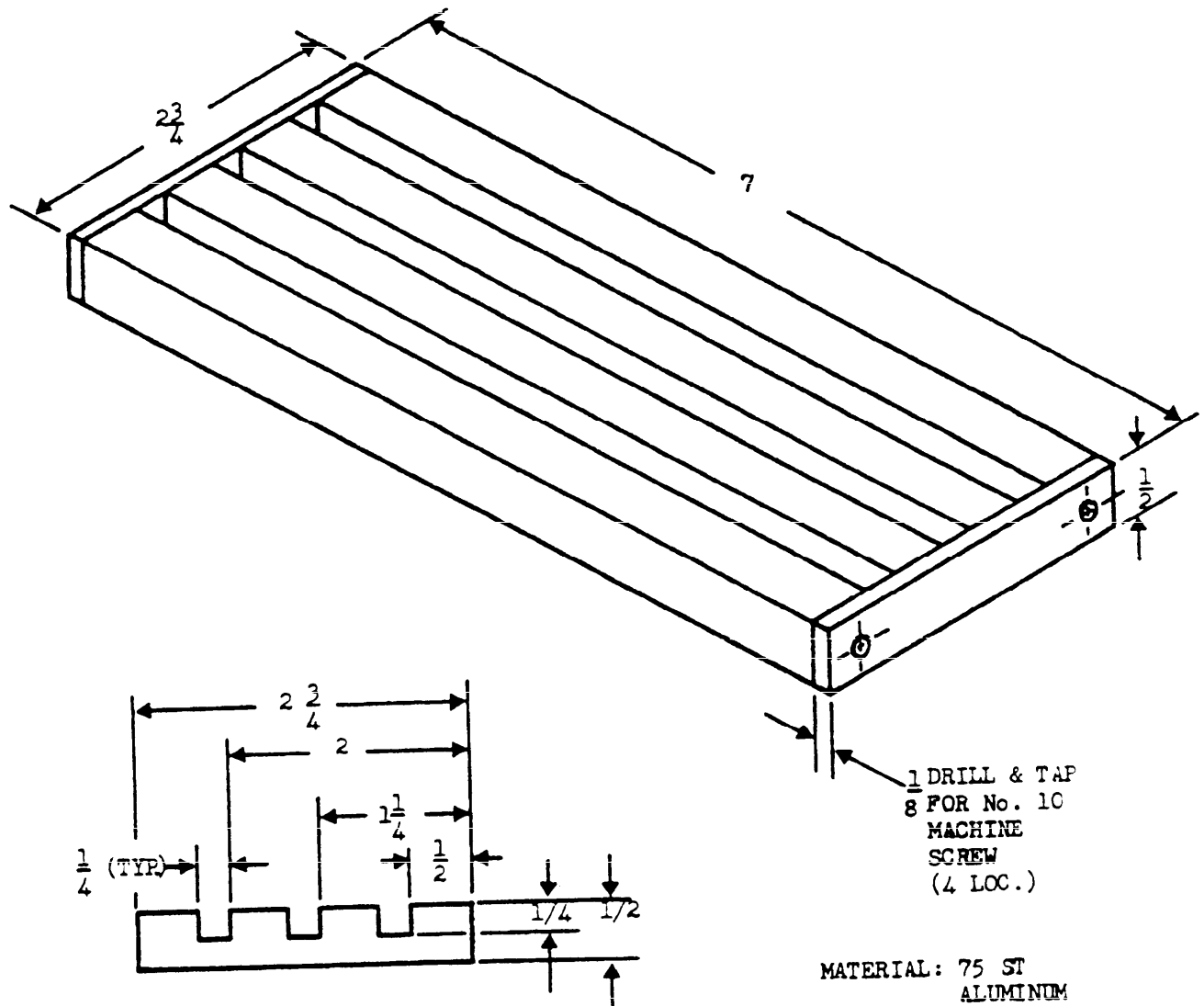


MATERIAL: MAPLE WOOD
 APPARATUS CONSTRUCTED IN FOUR PIECES AS SHOWN
 APEXES AT FULCRA TO BE ROUNDED TO 1/16 RADIUS
 ALL JOINTS TO BE SCREWED SECURELY

DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES:
 FRACTIONS $\pm 1/64$

FIGURE 4 Design of apparatus for Accelerated Crazing Test

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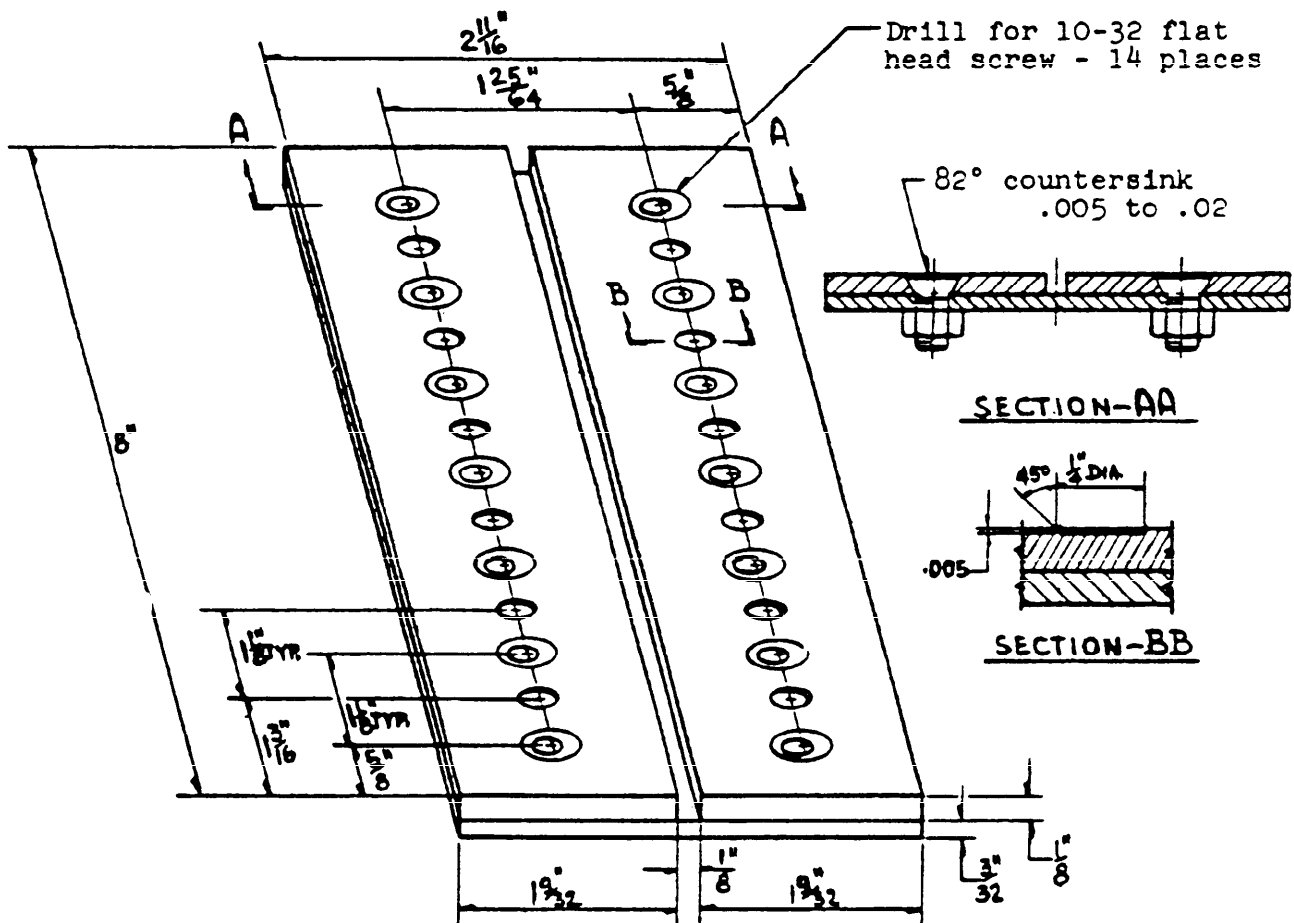


DIMENSIONS IN INCHES:
TOLERANCES: $\pm 1/64$

FIGURE 5 Mold for Shrinkage Test Specimens

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Material: Alclad Aluminum
Alloy 2024T



DIMENSIONS IN INCHES
TOLERANCES: $\pm 1/64$

FIGURE 6. Mold for Shaving and Sanding Test Specimens

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4.7.16 Weathering.- The test panel, prepared for shaving and sanding (4.7.15), shall be exposed in the Atlas Weatherometer for 30 days. The temperature shall be 140° F and a cycle of 3 minutes water spray and 17 minutes sunshine shall be maintained during the exposure. No cracking, peeling, chalking or loss of adhesion shall occur in the sealing compound.

4.7.17 Toxicological data and formulations.- The supplier shall furnish the toxicological data and formulations required to evaluate the safety of the material for the proposed use.

4.7.18 Packaging, packing and marking.- Preparation for delivery shall be examined for conformance with section 5.

5. PREPARATION FOR DELIVERY

5.1 Packaging.- Packaging shall be level A or C, as specified (see 6.2).

5.1.1 Level A

5.1.1.1 Unit packaging.- The base compound and the curing agent shall each be packaged in their own containers. Each curing agent container shall be packaged with one base compound container in a manner which will prevent accidental separation but will permit easy separation for mixing purposes. The ratio of the quantity contained in base container to the quantity contained in the curing agent container shall be the same as the recommended mixing ratio of the base compound and curing agent.

5.1.1.1.1 Individual containers.- The base compound shall be furnished in 1/2-pint, 1-pint, 1-quart, or 1-gallon metal cans, as specified in the contract or order. Metal cans shall conform to type V, class 2 of Specification PPP-C-96, except that tinplate cans with paper labels may be used, unless specifically prohibited. The base compound contained in each size container shall be as follows:

<u>Size of container</u>	<u>Amount of base compound</u>	<u>Volume tolerance</u>
1/2 pint -----	6 fluid ounces -----	± 1/8 fluid ounce
1 pint -----	12 fluid ounces -----	± 1/4 fluid ounce
1 quart -----	24 fluid ounces -----	± 1/2 fluid ounce
1 gallon -----	96 fluid ounces -----	± 2 fluid ounces

The curing agent shall be furnished in glass jars or in suitable plastic containers approved by the procuring activity. The jars or plastic containers, as applicable, shall have vertical, smooth inside walls, and no internal projections nor internal lips exceeding 1/16 inch. 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.

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5.1.1.1.2 Sectional-type containers.- The base compound and curing agent shall be furnished in sectional-type 2 1/2- or 6-ounce nominal containers, as specified in the contract or order. The total content of base compound and curing agent container in each sectional-type container shall be as follows:

<u>Size of container</u>	<u>Total content (base and curing)</u>	<u>Volume tolerance</u>
2 1/2 ounces-----	2 fluid ounces -----	±1/8 fluid ounce
6 ounces -----	3 1/2 ounces -----	±1/8 fluid ounce

5.1.2 Level C.- Packaging shall be in accordance with the manufacturer's commercial practice.

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

5.2.1 Level A.- The sealing compound shall be packed in overseas-type shipping containers in accordance with the requirements of the appendix to Specification PPP-C-96.

5.2.2 Level B.- The sealing compound shall be packed in domestic-type shipping containers in accordance with the requirements of the appendix to Specification PPP-C-96.

5.2.3 Level C.- The sealing compound shall be packed in a manner to insure carrier acceptance and safe delivery at destination. Containers shall be in accordance with Uniform Freight Classification Rules or regulations of other carriers applicable to the mode of transportation.

5.3 Marking of shipment.- In addition to any special marking required by the contract or order, interior packages and exterior shipping containers shall be marked in accordance with Standard MIL-STD-129. Marking shall include specification number, applicable type and dash number, name of manufacturer, date of manufacture (month and year), and recommended storage temperature.

6. NOTES

6.1 Intended use.- The sealing compound covered by this specification is intended for filling gaps, slots and depressions on exterior of aircraft and missiles to effect a smooth contour. Type I is for applications in the range of -65° to +250° F and is more resistant to jet fuels. Type II is for applications in the range of -65° to +500° F and has less resistance to abrasion than type I.

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6.2 Ordering data.- Procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. Type of sealing compound and dash number (see 1.2).
- c. Quantity desired.
- d. Provisions for submission of preproduction samples (see 4.3.1).
- e. Size of container (see 5.1.1.1.1).
- f. Applicable levels of packaging and packing (see 5.1 and 5.2).

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Preparing activity:
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Review:
Air Force - 11, 69

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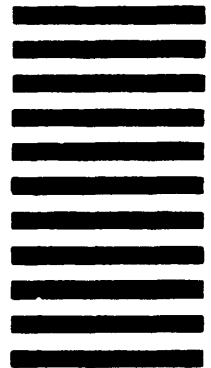
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