[INCH-POUND]
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SUPERSEDING
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COMMERCIAL ITEM DESCRIPTION

SEALING COMPOUND, ADHESIVE: CURING (POLYSULFIDE BASE)

The General Services Administration has authorized the use of this commercial item description, for all federal agencies.

1. SCOPE. This CID covers the general requirements for one type of inert, curing-type, adhesive sealing compound suitable for use by injection in bonding metal to metal or glass to metal, in optical instruments or fire control instruments.

2. SALIENT CHARACTERISTICS.

2.1 Materials. The sealing compound shall be a two-part material consisting of a base (polysulfide) compound and an accelerator. The compound shall consist of the properties as specified in Table I when tested as indicated therein. The quantity and unit size of the sealing compound shall be as specified in the contract or order (see 6.2 and 6.3).

2.2 Color. The base compound shall be black in color.

2.3 Volatile content. The volatile content of the freshly prepared sealing compound shall not exceed 3 percent by weight.

2.4 Water solubility. The solubility in distilled water of the cured sealing compound shall not exceed 6 percent by weight.

2.5 Low temperature flexibility. The cured sealing compound shall show no evidence of cracking or lack of adhesion when subjected to flexing at -40°F (-40°C).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army TACOM-ARDEC, Attn.: AMSTA-AR-EDE-S, Bldg 12, Picatinny Arsenal, NJ 07806-5000 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 8030

2.6 Oil resistance. The cured sealing compound shall show no evidence of blistering, softening, or loss of adhesion when in contact with petroleum oil and synthetic fluid.

2.7 Adhesion. The cured sealing compound shall exhibit a tensile bond strength of not less than 200 pounds per square inch.

2.8 Effect of volatile components. There shall be no evidence of chemical attack, such as crazing, pitting, or etching on the surface of methyl methacrylate when exposed to volatile (and non-volatile) components of freshly cured sealing compound.

2.9 Water vapor permeability. The cured sealing compound shall have a water vapor transmission rate of not greater than 0.025 grams per hour per square inch.

2.10 Working life. The mixed sealing compound shall have a cone penetration value of not less than 200 after 3 hours at 75° ± 2°F and the change in cone penetration within the 3 hour period shall not be greater than 75.

2.11 Hardness. The cured sealing compound shall have a Durometer A hardness of 40 ± 5.

TABLE I. Physical properties

Property	Requirement	Test Method
1. Volatile Content	2.3	4.3.1
2. Water Solubility	2.4	4.3.2
3. Low Temperature Flexibility	2.5	4.3.3
4. Oil Resistance	2.6	4.3.4
5. Adhesion	2.7	4.3.5
6. Effect of Volatile Components	2.8	4.3.6
7. Water Vapor Permeability	2.9	4.3.7
8. Working Life	2.10	4.3.8
9. Hardness	2.11	4.3.9

3. REGULATORY REQUIREMENTS. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

4. QUALITY ASSURANCE PROVISIONS.

4.1 Product Conformance. The products provided shall meet the salient characteristics of this commercial item description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial market. The government reserves the right to require proof of such conformance.

4.2 Market Acceptability. The sealing compound must meet the market acceptability criteria when specified in the contract or order (see 6.2).

4.3 Tests

4.3.1 Volatile content. Not less than 10 grams of the base compound and accelerator shall be prepared at one time. The ratio of the base compound to accelerator shall be as specified by the manufacturer. The two components shall be thoroughly mixed taking care that all traces of the accelerator disappear and that no base compound is left around the edges or in the corners of the mixing vessel. Examination shall be made for homogeneity. A sample (about 2 grams) of the prepared compound shall be spread uniformly, approximately .0625 inch thick, on one side of a weighed 2 by 4 by 0.040 inch aluminum panel. Immediately after preparing the panel, it shall be accurately weighed and placed in a circulating air oven at 200° ± 2°F (93.3° ± 1.1°C) for a period of 2 hours. The panel shall then be removed, and allowed to cool to room temperature, then carefully reweighed. The loss in weight divided by the initial weight of the sample, multiplied by 100, shall constitute the percent of volatile content. The test shall be performed in duplicate. Failure of either sample shall be cause for rejection.

4.3.2 Water solubility. The panels with samples, which were used in determining the volatile content, shall be immersed in distilled water and heated at 160° ± 2°F (71.1° ± 1.1°C) for 4 hours. They shall then be removed and dried in air at 200° ± 2°F (93.3° ± 1.1°C) for 2 hours. The loss in weight divided by the weight of the sample after the determination of the volatile content and multiplied by 100 shall constitute the percent of water-soluble material.

4.3.3 Low temperature flexibility. A 1 by 4 by 0.040 inch aluminum panel shall be coated on one side with the freshly prepared compound (see 4.3.1) to a thickness of .0625 inch. The panel shall be allowed to stand for 72 hours at 75° to 85°F or placed in a circulating air oven for 2 hours at 200° ± 2°F (93.3° ± 1.1°C). The panel shall then be subjected to a temperature of -40° ± 2°F (-40° ± 1.1°C) for 4 hours. At that temperature, the panel shall be bent rapidly over a 1 inch diameter mandrel through an angle of 90° and with the uncoated surface resting on the mandrel. The mandrel shall be at the same temperature as that of the panel. After bending the panel, the sample shall be inspected for evidence of cracking and lack of adhesion. Test shall be performed in duplicate. Failure of either sample shall be cause for rejection.

4.3.4 Oil resistance. Approximately 1 gram of the freshly prepared compound (see 4.3.1) shall be spread uniformly on one side of a 1 by 4 by 0.040 inch aluminum panel. The sample shall be allowed to cure for 72 hours at 75° to 85 °F or for 2 hours at 200° ± 2°F (93.3° ± 1.1°C). The sample shall then be partially immersed for 4 days in noncorrosive lubricating oil which shall be refined petroleum hydrocarbons free from additives except pour-point depressant. This test shall be conducted at room temperature. The panel shall be removed and the sample shall be examined for evidence of blistering,

softening, and lack of adhesion. Test shall be performed in duplicate. Failure of either sample shall be cause for rejection.

4.3.5 Adhesion. The freshly prepared compound (see 4.3.1) shall be applied to both surfaces of a steel tensile specimen as described in ASTM D897. The specimen shall be compressed under a load of 200 pounds for about 20 seconds to ensure a minimum gap between the adherents of the specimen. The test specimen shall then be conditioned for 72 hours at 75° to 85°F. Bond strength of the assembly shall be measured in a tensile testing machine whose idle jaw separation speed is 1 inch per minute. The test shall be conducted at room temperature. Test shall be performed in duplicate. Failure of either specimen shall be cause for rejection.

4.3.6 Effect of volatile components. A 5 to 6 gram sample of freshly prepared compound (see 4.3.1) shall be placed on a 2 inch diameter watch glass and then placed in an enclosed vessel which contains a polished methyl methacrylate window. The test fixture shall be placed in an oven at 160° ± 2°F (71.1° ± 1.1 °C) for 3 hours, then removed and allowed to cool to a temperature of approximately 100°F (38°C). The outer surface of the methyl methacrylate window shall be cooled by placing a piece of dry ice having a flat side of about ½ square inch onto the window of the fixture and allowed to remain in contact with the window until condensation is observed on the inner surface of the window or for a period not greater than 20 minutes. The fixture shall then be allowed to remain at room temperature for a period of 2 hours. The window of the fixture shall be removed and its inner surface washed with tap water and wiped with a soft cloth. The surface shall then be examined with the aid of a 10 power magnifier (approximately) in the area where condensation had formed for visual evidence of crazing, pitting, or etching. Testing shall be performed in duplicate. Failure of either sample shall be cause for rejection.

4.3.7 Water vapor permeability. A sufficient amount of freshly prepared sealing compound (see 4.3.1) shall be pressed between two polyethylene sheets to form a film about 0.075 inch thick and 3 inches in diameter. The sandwich thus formed shall be placed on dry ice for a period of about one hour. At this low temperature, one of the polyethylene sheets shall be peeled off and the sealing compound then allowed to return to room temperature. A suitable size screen which will retain the sealing compound shall be placed on the sealing compound. It is recommended that this screen be brass or aluminum of approximately 2.5 inches in diameter, having a mesh of approximately 33 by 40 and a wire thickness of 0.010 inch. The polyethylene sheet which was removed after freezing shall be placed on the screen and the assembly shall be compressed until the overall thickness of the sealing compound and screen will be 0.064 ± 0.002 inch. The assembly shall then be placed in an oven at 200° ± 2°F (93.3° ± 1.1°C) for 2 hours to cure and solidify the sealing compound. After the curing treatment, the polyethylene sheets shall be removed and the screen-supported film shall be trimmed and placed in a position as shown on figure 1. Approximately 5 milliliters of distilled water shall be placed in a Petri dish. The two metal plates holding the film of sealing compound and the Petri dish shall be screwed together tightly to ensure a good seal between the edge of the Petri dish and the sealing compound. The two assemblies shall be prepared as described above. A third assembly shall be prepared in the same manner except that no water shall be placed in the Petri dish. The three assemblies shall be carefully weighed and placed in an oven at 160° ± 2°F (71.1° ± 1.1°C) for 48 hours. The loss in weight of the dry assembly shall be subtracted from the weight of each of the other two assemblies and the water vapor transmission rate shall be calculated in units of grams of water per hour per square inch of open area. The open area is the area of the 1.875

inch hole in the metal plate minus the area occupied by the wires of the screen within the hole. Failure of either sample shall be cause for rejection.

4.3.8 Working life. Prepare a sample of 75 to 80 grams of freshly prepared sealing compound (see 4.3.1). The sample shall be placed immediately into a receptacle of approximately 2 inches in diameter and 1.25 inch deep. The time shall be recorded and cone penetration test shall be made immediately thereafter. The test shall be made at a temperature of 75° ± 2°F and in accordance with ASTM D217-94. After 3 hours, the same penetration shall be repeated. The test shall be performed in duplicate. Failure of either sample shall be cause for rejection.

4.3.9 Hardness. The test procedure shall be as described in method 3021 of Fed. Test Method Std. No. 601.

5. PACKAGING. Preservation, packing, and marking shall be as specified in the contract or order.

6. NOTES.

6.1 Source of documents.

6.1.1 The Code of Federal Regulations (CFR) is available by mail order from the Superintendent of Documents, ATTN: New Order, PO Box 371954, Pittsburgh, PA 15250-7954.

6.1.2 Federal test method standards are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.

6.1.3 ASTM standards and test methods are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, date of this CID.
b. Quantity (see 2.1).
c. Unit sizes (see 2.1 and 6.3).
d. Need for market acceptability criteria (see 4.2.
e. Packaging and marking requirements (see 5).

6.3 Unit sizes. As of the date of this document, the quantities and unit sizes identified herein were commercially available:

24 ea. per case 2 ½ oz. And 6 oz. Cartridges
16 ea. per case Pint Kit
16 ea. per case Quart Kit

4 ea. per case Gallon Kit
The sealing compound is also available in 5-gallon and 50 gallon Drum Kits.

6.4 Material safety data sheets. Products meeting the requirements of this CID may be subject to the requirements of 29 CFR 1910.1200 and FED-STD-313 for Material Safety Data Sheets.

MILITARY INTERESTS:

Custodians
Army-AR
Air Force-11
Navy - MC

Review Activities
Army-AT, AV

CIVIL AGENCY COORDINATING ACTIVITY:
GSA-FSS

Preparing Activity:
Army-AR

(Project 8030-0771)

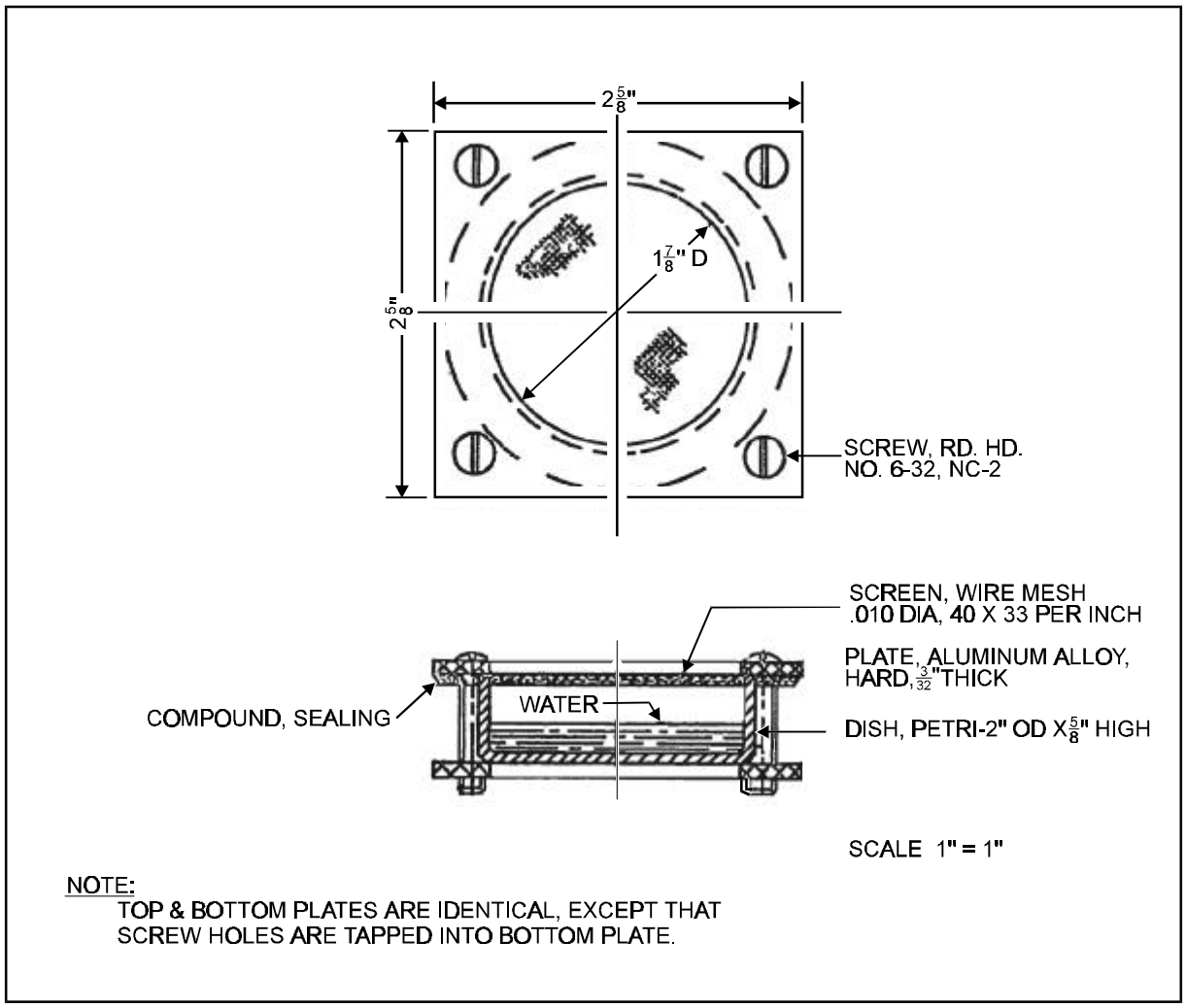

FIGURE 1. *Assembly for water vapor permeability test*

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.

2. The submitter of this form must complete blocks 4, 5, 6, and 7.

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NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	**1. DOCUMENT NUMBER** A-A-59293	**2. DOCUMENT DATE (YYMMDD)** 980721

3. DOCUMENT TITLE SEALING COMPOUND, ADHESIVE: CURING (POLYSULFIDE BASE)

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include Zip Code)*	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON *(if applicable)*	**7.DATE SUBMITTED** (YYMMDD)

8. PREPARING ACTIVITY

a. NAME Mr. Gary Vander Sande	b. TELEPHONE *Include Area Code)* (1) Commercial (973) 724-2163 (2) AUTOVON 880-2163
c. ADDRESS *(Include Zip Code)Commander* US Army TACOM-ARDEC Attn: AMSTA-AR-EDE-S, Bldg 12 Picatinney Arsenal, NJ 07806-5000	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** DEFENSE QUALITY AND STANDARDIZATION OFFICE 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22401-3466 Telephone (703) 756-2340 AUTOVON 289-2340