INCH-POUND

NOTICE OF CANCELLATION

SS-S-1614A
NOTICE 2
3 MARCH 2009
SUPERSEDING
NOTICE 1
5 September 1988

FEDERAL SPECIFICATION

SEALANTS, JOINT, JET-FUEL-RESISTANT, HOT-APPLIED, FOR PORTLAND CEMENT AND TAR CONCRETE PAVEMENTS

SS-S-1614A, dated 15 August 1984, is hereby canceled without replacement.

Custodians:
Army – CE
Navy – YD
Air Force – 99

Preparing activity:
DLA – IS

(Project 8030-2008-007)

Review activities:
Army – MD, MR
Navy – MS

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil .

AMSC N/A

FSC 8030

|NOT MEASUREMENT|
|SENSITIVE|

SS-S-1614A
AMENDMENT-1
May 14, 1993

FEDERAL SPECIFICATION

SEALANTS, JOINT, JET-FUEL-RESISTANT, HOT-APPLIED, FOR PORTLAND CEMENT AND TAR CONCRETE PAVEMENTS

This amendment, which forms a part of SS-S-1614A, dated August 15, 1984, is approved by the General Services Administration for use by all federal agencies.

Page 2 - Paragraph 2.2
DELETE: C33 - Concrete Aggregates
C150 - Portland Cement
C192 - Making and Curing Concrete Test Specimens in the Laboratory, Methods of
ADD: C1985- Preparing Concrete Blocks for Testing Sealants, for Joints and Cracks, Standard Practice for

Page 7 - Paragraph 4.4.6.2
DELETE: Concrete block preparation. Prepared blocks are available (see 6.6.4).
ADD: Concrete block preparation. Prepare concrete blocks in accordance with ASTM D1985. Prepared blocks are available (see 6.6.4).

Page 8
DELETE: Paragraph 4.4.6.2.1, Table I, and Paragraph 4.4.6.2.2.

Page 10 - Paragraph 4.4.6.5, last sentence
DELETE: Three cycles of immersion, conditioning, extension, and recovery shall constitute one complete test for fuel-immersed bond (see 4.4.6.7).
ADD: Two additional cycles of extension and recovery shall constitute one complete test for fuel-immersed bond (see 4.4.6.7).

Page 10 - Paragraph 4.4.6.6, last sentence
DELETE: Three cycles of immersion, conditioning, extension, and recovery shall constitute one complete test for water-immersed bond (see 4.4.6.7).
ADD: Two additional cycles of extension and recovery shall constitute one test for water-immersed bond (see 4.4.6.7).

MILITARY INTERESTS:
Custodians
Army - CE
Navy - YD
Air Force - 99

Review Activities
Army - MD, MR
Navy - MS

CIVIL AGENCY COORDINATING ACTIVITIES:
GSA - FSS 9FTE-10
COM - NIST

PREPARING ACTIVITY:
Navy - YD

(Project 8030-0671)

FSC 8030

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

| NOTICE OF |
| VALIDATION |

SS-S-1614A
NOTICE 1
5 September 1988

FEDERAL SPECIFICATION

SEALANTS, JOINT, JET-FUEL-RESISTANT, HOT-APPLIED, FOR PORTLAND CEMENT AND TAR CONCRETE PAVEMENTS

SS-S-1614A, dated August 15, 1984, has been reviewed and determined to be valid for use in acquisition.

Custodians:
Army - CE
Navy - YD
Air Force - 99

Review Activities:
Army - MD, MR
Navy - MS

CIVIL AGENCY COORDINATING ACTIVITY:
GSA - FSS

Preparing Activity:
Navy - YD

AMSC N/A

FSC 8030

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

SS-S-1614A
August 15, 1984
SUPERSEDING
SS-S-1614
November 17, 1969

FEDERAL SPECIFICATION

SEALANTS, JOINT, JET-FUEL-RESISTANT, HOT-APPLIED, FOR PORTLAND CEMENT AND TAR CONCRETE PAVEMENTS

This specification was approved by the Assistant Administrator, Office of Federal Supply and Services, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers two types and two classes of one-component, jet-fuel-resistant, hot-applied material for use in sealing joints and cracks in portland cement and tar concrete pavements.

1.2 Classification. The sealant shall be of the following types and classes (see 6.2).

Type I - Fully polymerized and cured solid material

Class 1 - Rubber-base
Class 2 - Poly(vinyl chloride) resin base

Type II - Liquid material

Class 2 - Poly(vinyl chloride) resin base

2. APPLICABLE DOCUMENTS

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

Federal Specification

PPP-P-704 - Pails, Metal: (Shipping, Steel, 1 Through 12 Gallons)

Federal Standards

FED-STD-123 - Marking for Shipment (Civil Agencies)
FED-STD-313 - Material Safety Data Sheets Preparation and the Submission of

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specification documents, and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

Military Standards

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-147 - Palletized Unit Loads

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

Federal Regulations

29 CFR 1900-1999 - Occupational Safety and Health Administration (OSHA), Department of Labor

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM)

C33 - Concrete Aggregates
C150 - Portland Cement
C192 - Making and Curing Concrete Test Specimens in the Laboratory, Methods of
D5 - Penetration of Bituminous Materials, Test Method for
D140 - Sampling Bituminous Materials, Methods of
D217 - Cone Penetration of Lubricating Grease, Test Methods for
D471 - Rubber Property - Effect of Liquids, Test Method for

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

Technical Association of the Pulp and Paper Industry

T431 om - Ink Absorbency of Blotting Paper

(Application for copies should be addressed to the Technical Association of the Pulp and Paper Industry, Technology Park/Atlanta, P.O. Box 105113, Atlanta, GA 30348.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Description.

3.1.1 Material. The sealant shall be a thermoplastic material. It shall be composed of a mixture of coal tar, and rubber or resin (see 1.2), with additives. The manufacturer's specified application or pouring temperature shall not exceed 232 degrees Celsius (°C) (450 degrees Fahrenheit (°F)), and shall be at least 11°C (20°F) lower than the safe heating temperature. The sealant shall meet the requirements of this specification when poured after being held at the application temperature for no more than 10 minutes, and shall retain all of its properties with up to 3 hours of continuous heat.

3.1.2 Performance. The sealant shall form a resilient and adhesive compound, resistant to the solvent action of jet fuels and lubricating oils. The sealant shall effectively seal joints and cracks in pavements against the infiltration of moisture throughout repeated cycles of expansion and contraction. The sealant shall not flow from the joint or be picked up by pneumatic tires at in-place joint seal temperatures of 52°C (125°F) or below. The sealant shall have a uniform application or pouring consistency suitable for filling the joint without inclusion of blisters, bubbles, or discontinuities.

3.2 Safe heating temperature. The safe heating temperature is the highest use temperature permitted by the manufacturer (see 5.3.3) and is a temperature to which the sealant can be heated for a duration of at least 3 hours, and still conform to all of the requirements specified herein.

3.3 Penetration.

3.3.1 Nonimmersed penetration. Penetration shall not exceed 13.0 millimeters (mm) (130 test units) (0.512 inch) when the sealant is tested as specified in 4.4.3.1.

3.3.2 Fuel-immersed penetration. Penetration shall not exceed 15.5 mm (155 test units) (0.610 inch), and shall not change from the nonimmersed penetration by more than 2.5 mm (25 test units) (0.098 inch), when the sealant is tested as specified in 4.4.3.2.

3.4 Change in mass by fuel immersion. The change in dry mass after fuel immersion for 24 hours at 49°C (120°F) shall not exceed 2.0 percent, and there shall be no apparent defects that will affect the material as a sealant, when sealant is tested as specified in 4.4.4.

3.5 Flow. Flow shall not exceed 30 mm (1.18 inches), for either specimen, when the sealant is tested as specified in 4.4.5.

3.6 Bond to concrete.

3.6.1 Nonimmersed bond. When the sealant is tested as specified in 4.4.6.4, the following requirements shall be met:

a. Two of the three specimens shall exhibit no crack, separation, or other opening in the sealant, or between the sealant and the concrete blocks.

b. The third specimen shall exhibit no crack, separation, or other opening in the sealant, or between the sealant and the concrete blocks exceeding 6.35 mm (0.25 inch) in depth, and shall exhibit no total area of bare concrete exposed on the face of either single concrete block exceeding 160 mm^2 (0.25 square inch).

3.6.2 Fuel-immersed bond. When the sealant is tested as specified in 4.4.6.5, the following requirements shall be met:

a. None of the three specimens shall exhibit any crack, separation, or other opening in the sealant, or between the sealant and the concrete blocks exceeding 6.35 mm (0.25 inch) in depth.

b. None of the three specimens shall exhibit a total area of bare concrete exposed on the face of any single concrete block exceeding 160 mm^2 (0.25 square inch).

3.6.3 Water-immersed bond. When the sealant is tested as specified in 4.4.6.6, requirements a. and b. of 3.6.1 shall be met.

3.7 Storage stability. When specified (see 6.2), the Government will retain samples for verification of these requirements: The sealant, when stored for 2 years from the date of delivery, at temperatures from -18° to 46°C (0° to 115°F), and tested in accordance with this specification, shall meet all of the requirements herein.

3.8 Toxicity. The material 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 acquiring activity to the appropriate medical service who will act as advisor to the acquiring activity. The manufacturer's instructions shall provide personnel protection to meet OSHA requirements, including 29 CFR 1910.1000, 1910.1001, 1910.1002, and 1910.1017, as applicable (see 4.5).

3.9 Material Safety Data Sheets (MSDS). MSDS shall be prepared in accordance with FED-STD-313 and submitted as directed in the contract or order at the time of acquisition award (see 6.2, 6.3, and 6.5).

4.4.1 Standard conditions. Laboratory atmospheric conditions, hereinafter referred to as standard conditions, shall be 23 ± 2°C (73 ± 4°F) temperature and 50 ± 5 percent relative humidity. Specimens shall be stored and tested at standard conditions unless otherwise specified.

4.4.2 Specimen preparation.

4.4.2.1 Equipment. The unit for melting laboratory samples shall be of the double-boiler type, with two melting pots (see 6.6.1). The unit shall employ a high flash-point oil as the heat transfer medium, and be designed and built so that the oil will completely surround the sides of the inner or material chambers. Heating shall be thermostatically controlled to maintain the temperature of the oil within 3°C (5°F) of that required to maintain the sample at the safe heating temperature set by the manufacturer of the sealant under test. The melting unit shall be equipped with a bottom discharge controlled by a knife or blade valve to permit drawing off the melted material. Mechanical stirring shall be provided both in the material chambers and in the oil bath. Continuous temperature readings shall be provided for both the samples being melted and the heat-transfer oil.

4.4.2.2 Melting. The portion of the sample selected for testing shall provide approximately 1.6 cubic decimeter (1.7 quarts) of melted material. Divide the test sample into segments of 25 ± 2 grams each. Add segments to each of two melting pots at the rate of one segment per minute. Stop the stirrers in the melting pots for an interval not to exceed 10 seconds when adding a segment. Keep pots covered, with continuous stirring of the material during the heating period, except when adding segments. The temperature of the oil bath during the time the segments are being added to the melting pots shall not exceed the safe heating temperature as specified by the manufacturer. As the segments are added, raise the oil-bath temperature to bring the sample to the safe heating temperature within 1 hour from the time the first segment has been added. In no case however, shall the oil bath temperature be more than 11°C (20°F) higher than the safe heating temperature. Continue heating of the sample at the safe heating temperature until 3 hours have elapsed since the first segment was added to the melters.

4.4.2.3 Pouring. Pour all test specimens as specified in 4.4.3 through 4.4.6 within a period of 10 minutes. Discard the first 50 to 60 grams of material discharged from each melting pot.

4.4.3 Penetration.

4.4.3.1 Nonimmersed penetration. Penetration testing shall be in accordance with ASTM D5, except as specified herein. Use a penetrometer as specified in ASTM D217, with a cone conforming to the Optional Cone therein in place of the needle. Prepare specimens in 177 cubic centimeter (cc) (6 ounce) containers, and cast flush with the top edge. Make determinations at locations on 120° radii, and halfway between the center and outside of the specimen. Determine conformance to the requirement of 3.3.1.

4.4.3.2 Fuel-immersed penetration. Immerse specimens, prepared as specified in 4.4.3.1, for 24 hours in 500 cc (16.9 ounces) each of clean test fuel, maintained at 49 ± 1°C (120 ± 2°F). The container for the test fuel and specimens shall have a 3.2-mm (0.125-inch) round hole cut in the lid to

eliminate pressure build-up. More than one specimen of the same manufacturer's material may be immersed in the same container, provided the volume of test fuel per specimen is maintained at 500 cc. The container shall be deep enough to provide a minimum of 12.7 mm (0.5 inch) of test fuel covering the surface of the specimens. Use a covered constant-temperature water bath to maintain the container, test fuel, and specimens at the required temperature. The test fuel shall be a 70 percent isooctane/30 percent toluene composition, by volume, conforming to the requirements of ASTM Reference Fuel B of ASTM D471 (see 6.6.2). Immediately after the 24-hour immersion period, dry the specimens for 1 hour under a 300-mm (12-inch) diameter electric fan, placed to provide an air speed of 0.76 to 2.54 meters per second (m/s) (150 to 500 feet per minute (fpm)) over the surface of the specimens. Test as specified in 4.4.3.1. Determine conformance to the requirements of 3.3.2.

4.4.4 Change in mass by fuel immersion. Prepare a specimen as specified in 4.4.3.1, in a tared container, and determine the mass to the nearest 0.01 gram. Immerse and dry the specimen as specified in 4.4.3.2, and redetermine the mass. Report the change in mass of the specimen in percent gain or loss. Determine conformance to the requirements of 3.4.

4.4.5 Flow.

4.4.5.1 Specimen preparation. Prepare duplicate specimens in molds 40 by 60 by 3.2 mm (1.56 by 2.34 by 0.125 inches) deep, placed on a bright tin panel. The release molds shall have nonadherent, nonreactive surfaces. A metal mold, coated with a release agent, such as a thin, cured film of heat-stable silicone (see 6.6.3), or equivalent, shall be used. Fill the mold with excess material. Allow the specimen to cool at laboratory temperature for at least one-half hour, then trim flush with the face of the mold with a heated metal knife or spatula.

4.4.5.2 Test. Remove the molds and mark reference lines across the panels coincident with the transverse edges of the specimens. Mount the specimens, with the long axis at an angle of 75 $\pm$ 1° with the horizontal, and the transverse axis horizontal, in a forced-draft oven maintained at 60 $\pm$ 1°C (140 $\pm$ 2°F). After 5 hours, remove the specimens and mark another reference line on each specimen, coincident with the lowest point of sag or flow, and parallel to the line directly above it. Measure the indicated change in length of the specimen, and report as flow. Determine conformance to the requirements of 3.5.

4.4.6 Bond to concrete.

4.4.6.1 Extension machine. The extension machine used in the bond test shall be so designed that the specimen can be maintained at the test temperature while being extended at a uniform rate as specified. It shall consist essentially of one or more screws rotated by an electric motor through suitable gear reductions. Self-alining plates or grips, one of each pair fixed and the other carried by the rotating screw or screws, shall be provided for holding the test specimen in position during the test.

4.4.6.2 Concrete block preparation. Prepared blocks are available (see 6.6.4).

4.4.6.2.1 Materials. Use aggregate conforming to ASTM C33 except as specified herein. Use aggregate grading specified in table I, with coarse aggregate consisting of crushed limestone (+ 95 percent $CaCO_3$) having a water absorption of not more than 1.5 percent, with fine aggregate of crushed limestone manufactured from the same parent rock as the coarse aggregate, and with fine aggregate approximately 40 percent of the total aggregate solid volume. Use portland cement conforming to ASTM C150, Type II. Make a concrete mix with a water-cement ratio of 5.5 gallons of water per bag of cement, a cement factor of 6.0 ± 0.5 bags of cement per cubic yard of concrete, a slump of 64 ± 13 mm (2.5 ± 0.5 inches), and an air content of 5 ± 0.5 percent by addition of an air-entraining agent such as a neutralized thermoplastic resin (see 6.6.5), or equivalent. Use a 250 by 450 by 75 mm (10 by 17.5 by 3 inch) metal mold, secured to a metal base plate to form a watertight assembly, and oiled with mineral oil before use.

TABLE I. Aggregate grading.

Type	Sieve size	Percent passing
Coarse aggregate	(19.0 mm) 3/4 inch	97 - 100
	(12.5 mm) 1/2 inch	63 - 69
	(9.5 mm) 3/8 inch	30 - 36
	(4.75 mm) No. 4	0 - 3
Fine aggregate	(4.75 mm) No. 4	100
	(2.36 mm) No. 8	82 - 88
	(1.18 mm) No. 16	60 - 70
	(600 µm) No. 30	40 - 50
	(300 µm) No. 50	16 - 26
	(150 µm) No. 100	5 - 9

4.4.6.2.2 Block preparation. Prepare and cure the blocks in accordance with ASTM C192 except as specified herein. Fill the mold to overflowing, vibrate externally 30 seconds, screed (level) to a smooth surface with a wooden float, and level off with a metal straightedge drawn across the top with a sawing motion. Cure for not less than 14 days, then cut the block into 25 by 50 by 75 mm (1 by 2 by 3 inch) test blocks, using a 40 to 60 grit diamond saw blade at a peripheral speed of 50.8 ± 1.3 m/s (10,000 ± 250 fpm), cutting the face to be bonded in a vertical plane, and allowing vertical selvages of 1 inch or more for discard. While the blocks are still wet from the sawing operation, scrub the surfaces lightly with a stiff-bristle brush, under running water. Store the blocks under lime-saturated water maintained at standard-condition temperature. Stocks of prepared blocks may be stored under standard conditions indefinitely, but blocks shall be immersed in lime-saturated water for not less than 7 days prior to use.

4.4.6.3 Specimen preparation. Prepare nine bond test specimens (18 blocks) as follows: Remove blocks from the storage water individually, scrub the 50- by 75-mm (2- by 3-inch) faces lightly with a stiff bristle brush, under running water, and resubmerge in fresh tap water until all blocks have been scrubbed. Remove all blocks from the water and lightly blot with an oil-free, soft, absorbent cloth or paper to remove all free surface water. Place the blocks, three each, with 50- by 75-mm faces down, centered and uniformly spaced 25 mm (1 inch) apart on sheets of blotting paper placed on a plane, solid, nonabsorbent surface. The sheets shall be approximately 100- by

240-mm (4- by 9.5-inch) size, cut from material having a maximum absorption time of 28 seconds as measured by TAPPI T431 (see 6.6.6). Three blocks shall be placed on each sheet. At the end of 1 hour, assemble pairs of concrete blocks to provide test specimens. Complete setup and pour within 1 hour. Spacers and base plate shall have nonadherent, nonreactive surfaces (see 4.4.5.1). Place spacer strips not less than 6.35-mm (0.25-inch) thick on a base plate to form an open space 12.7-mm (0.5-inch) wide and 50-mm long. Place pairs of the concrete blocks on the spacers so that the 25- by 75-mm faces are on the spacers, and the 50- by 75-mm faces which were against the blotting paper form the space to be filled with sealant. Space the blocks 12.7 $\pm$ 0.1 mm (0.500 $\pm$ 0.005 inch) apart with 12.7 $\pm$ 0.1 mm square by 75-mm long spacers. Corners may be slightly rounded, but discard spacers having a diagonal dimension of less than 16.51 mm (0.650 inch). Place these spacers at a distance from the ends of the blocks so that an opening 12.7 $\pm$ 0.1 by 50 by 50 mm (0.500 $\pm$ 0.005 by 2.0 by 2.0 inches) is formed. Place spacer strips not less than 12.7-mm thick on top of the blocks to provide for an overfill. Clamps or other suitable means may be used to hold the blocks and overfill spacers in position. Pour sealant prepared in accordance with 4.4.2 into the space between the blocks in sufficient quantity to bring it at least even with the top of the overfill spacers, and in a manner essentially to exclude air pockets. After specimens have cooled to room temperature, remove the excess sealant protruding beyond the top and bottom of the blocks by trimming with a hot knife or spatula. If the material shrinks on cooling below the top of the blocks, or if other casting defects are apparent, discard the specimens and prepare additional ones. Cool the specimens for at least 2 hours, but no more than 24 hours, at standard conditions before subjecting them to test conditions.

4.4.6.4 Nonimmersed bond. Condition three bond test specimens, with spacers maintaining the 12.7-mm (0.500-inch) dimensions, at the test temperature, -18 $\pm$ 1°C (0 $\pm$ 2°F), with forced air circulation, for not less than 4 hours. Then extend the specimens 6.35 mm (0.25 inch) at a uniform rate of 3.18 mm (0.125 inch) per hour, while maintaining the specimens at the test temperature. Remove the specimens from the extension machine, reinsert the 12.7-mm spacers, and examine the specimens as described in 4.4.6.7. Then permit the specimens to return to the original dimensions at standard conditions, resting each specimen on one concrete block so that the weight of the top block recompresses the joint sealant. Three cycles of conditioning, extension, and recovery shall be completed within 5 days after the start of the first cycle, and shall constitute one complete test for nonimmersed bond (see 4.4.6.7). When initiation of the second or third cycle is delayed, store the specimens at the test temperature.

4.4.6.5 Fuel-immersed bond. Insert thinner, metal spacers between the concrete blocks of another three bond specimens, so that an opening of not less than 6.35 by 12.7 by 50 mm (0.25 by 0.5 by 2 inches) will be produced and maintained between the spacers and the sealant. Using the type containers and procedures described in 4.4.3.2 and the test fuel specified therein, immerse each specimen for 24 $\pm$ 0.25 hours in 500 cc (16.9 ounces) of the test fuel maintained at 49 $\pm$ 1°C (120 $\pm$ 2°F) by means of a covered constant-temperature water bath. Place the specimens with the concrete blocks in a horizontal position. Three specimens may be placed in one container, provided the fuel-to-specimen ratio is maintained. Clean fuel shall be used for each

test. At the end of the 24-hour immersion period, condition the entire assembly of test specimens, fuel, and containers in an atmosphere at -18 ± 1°C (0 ± 2°F) for 4 hours. Remove the test specimens from the fuel, remove the spacers, and conduct the extension test as specified in 4.4.6.4. Three cycles of immersion, conditioning, extension, and recovery shall constitute one complete test for fuel-immersed bond (see 4.4.6.7).

4.4.6.6 Water-immersed bond. Insert thinner spacers between the concrete blocks of the other three bond specimens, so that an opening of not less than 6.35 by 12.7 by 50 mm (0.25 by 0.5 by 2 inches) will be produced and maintained between the spacers and the sealant. Using covered containers deep enough to provide a minimum of 12.7 mm of water cover, immerse the specimens for 96 ± 1 hours in 500 cc (16.9 ounces) of distilled or deionized water per specimen, and maintain at standard conditions. Place the specimens with the concrete blocks in a horizontal position. Three specimens may be placed in one container provided the water-to-specimen ratio is maintained. At the end of the 96-hour immersion period, remove the specimens from the water, remove the spacers, and remove the excess surface water from the specimens with a soft, dry absorbent material. Subject the specimens to conditioning and extension test as specified in 4.4.6.4. Three cycles of immersion, conditioning, extension, and recovery shall constitute one complete test for water-immersed bond (see 4.4.6.7).

4.4.6.7 Bond-test results. Remove the bond-test specimens from the extension machine within 30 minutes after the completion of the extension of each of the first two test cycles, and examine the specimens for obvious separations within the sealant and between the sealant and the blocks, without distorting or manually causing extension of the specimens. Immediately upon completion of the final extension, insert both sets of spacers, or otherwise maintain 50 percent extension during examination and dimensional measurements, examining the specimens thoroughly, while still frozen, for separations between the sealant and the blocks, and within the sealant, including surface cracks. This shall be accomplished without distorting the specimens, but after recovery as specified in 4.4.6.4, the specimens may be extended uniformly up to 6.35 mm (0.25 inch) to permit further detailed examination. Determine conformance to the requirements of 3.6.1, 3.6.2, and 3.6.3.

4.5 Toxicological data and formulations. The manufacturer shall provide a listing of the components in the sealant that could give off hazardous vapors, when heated (see 5.3.3). Where precautions need to be taken relative to the inhaling of, or skin and eye contact with the vapors, these precautions shall be included in the manufacturer's instructions (see 3.8 and 5.3.3.1).

4.6 Inspection of preparation for delivery.

4.6.1 Sampling. Sampling for inspection of filled containers shall be in accordance with MIL-STD-105, inspection level II. The unit of product shall be one unit prepared for shipment.

4.6.2 Examination. Each filled container selected shall be inspected for conformance to the requirements of section 5. Inspection shall be based on an Acceptable Quality Level of 2.5 percent defective.

5. PREPARATION FOR DELIVERY

5.1 Packing. Packing shall be level A, B, or commercial as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Type I. Type I material shall be packed in a close-fitting, tapered 24-gage metal pail with gasket and lug cover. Pails shall be provided with a polyethylene liner. Pails shall have a wire handle securely attached to ears or clips which shall be attached to the body of the pails. The exterior surfaces of the pails shall be coated as specified in PPP-P-704. The unit pack quantity shall be one unit of issue quantity specified in the contract or purchase order.

5.1.1.2 Type II. Type II material shall be packed the same as for type I material except that a polyethylene liner shall not be used.

5.1.2 Level B. Type I and type II material shall be packed the same as for their designated type provided for level A except that the exterior surfaces of the pail shall be coated with a commercial coating.

5.1.3 Commercial. The material shall be packed to insure carrier acceptance and safe delivery at destination in containers complying with the rules and regulations applicable to the mode of transportation.

5.2 Palletization.

5.2.1 Level A. Unless otherwise specified (see 6.2), material shall be palletized in accordance with MIL-STD-147.

5.2.2 Level B and Commercial. When specified (see 6.2), material shall be palletized in accordance with MIL-STD-147.

5.3 Marking.

5.3.1 Civil agencies. Shipments to civil agencies shall be marked in accordance with FED-STD-123.

5.3.2 Military agencies. Shipments to military agencies shall be marked in accordance with MIL-STD-129.

5.3.3 Special marking. In addition to the marking of 5.3.1 or 5.3.2, and any special marking of the contract or order, the following information shall be shown on each pail:

a. Name of sealant
b. Specification number, type, and class
c. Manufacturer's name and material designation
d. Manufacturer's lot and batch number
e. Date of manufacture (month and year)
f. List of hazardous components (see 4.5)
g. Quantity of sealant in pail (net weight)
h. Application or pouring temperature
i. Safe heating temperature
j. Instructions for use

5.3.3.1 Instructions for use. The instructions for use (see 6.7) shall include, but not be limited to: ambient temperature and humidity ranges, and moisture conditions of joints, for successful installation; essential requirements for preparation of joints, heating of the sealant, handling, placing, and disposal of the hot materials; and any restrictions to be adhered to in order to reduce hazards to personnel or to the environment. If it is not feasible to include all the instructions on the container without sacrificing legibility, the most important information shall be shown on the container and the full instructions referenced and furnished separately.

6. NOTES

6.1 Intended use. This sealant is intended for sealing joints and cracks in pavements subject to spillage of jet fuels and lubricating oils. It is not intended to be resistant to the heat and blast of jet aircraft engines, except when aircraft are moving at moderate speeds.

6.2 Ordering data. Purchasers shall select the preferred options permitted herein, and include the following information in procurement documents:

a. Title, number, and date of this specification.
b. Type and class required (see 1.2).
c. When stability samples are required, quantity to be retained, and by what activity (see 3.7 and 6.4).
d. Addressees for submission of MSDS (see 3.9 and 6.5).
e. Sampling, if other than as specified (see 4.3).
f. Designation of Government-approved test facility (see 4.4).
g. Level of packing required (see 5.1).
h. If palletization is not required for level A (see 5.2.1).
i. When palletization is required for level B or commercial (see 5.2.2).

6.3 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL) and invokes the provisions of paragraph 52.227-7031 of the Federal Acquisition Regulations (FAR), the data requirements will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL (DD Form 1423) incorporated into the contract. When the provisions of FAR 52.227-7031 are not invoked, the data shall be delivered in accordance with the contract requirements (see 3.9).

6.4 Stability samples. The date of delivery will be marked on samples submitted for stability testing (see 3.7).

6.5 MSDS submission and forwarding. MSDS copies will be forwarded to the designated Industrial Hygienist and the focal point of the activity that purchased the item, and the focal point of the using activity if different. After review and acceptance of MSDS by designated recipients, approved copies will be forwarded to arrive at destinations prior to material delivery (see 3.9).

6.6 Availability of testing materials and apparatus. Known suppliers of specified testing materials and apparatus are as follows:

6.6.1 Melting unit. A unit as specified in 4.4.2.1: Laboratory Melter Model BLM-100, Berry Corporation, P.O. Box 337, Nicholasville, KY 40356.

6.6.2 Reference fuel. Reference fuel as specified in 4.4.3.2: ASTM Reference Fuel B of ASTM D471, Phillips Petroleum Company, Customer Service Center, Drawer "O", Borger, TX 79007.

6.6.3 Release agent. An agent as specified in 4.4.5.1: Dow Corning 20 release coating, Dow Corning Corporation, Midland, MI 48640.

6.6.4 Concrete blocks. Blocks as specified in 4.4.6.2: U.S. Army Corps of Engineers, Missouri River Division Laboratory, 420 South 18th Street, Omaha, NE 68102.

6.6.5 Thermoplastic resin. A resin as specified in 4.4.6.2.1: Vinsol NVX resin, Hercules Plaza, Wilmington, DE 19894.

6.6.6 Blotting paper. Paper as specified in 4.4.6.3: White Reliance Blotting Paper, Product Code 13-01-12, James River Paper Co., Inc., 145 James Way, Southampton, PA 18966.

6.7 Precautions. Sealant will be damaged by heating at too high a temperature, reheating, or by heating for too long a time. The temperature of the sealant in the heating equipment should never exceed the safe heating temperature set by the manufacturer. Any given quantity of material should never be heated at the application or pouring temperature for more than 3 hours and should never be reheated. Sealant left in the equipment at the end of the day's work should be removed and discarded. The sealant should be heated in a kettle or tank constructed as a double boiler, with the space between the inner and outer shells filled with heat transfer oil. Positive thermostatic control, mechanical agitation, and recirculating pumps should be provided to maintain uniform temperature of the oil and sealant. Direct heating is not permitted. Thermometers should be provided for continuous temperature readings of both oil and sealant. The kettle or tank should be covered at all times possible during use in order to minimize release of volatile and particulate material (see 5.3.3.1).

MILITARY CUSTODIANS:

Army - CE
Navy - YD
Air Force - 99

Review activities:

Army - MD, MR
Navy - MS

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

Preparing activity:

Navy - YD

DoD project 8030-0464

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.