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MIL-PRF-19565C
23 December 1980
 SUPERSEDING
 MIL-C-19565B
 23 December 1965
 (See 6.4 and 6.5)

PERFORMANCE SPECIFICATION

COATING COMPOUNDS, THERMAL INSULATION, FIRE- AND WATER-RESISTANT, VAPOR-BARRIER

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

1. SCOPE

- * 1.1 Scope. This specification covers an interior vapor-barrier coating for insulated refrigerant and chilled water lines.
- * 1.2 Classification. Coating compounds for thermal insulation shall be of the following type:

Type II - Fire and water resistant vapor barrier coating for indoor use only.

2. APPLICABLE DOCUMENTS

- * 2.1 Issues of documents. 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

TT-E-485 - Enamel, Semi-Gloss, Rust-Inhibiting.
 PPP-C-96 - Cans, Metal, 28 Gage and Lighter.
 PPP-P-704 - Pails, Shipping, Steel, (1 through 12 gallon).

MILITARY

MIL-I-2819 - Insulation Block, Thermal.
 MIL-E-17970 - Enamel, Nonflaming (Dry) Chlorinated Alkyd Resin, Soft White, Semigloss, Formula No. 124/58.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 3112, Department of the Navy, Washington, DC 20362 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter

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STANDARDS

FEDERAL

- FED-STD-141 - Paint, Varnish, Lacquer, and Related Materials; Methods for Testing of.
- FED-STD-313 - Material Safety Data Sheets Preparation and the Submission of.
- FED-STD-595 - Colors.

MILITARY

- 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 for 40" x 48" Pallets.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the contracting 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 Ratings, Rules and Regulations.

(Application for copies should be addressed to the Uniform Classification Committee Agent, Tariff Publication Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to the National Motor Freight Traffic Association, Inc., ATA TRAFFIC Dept., 1616 "P" Street, N.W., Washington, DC 20036.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- B117-73 (1979) - Salt Spray (Fog) Testing.
- D92-78 - Flash and Fire Points by Cleveland Open Cup, Test for.
- E96-66 (1972) - Water Vapor Transmission of Materials in Sheet Form, Test for.

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

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

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3. REQUIREMENTS

3.1 Qualification. The coating compound furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.3 and 6.3).

3.2 Material composition. The compound shall have a composition that complies with the requirements of this specification and is asbestos-free. A certificate of compliance shall be required that the compound is asbestos-free (see 6.2.2). The compound shall be suitable for the purpose intended, without heating or the addition of any other ingredients. It shall not contain any ingredient which may affect the serviceability or have a harmful effect on the thermal insulation or metal surfaces on which it is intended to be used. It shall be free of grit, lumps, and skins; and from any toxic ingredients which may adversely affect the health of workmen using it. The compound shall be suitable for application with a stiff brush or trowel.

3.3 Stability.

3.3.1 Storage stability. The compound shall not liver, settle or otherwise deteriorate when stored for a period of 1 year in an airtight container (see 4.5.1.1).

3.3.2 Freeze thaw stability. The compound shall not be adversely affected by the single test described in 4.5.1.2.

3.4 Water vapor permeance. The water vapor permeance of the compound shall not exceed 0.05 perm (see 4.5.2).

3.5 Flash point. The flash point of the compound shall not be less than 80°F (see 4.5.3).

3.6 Flexibility. The compounds shall not chip, scale, crack or otherwise leave the surface of a metal strip when tested as specified in 4.5.4.

3.7 Water resistance. The compound shall not show evidence of leaching, disintegration, loss of adhesion, or other indications of solubility in water when tested in accordance with 4.5.5.

3.8 Protection against corrosion. The compound shall not have more than a 1/4 inch creep of rust or corrosion under the coating, from and on either side of the line scribed through the coating when tested in accordance with 4.5.6.

3.9 Paint compatibility. The compound shall not cause discoloration or bleeding through a coat of paint conforming to MIL-E-17970. Compounds shall have good adhesion and compatibility with the paint in that only traces of paint are permissible on the tape when tested as specified (see 4.5.7). Neither the paint nor compound shall soften or blister on the specimen for at least a period of 24 hours.

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3.10 Fire resistance. The fire and water resistant vapor barrier coating for indoor use after drying shall be fire resistant and shall not continue to burn more than 2 seconds when tested as specified in 4.5.8.1.

3.11 Material Safety Data Sheet. The contracting activity shall be provided a material safety data sheet (MSDS) at the time of contract award. The MSDS is form OSHA-20 and found as part of FED-STD-313. The MSDS shall be included with each shipment of the material covered by this specification.

4. QUALITY ASSURANCE PROVISIONS

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

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- (a) Qualification inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).

4.3 Qualification inspection. Qualification inspection shall be conducted at a laboratory satisfactory to the Naval Sea Systems Command. Qualification tests shall consist of the tests specified in 4.5 (see 6.3).

4.4 Quality conformance inspection. The quality conformance inspection shall consist of the examination of filled containers in accordance with 4.4.4, and the tests of the compound samples in accordance with 4.5.3, and 4.5.4. If any sample fails any test, the represented lot shall be rejected.

4.4.1 Lot. For purposes of inspection, a lot shall consist of all compound from one production batch offered for delivery at one time.

4.4.2 Sampling for examination of filled containers. A random sample of filled containers shall be selected from each lot in accordance with MIL-STD-105 at inspection level I and acceptable quality level equal to 2.5 percent defective for the examination specified in 4.4.4.

4.4.3 Sampling for tests. From each lot, two containers shall be randomly selected. From each of the containers, two quart samples shall be taken for the tests specified in 4.4.

4.4.4 Examination of filled containers. Each sample filled container selected in accordance with 4.4.2 shall be examined to verify compliance with this specification. Any container in the sample having one or more defects or under required fill shall be cause for rejection, and if the number of defective containers in any sample exceeds the acceptance number for the appropriate sampling plan of MIL-STD-105, this shall cause rejection of the lot represented by the sample.

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4.5 Test procedures.**4.5.1 Storage stability.**

4.5.1.1 Storage. The compound shall be stored for a period of 1 year in an airtight container. At the end of this period, the compound shall be examined to determine conformance with 3.3.1.

4.5.1.2 Freeze thaw stability. The compound shall be subjected to a temperature of 16°F for 16 hours and returned to room temperature before testing for stability.

4.5.2 Water vapor permeability.

4.5.2.1 Apparatus. The apparatus shall be as specified in ASTM E 96.

4.5.2.2 Procedure. The procedure shall be procedure B of ASTM E 96.

4.5.2.3 Test specimens. The supporting membrane of the test specimens shall be of any porous, semi-rigid material such as the glass-cloth facing of fibrous glass hull insulation board. A 1/16 inch wet coat of the compound shall be applied to the supporting membrane by means of a doctor blade. The membrane shall be of size to yield 4 specimens. The coated specimens shall be air-dried for 72 hours prior to assembly.

4.5.3 Flash point. The flash point shall be determined in accordance with ASTM D 92.

4.5.4 Flexibility.

4.5.4.1 Apparatus. The apparatus shall consist of the following:

- (a) A tin plate panel 8 by 18 inches, clean and dry in accordance with method 2012 of FED-STD-141.
- (b) A film applicator with a clearance of 1/16 inch and a gap of sufficient size to make a film 3 to 6 inches wide.
- (c) A steel mandrel 1/4 inch in diameter and 6 inches long supported at each end.

4.5.4.2 Procedure. The 8 by 18-inch tin panel shall be placed on a flat surface. Using the film applicator, a film of the compound 18 inches long and 3 to 6 inches wide shall be applied on the panel. The coated panel shall be air dried for 72 hours at 73°F ± 1°F and 50 percent ± 2 percent R.H. Four 1-1/2- by 4-inch strips shall be cut from the coated portion of the panel. Two of the strips shall be placed in an electric air circulating oven and baked at 158°F ± 2°F for 48 hours. The other two strips shall be placed in fresh water at a temperature of 75°F for 48 hours. The strips shall be removed from the oven and water and allowed to come to room temperature. Then the strips shall be bent rapidly over the surface of the mandrel. The strips shall be examined for cracks at the bend. Slight surface cracks and edge cracking shall be disregarded, but deep cracks which expose bare metal shall be considered as failure of the compound to pass the test.

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4.5.5 Water resistance. The test strips prepared in accordance with 4.5.4.2, and immersed in water for the specified time, shall be observed for evidence of leaching disintegration, loss of adhesion or other indications of solubility in water.

4.5.6 Corrosion protection.

4.5.6.1 Apparatus. The apparatus used shall be as specified in ASTM B 117.

4.5.6.2 Procedure. A 0.125 inch wet coating of the compound shall be applied to unprimed steel panels and air dried for 30 days. A line shall be scribed through the coating with a sharp instrument so as to expose the underlaying metal surface before testing. The coated panels shall be subjected to salt spray for 30 days. Then the panels shall be examined for signs of rusting or corrosion.

* 4.5.7 Paint compatibility. A block of thermal insulation conforming to class 2 of MIL-I-2819, 6 by 4 by 2 inches thick shall be covered with a continuous piece of fiber glass cloth cut so there are a minimum number of seams. The cloth shall be secured tightly to the surface of the block. A coat of type II compound shall be applied and allowed to dry for 72 hours. A coat of enamel conforming to MIL-E-17970 shall then be applied to the specimen. Adhesion shall be determined in accordance with method 6301 of FED-STD-141.

4.5.8 Fire resistance.

4.5.8.1 Procedure. A strip of fiberglass tape 6 inches long, 1-1/2 to 2 inches wide and 0.005 to 0.007 inch thick shall be given a thin coat (approximately 30 mils, wet) of vapor-barrier coating and then dried in an electrically heated oven for 2 hours at 220°F. The specimen shall be removed and suspended vertically from a clamp covering the upper 1/2 inch of the specimen. A Bunsen burner with a 1-inch blue flame shall be placed at the bottom of the free end of the specimen so that 1/2 inch of the specimen is in the burner flame. The burner shall be removed at the end of 5 seconds, and the duration of any residual burning recorded.

* 4.5.9 Packaging inspection. Sample packages and packs and the inspection of the packaging, packing and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified herein.

5. PACKAGING

(The preparation for delivery requirements specified herein apply only for direct Government acquisitions.)

5.1 Packaging. Packaging shall be level A or C, as specified (see 6.2.1).

* 5.1.1 Level A. The coating shall be furnished in 1-gallon multi-friction top cans conforming to type V, class 2 of PPP-C-96 or 5-gallon lug cover pails conforming to type II, class 3, class 4, or class 8 of PPP-P-704, as specified (see 6.2.1).

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5.1.1.1 One-gallon cans. The exterior plan B coating of cans and side seam stripping will be required, and after filling, the plugs shall be spot-soldered to the friction ring at three points equidistant from each other around the periphery of the plug.

5.1.1.2 Five-gallon pails. The exterior coating of pails shall conform to TT-E-485. Color shall be olive drab conforming to color chip number 24087 of FED-STD-595.

- 5.1.2 Level C. Packaging shall be sufficient to afford adequate protection against corrosion, deterioration and physical damage during shipment from the supply source to the first receiving activity for immediate use. The contractor's normal retail or wholesale packaging methods may be utilized when such meets the requirements of this level.

5.2 Packing. Packing shall be Level A, B or C, as specified (see 6.2.1).

5.2.1 Level A.

- 5.2.1.1 The 1-gallon multifriction top cans shall be arranged and packed in accordance with the overseas packing requirements of the appendix to PPP-C-96.

5.2.1.2 The 5-gallon lug cover pails will require no packing.

5.2.2 Level B.

5.2.2.1 The 1-gallon multifriction top cans shall be arranged and packaged in accordance with the domestic shipment requirements of the appendix to PPP-C-96.

5.2.2.2 The 5-gallon lug cover pails will require no packing.

5.2.3 Level C. Coating, packaged as specified (see 6.2.1), shall be packed in containers, at the lowest rates in a manner which will insure acceptance by common carrier and will afford protection against physical or mechanical damage during direct shipment from the supply source to the first receiving activity for immediate use. This level in general shall conform to the Uniform Freight Classification Ratings, Rules and Regulations or National Motor Freight Classification or other carrier regulations as applicable to the mode of transportation.

- 5.2.4 Palletization. When specified (see 6.2.1), cans and pails packed as specified in 5.2, shall be palletized in accordance with MIL-STD-147.

5.3 Marking. In addition to any special marking required (see 6.2.1), interior packages and exterior shipping containers shall be marked for shipment in accordance with MIL-STD-129.

- 5.3.1 Special marking. Packages and shipping containers shall be marked "ASBESTOS-FREE" (see 6.2.1).

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6. NOTES

6.1 Intended use. The coating is intended for use as a vapor barrier coating over thermal insulation.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Level of packaging and level of packing required (see 5.1 and 5.2).
- (c) Sizes of container required for coating required (see 5.1.1).
- (d) When palletization is required (see 5.2.4).
- (e) Special marking, if required (see 5.3 and 5.3.1).

6.2.2 Data requirements. When this specification is used in a contract which invokes the provision of the "Requirements for Data" of the Defense Acquisition Regulation (DAR), the data identified below, which are required to be developed by the contractor, as specified on an approved Data Item Description (DD Form 1664), and which are required to be delivered to the Government, should be selected and specified on the approved Contract Data Requirement List (DD Form 1423) and incorporated in the contract. When the provisions of the "Requirements for Data" of the DAR are not invoked in a contract, the data required to be developed by the contractor and required to be delivered to the Government should be selected from the list below and specified in the contract.

<u>Paragraph</u>	<u>Data requirements</u>	<u>Applicable DID</u>	<u>Option</u>
3.2	Certificate of Compliance	DI-E-2121	-----

(Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.)

6.2.2.1 The data requirements of 6.2.2 and any task in section 3, 4, or 5 of the specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

6.3 With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for inclusion in the applicable Qualified Products List QPL 19565 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and

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manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the Qualified Products List is Naval Sea Systems Command, SEA 3112, Department of the Navy, Washington, DC 20362, and information pertaining to qualification of products may be obtained from that activity. Application for Qualification tests shall be made in accordance with "Provisions Governing Qualification SD-6" (see 6.3.1).

6.3.1 Copies of "Provisions Governing Qualification SD-6" may be obtained upon application to Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

• 6.4 Type I of MIL-C-19565B has been deleted from this specification since it is no longer being used.

6.5 Changes from previous issue. The margins of this specification are marked with an asterisk (*) to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

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Preparing activity:

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(Project 8030-0480)

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