Downloaded from http://www.everyspec.com

MIL-P-20628B
21 May 1971
SUPERSEDING
MIL-P-20628A
17 January 1964

MILITARY SPECIFICATION

PUTTY, SEALING (FOR BOLTED STEEL STORAGE TANKS)

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

1. SCOPE

1.1 Scope. This specification covers sealing putty for use in caulking the joints of bolted steel tanks used for the storage of gasoline, oil, or asphalt.

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 this specification to the extent specified herein:

SPECIFICATIONS

Federal

QQ-S-698	- Steel, Sheet and Strip, Low-Carbon.
QQ-S-781	- Strapping, Steel, Flat and Seals.
TT-S-735	- Standard Test Fluids, Hydrocarbons.
PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-B-636	- Box, Fiberboard.
PPP-B-640	- Boxes, Fiberboard, Corrugated, Triple-Wall.
PPP-C-96	- Cans, Metal, 28 Gage and Lighter.
PPP-T-60	- Tape: Pressure-Sensitive Adhesive, Waterproof, for Packaging.

Military

MIL-T-3689	- Tubes, Collapsible.

Downloaded from http://www.everyspec.com

STANDARDS

Military

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	- Marking for Shipment and Storage.

(Copies of specifications and standards 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 documents form 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.

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Application for copies should be addressed to the Tariff Publishing Officer, Room 202, Union Station, 516 West Jackson Boulevard, Chicago, Illinois 60606.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc. ATTN: Tariff Order Section, 1616 P Street, NW, Washington, D. C. 20036.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM D381 - Existent Gum in Fuels by Jet Evaporation.

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

3. REQUIREMENTS

3.1 Description. The sealing putty shall be made from a polymerizing resin or compatible resins requiring a common curing agent, or from a resin requiring contact with air to activate polymerization to form an

Downloaded from http://www.everyspec.com

irreversible rubber-like sealing compound in petroleum media. The sealing putty shall adhere to steel and to rubber compounds when the surface is cleansed (detergent and water) of residual petroleum and dried. The sealing putty in a (oxygen-displaced airtight) container shall be stable at temperatures under 90° F. without evidence of auto-polymerization which has destroyed its handling and adhesion properties as specified herein.

3.1.1 Two component systems. When a two component system is provided by the supplier, the curing agent shall be limited to not greater than 4 fluid ounces per 1 quart unit and instructions for mixing shall be printed on each can of sealing putty and the curing agent shall be labeled for identity, (see 6.4).

3.2 Material. Material shall be as specified herein. Materials not specified shall be selected by the supplier and shall be subject to all provisions of this specification.

3.3 Stability and storage. The sealing putty shall be stable in oxygen-displaced sealed containers. The putty shall retain its manual mixing properties after constant exposure to 100° F. plus or minus 5° F. for 30 days. On inspection, the putty shall be soft and tacky to the touch. When a skin is present in a newly opened container, it shall be not greater than 1/8-inch thick.

3.4 Resistance to leakage. The sealing putty shall show no evidence of leakage when tested as specified in 4.4.2.1.

3.5 Fuel contamination. The concentration of existent gum in the test fluid shall not be greater than 10 mg of gum per 100 ml of test fluid, when tested as specified in 4.4.2.2.

3.6 Low temperature flexibility. The sealing putty shall not crack, check, or lose adhesion when tested as specified in 4.4.2.3.

3.7 Solubility and porosity. The putty shall not soften, blister, or separate from the panel, nor shall there be any evidence of corrosion of the metal under the putty, when tested as specified in 4.4.2.4.

3.8 Workmanship. The putty shall be mixed homogenously and shall show no streaks of the components or evidence of separation in the containers. The containers shall show no evidence of leakage or damage such as critical scratches or dents.

Downloaded from http://www.everyspec.com

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 in the contract or order, the supplier 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of inspection. Inspection shall be classified as follows:

(a) Quality conformance inspection (see 4.3).
(b) Inspection of preparation for delivery (see 4.5).

4.3 Quality conformance inspection.

4.3.1 Lot. For purposes of examination and test, a lot shall consist of all containers of putty, and curing agent where applicable, from one batch of formulation which are offered for delivery at one time under a contract or order.

4.3.2 Sampling for inspection. A random sampling of filled containers, and curing agent where applicable, shall be selected from each lot in accordance with MIL-STD-105, level I. Two samples not less than 1 quart in quantity shall be used for tests.

4.3.3 Examination. Samples selected in accordance with 4.3.2 shall be examined for defects specified in 4.4.1 AQL shall be 2.5 percent defective.

4.3.4 Tests. Samples selected in accordance with 4.3.2 shall be conditioned at 100° F. for 30 days and tested as specified in 4.4.2.1 through 4.4.2.4. Failure of any test shall be cause for rejection of the specific lot of sealing putty.

4.4 Inspection procedure.

4.4.1 Examination. The sealing putty, and curing agent where applicable, shall be examined as specified herein for the following defects:

101. Container or closure damaged or shows evidence of leakage.
102. Putty hard with loss of tackiness or skin greater than 1/8-inch thick.

Downloaded from http://www.everyspec.com

103. Weight of can below the weight-volume ratio specified by the supplier.
104. Labeling illegible, incorrect or missing.
105. Mixing instructions missing, if applicable.
106. When applicable, quantity of sealing putty curing agent ratio not as specified.

4.4.2 Conditioning of test samples. Samples shall be conditioned as specified in 4.3.4. Failure to meet the requirements of 3.3 shall be cause for rejection of the lot of sealing putty.

4.4.2.1 Resistance to leakage.

4.4.2.1.1 Apparatus. The test apparatus shall conform in general to figure 1, and, when assembled, shall be tight against gasoline and air under a pressure of 20 pounds per square inch.

4.4.2.1.2 Test fluid. The test fluid shall conform to type II of TT-S-735.

4.4.2.1.3 Preparation of test specimens. Six test specimens, each consisting of a putty testing tube filled with mixed putty, shall be prepared from the sample. The mixed putty shall be pressed firmly into the tubes. The test specimens shall be allowed to dry in air at room temperature for 72 hours plus or minus 4 hours. After air drying for 3 days, two specimens shall be tested as specified in 4.4.2.1.4. Two of the four remaining specimens shall be submerged in water and two in the test fluid for 168 hours, plus or minus 4 hours and then removed and tested as specified in 4.4.2.1.4.

4.4.2.1.4 Procedure. The test chamber shall be filled with the test fluid specified in 4.4.2.1.2. The specimen shall be placed in position in contact with the test fluid and air pressure in the chamber brought to 20 pounds per square inch, plus or minus 0.5 pounds per square inch. The needle valve shall be closed to maintain the pressure, and the pressure recorded. The gage shall be observed for 1 hour for pressure drop. Any drop in pressure shall be considered as evidence of leakage, and shall constitute failure of this test.

4.4.2.2 Fuel contamination.

4.4.2.2.1 Preparation of steel test panels. Six cold-rolled steel panels (6 inches by 1 inch by 1/32 inch) conforming to QQ-S-698, finish and quality optional, shall be coated with sample putty on one side to a thickness of 0.030 to 0.040 inch. Before coating, the panels shall be freed of scale, rust, and other imperfections, polished with 2/0 abrasive garnet paper, and then cleaned of oil, grease, and dirt with toluene. The panels shall

Downloaded from http://www.everyspec.com

be cured for 70 hours under laboratory atmospheric conditions (73.5° F. plus or minus 2° F., and 50 percent relative humidity).

4.4.2.2.2 Procedure. Two coated panels prepared as described in 4.4.2.2.1, shall be immersed for 48 hours plus or minus 2 hours in a single vessel containing 250 ml of the test fluid specified in 4.4.2.1.2. The temperature of the fluid shall be maintained at 75° F. plus or minus 2° F. The test fluid shall then be decanted, and the amount of existent gum (nonvolatile residue) shall be determined by ASTM D381 (jet evaporation), except that the total evaporation time shall be 45 minutes and the temperature shall be 320° F. to 329° F. Nonconformance to 3.5 shall constitute failure of this test.

4.4.2.3 Low temperature flexibility. Two coated panels, prepared as described in 4.4.2.2.1, shall be dried in an air circulating oven at 100° F. plus or minus 2° F. for 20 hours plus or minus 2 hours and then conditioned at minus 65° F. plus or minus 2° F. for 4 hours plus or minus 15 minutes. A 4-inch nominal size diameter mandrel shall be conditioned with the panels to minus 65° F. plus or minus 2° F. After conditioning at minus 65° F., the panels shall be bent around the mandrel with the coated side outward within 1 minute while still at 65° F. plus or minus 2° F. The coatings shall then be observed for any evidence of cracking, checking, or loss of adhesion. Nonconformance to 3.6 shall constitute failure of this test.

4.4.2.4 Solubility and porosity. Two coated panels, prepared as described in 4.4.2.2.1, shall be placed in a covered glass vessel containing a 2-inch layer of tap water, a 2-inch layer of the test fluid specified in 4.4.2.1.2 and 2 inches of the equilibrium air-vapor mixture. The panels shall be placed so that part of each panel is exposed to each of the three layers. The panels shall be exposed to these conditions for not less than 14 days plus or minus 4 hours at a temperature of 130° F. plus or minus 2° F. The coating shall then be observed for any evidence of softening, blistering, and separation from the panels. The putty shall then be stripped from the panels using cyclohexanone or trichlorethylene, and the panels shall be examined for any evidence of corrosion. Two determinations shall be made. Any corrosion greater than a general discoloration or nonconformance to 3.7 shall constitute failure of this test.

4.5 Inspection of preparation for delivery.

4.5.1 Quality conformance inspection of pack.

4.5.1.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

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

Downloaded from http://www.everyspec.com

4.5.1.3 Examination. Samples selected in accordance with 4.5.1.2 shall be examined for the following defects. AQL shall be 2.5 percent defective.

107.	Materials and containers not as specified. Each incorrect material or container shall be considered one defect.
108.	Intermediate packages not waterproof sealed as specified for level A.
109.	Strapping not zinc coated for level A packing.
110.	Weight limitation of the containers exceeded for packing.
111.	Marking incomplete, illegible, or incorrect.

5. PREPARATION FOR DELIVERY

5.1 Packaging.

5.1.1 Level A. The sealing putty shall be packaged in round 1-quart cans conforming to PPP-C-96, type V, class 2. The curing agent, when applicable, shall be packaged in quantities of 4 fluid ounces or less in tubes conforming to MIL-T-3689, class 4 or 5. One can of sealing putty, and one tube of curing agent, when applicable, shall be unitized by securing the curing agent tube in a vertical position to the side of a 1-quart can with a 10-inch minimum length of 2-inch minimum width tape conforming to PPP-T-60, type III or IV. The sealing putty, unitized with the curing agent when applicable, and packaged as specified, shall be intermediate packaged in a box conforming to PPP-B-636, V3c. The basic packaging unit shall be of a size to accommodate twelve 1-quart cans of sealing putty with a plastic tube of curing agent, secured to each can. When applicable the cans shall be rotated so as to place the tube in the void between two cans along the side of the container. The boxes shall be closed and waterproof sealed with tape as specified for slotted boxes in accordance with the appendix to the box specification.

5.1.2 Level C. The sealing putty, and curing agent when applicable, shall be packaged to afford protection against damage and deterioration from the supplier to the first receiving activity. The supplier may use his standard practice when it meets these requirements. The sealing putty shall be packaged in 1-quart cans, and the curing agent, when applicable, shall be packaged in quantities of 4 fluid ounces or less in collapsible tubes. One can of sealing putty and one tube of curing agent, when applicable, shall be unitized by securing the curing agent tube in a vertical position to the side of a 1-quart can with tape. The sealing putty unitized with the curing agent, when applicable, shall be placed, in quantities of 12, in a close-fitting fiberboard box having a minimum bursting strength of 200 psi.

Downloaded from http://www.everyspec.com

5.2 Packing. Packing shall be level A, B, or C as specified.

5.2.1 Level A. The sealing putty packaged and intermediate packaged as specified in 5.1 shall be packed in close-fitting boxes conforming to PPP-B-601, overseas type, style I in quantities not to exceed the weight limitation of the container. Strapping shall be zinc coated.

5.2.2 Level B. The intermediate container (see 5.1) used to package the sealing compound shall serve as the shipping container. The container shall be strapped with one lengthwise and one girthwise strap 3/8 by 0.015 inch conforming to the requirements of QQ-S-781, type I or IV, class A. When specified, the intermediate containers shall be consolidated in a box conforming to PPP-B-601, class domestic, or PPP-B-640, class 2. Strapping shall be as specified above except size shall be 3/4 by 0.025 inch.

5.2.3 Level C. The sealing putty, and the curing agent when applicable, packaged as specified, shall be packed in a manner which will insure arrival at destination in satisfactory condition and which will be acceptable to the carrier at lowest rates. Containers and packing shall comply with Uniform Freight Classification rules or National Motor Freight Classification rules. When specified, the intermediate container (see 5.1.1) used to package the sealing putty, and the curing agent when applicable, shall serve as the shipping container. At the option of the supplier, the intermediate package may be consolidated in containers to assure acceptance and safe delivery to destination at lowest ratings in compliance with Uniform Freight Classification rules or National Motor Freight Classification rules.

5.3 Marking. In addition to any special marking required by the contract or purchase order, packages and shipping containers shall be marked in accordance with MIL-STD-129.

5.3.1 Warning statement. The following warning statement shall be marked on each container: "CAUTION: Do not apply this putty to tanks intended for use in the storage of drinking water. WARNING: Do not store at temperatures above 90° F."

6. NOTES

6.1 Intended use. The sealing putty covered by this specification is intended for use in caulking the joints of bolted steel storage tanks conforming to MIL-T-10086. The sealing putty is recommended for initial erection in controlling minor leaks and metal supported punctures.

Downloaded from http://www.everyspec.com

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Level of packaging and packing required (see 5.2).
(c) When intermediate packaging will be consolidated for level B packing (see 5.2.2).
(d) Any special marking required (see 5.3).

6.3 Packaging. The packaging (see 5.1) is the minimum packaging acceptable for this end item and shall be mandatory for all packing levels A, B, or C. For purposes of the packaging level marking, level A shall be used.

6.4 Mixing. The sealing putty is a material of such viscosity that it cannot be readily mixed by manual stirring. It is recommended that when use of a curing agent is required, the putty in the amount required be removed from can onto an impervious surface and the mixing be done with a 2 inch or larger putty knife by cutting in or blending the material, until all streaks of curing agent disappear (see 3.1.1).

Custodians:

Army - ME
Navy - YD
Air Force - 84

Review activity:

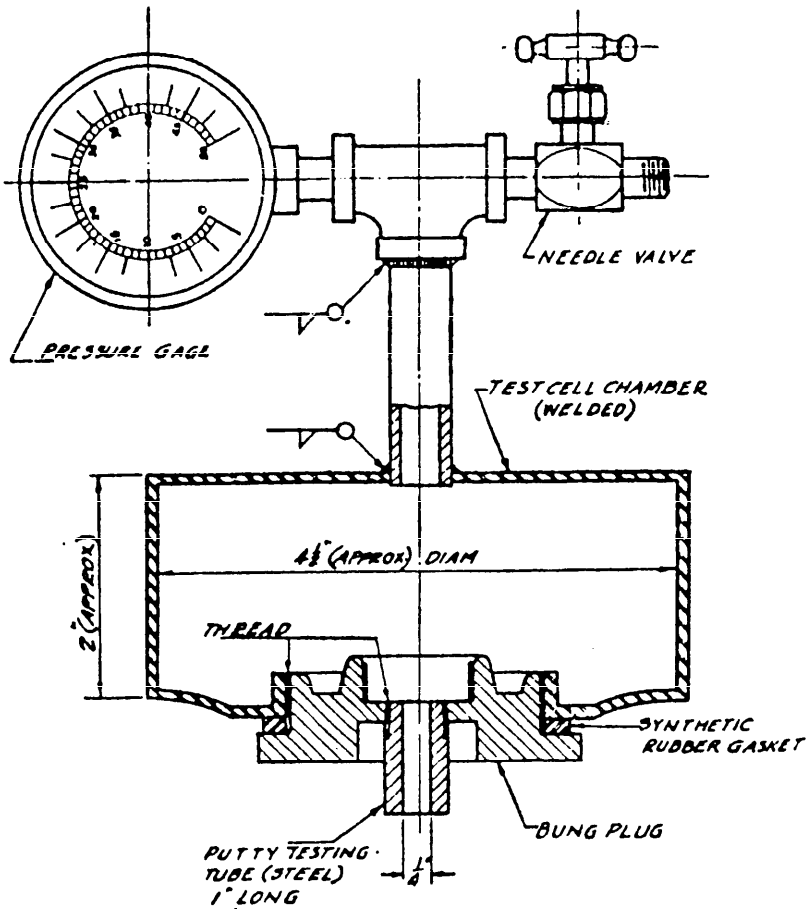
Army - MR

Preparing activity:

Army - ME

Project No. 8030-0381

Downloaded from http://www.everyspec.com



PUTTY TESTING UNIT

FIGURE 1.

X-2055

Downloaded from http://www.everyspec.com

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION MIL-P-20628B Putty, Sealing (for Bolted Steel Storage Tanks)

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO *(If "yes", in what way?)*

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity - Optional)*

DATE

DD FORM 1 JAN 66 1426

REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED

Downloaded from http://www.everyspec.com

FOLD

DEPARTMENT OF THE ARMY
U. A. ARMY MOBILITY EQUIPMENT COMMAND
RESEARCH, DEVELOPMENT AND ENGINEERING DIRECTORATE
ATTN: AMSME-RZG
FORT BELVOIR, VIRGINIA 22060

POSTAGE AND FEES PAID

OFFICIAL BUSINESS

DEPARTMENT OF THE ARMY
U. S. ARMY MOBILITY EQUIPMENT COMMAND
RESEARCH, DEVELOPMENT AND ENGINEERING DIRECTORATE
ATTN: AMSME-RZG
FORT BELVOIR, VIRGINIA 22060

FOLD