

MIL-D-3135F
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~~SUPERSEDED~~
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19 August 1974 and
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13 March 1962
(See 6.3)

MILITARY SPECIFICATION
DECK COVERING UNDERLAY MATERIALS

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

1. SCOPE

1.1 Scope. This specification covers deck covering underlay materials to smooth up the surfaces of steel decks before applying deck covering materials.

1.2 Classification. Deck covering underlay materials shall be of the following types, as specified (see 6.2):

Type I - For use under ceramic tile, terrazzo, and other mastic deck covering materials.

Type II - For use under linoleum and plastic tile, deck tile, and other similar preformed deck covering materials.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

UU-S-48 - Sacks, Shipping, Paper.
PPP-B-35 - Bags, Textile - Shipping, Burlap, Cotton, and Waterproof Laminated.
PPP-B-1714 - Bags, Shipping; Woven Polypropylene.
PPP-C-95 - Cans, Metal, 28 Gage and Lighter.
PPP-F-704 - Pails, Metal: (Shipping, Steel, 1 through 12 Gallon.)

MILITARY

MIL-S-901 - Shock Tests, H.I. (High-Impact); Shipboard Machinery, Equipment and Systems, Requirements for.

STANDARDS

FEDERAL

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.
MIL-STD-1623 - Fire Performance Requirements And Approved Specifications for Interior Finished Materials and Furnishings (Naval Shipboard Use).

(Copies of specifications, standards, drawings, and publications required by supplier 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.

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UNIFORM CLASSIFICATION COMMITTEE
Uniform Freight Classification Rules.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, Illinois 60606.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS
D 1391-57 - Measurement of Odor in Atmospheres (Drafted November 1957)

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

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION INCORPORATED, AGENT
National Motor Freight Classification Rules.

(Application for copies should be addressed to the National Motor Freight Traffic Association, Inc., 1616 P Street, N.W., Washington, D.C. 20036.)

(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.)

3. REQUIREMENTS

3.1 Qualification. Deck covering 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. The deck covering underlay materials shall consist of a compound of liquid synthetic rubber latex, underlay powder, and aggregate, suitable for application with a trowel after mixing. Mixing instructions shall be supplied by the manufacturer.

3.3 Application. The deck covering underlay materials shall be capable of adhering to the deck or structure on which applied without the use of clips or other devices welded to the deck, or other reinforcement not a part of the compound as mixed for application. It shall be capable of being applied to clean steel surfaces. Type II underlay material, in particular, shall be capable of being trowelled to a smooth feathered finish.

3.4 Odor. The deck covering underlay materials shall be free from objectionable odors under ordinary service conditions (see 4.6.14).

3.5 Weight. The deck covering underlay material after drying shall be of minimum practical weight but shall not exceed the following (see 4.6.2):

Type I - 1-3/4 pounds per square foot in a thickness of 1/4 inch.
Type II - 2-1/2 pounds per square foot in a thickness of 1/4 inch.

3.6 Resistance to impact. When tested as specified in 4.6.3, the deck covering underlay materials shall show no visible signs of chipping, cracking, or detachment from the steel plate (see 3.3). There shall be not more than 1/8 inch of permanent indentation for type I and not more than 1/16 inch of permanent indentation for type II.

3.7 Indentation.

3.7.1 Initial indentation. When tested as specified in 4.6.4, the initial indentation of the deck covering underlay material shall be as follows:

	Type I		Type II	
	minimum percent	maximum percent	minimum percent	maximum percent
Material cured 24 hours	...	40	...	20
Material cured 96 hours	1	40	1	5

3.7.2 Residual indentation (96 hour specimens only). Residual indentation of the deck covering underlay material 2 hours after removal of the load shall be no more than 38 and 5 percent of the original thickness for types I and II, respectively, when tested as specified in 4.6.4.

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3.8 Resistance to elevated temperatures. The deck covering underlay materials shall not flow or slip or both in any part more than 1/16 inch nor soften, when tested as specified in 4.6.5.

3.9 Resistance to moisture and temperature changes. The deck covering underlay materials shall show no signs of cracking, separation from the steel plate, or corrosion of the steel beneath the underlayment other than as caused by the liquid latex during the setting period immediately after application, when tested as specified in 4.6.6.

3.10 Moisture absorption. The deck covering underlay material shall not have absorbed more than 5 percent of moisture, based on its weight at normal atmospheric conditions, when tested as specified in 4.6.7.

3.11 Resistance to corrosion. The deck covering underlay material shall not soften or become detached, and the surface of the steel beneath the deck covering underlay material shall show no signs of corrosion other than as caused by the liquid latex during the setting period immediately after application when tested as specified in 4.6.8.

3.12 Fire resistance. The deck covering shall conform to the fire resistance requirements set forth in MIL-STD-1623 (see 4.6.9).

3.13 Resistance to oil. When tested as specified in 4.6.10, the deck covering underlay material shall show the following change in weight and volume:

	Percent (maximum)
Change in weight	6.5
Change in volume	2

3.14 Shock resistance. The deck covering underlay materials shall show no signs of chipping, cracking, or detachment from the steel backing plate, when tested as specified in 4.6.11.

3.15 Adhesive strength.

3.15.1 Initial. The initial adhesive strength of the deck covering underlay materials shall be not less than 50 pounds per square inch (lb/in²), when tested as specified in 4.6.12.

3.15.2 After aging. The adhesive strength of the deck covering underlay materials after aging shall be not less than 85 percent of the initial adhesive strength when tested as specified in 4.6.12.

3.15.3 After exposure. The adhesive strength of the deck covering underlay materials after exposure to moisture and temperature shall be not less than 95 percent of the initial adhesive strength when tested as specified in 4.6.12.

3.16 Serviceability. The deck covering underlay material shall satisfactorily perform its function when examined during and after the minimum service period specified in 4.6.13.

3.17 Workmanship. The components, when combined, shall produce a finished product for application, which conforms to the requirements of this specification.

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

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

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4.3 Qualification tests. Qualification tests shall be conducted at a laboratory satisfactory to the Naval Ship Engineering Center. Qualification tests shall consist of the examination of 4.5 and the tests specified in 4.6. Application for Qualification tests shall be made in accordance with "Provisions Governing Qualification SD-6" (see 6.3 and 6.3.1).

4.4 Quality conformance inspection.

4.4.1 Lot. All unmixed material of the same type, but not more than 5,000 pounds, offered for delivery at one time, shall be considered a lot for purposes of acceptance inspection.

4.4.2 Sampling for examination of filled containers. A random sample of filled containers shall be selected from each lot offered for examination in accordance with MIL-STD-105, at inspection level I, and Acceptable Quality Level (AQL) = 2.5 percent defective to verify compliance with all stipulations of this specification regarding fill, closure, marking, and other requirements not involving tests.

4.4.3 Sampling for tests. Two containers shall be selected from each lot of rubber latex and from each lot of underlay powder. From each of the containers, enough material to provide for the application of 9 square feet area and 1/4 inch (approximate) thickness shall be taken.

4.4.4 Lot tests. Each sample selected in accordance with 4.4.3 shall be subjected to the following tests:

<u>Test</u>	<u>Paragraph</u>
Weight	4.6.2
Impact	4.6.3
Indentation	4.6.4
Moisture absorption	4.6.7
Adhesive strength (initial only)	4.6.12

4.4.4.1 Fire test. The fire resistance test (see 4.6.9) shall be conducted as part of the lot acceptance tests once for every 50,000 pounds of unmixed material offered for delivery under one or more contracts or orders. Manufacturers records shall be used to determine quantities of material delivered.

4.4.4.2 Rejection. If any sample representing a lot is found not to be in conformance with this specification, this shall be cause for rejection of the entire lot. If a sample fails the fire resistance test, this test shall be conducted on every subsequent lot. This additional testing shall be discontinued and lot tests returned to the normal basis of 4.4.4 when four successive lots have been accepted.

4.4.4.3 Small lots. The tests of 4.4.4 shall not be required on any delivery of less than 2,000 pounds of unmixed material. However, deliveries of small quantities which are not represented by tests shall be so identified in the manufacturer's records and when the cumulated total of such deliveries reaches 2,000 pounds, sample material shall be selected and subjected to the tests of 4.4.4.

4.5 Examination.

4.5.1 Examination of filled containers. Each of the sample filled containers selected in accordance with 4.4.2 shall be examined for defects of the container and closure, for evidence of leakage, and for unsatisfactory marking. Each sample filled container shall also be weighed to determine the amount of the contents. Any container in the sample, having one or more defects or under required fill shall be rejected, and if the number of defective containers in any sample exceeds the acceptance number for the appropriate sampling plan of MIL-STD-105, the lot represented by the sample shall be rejected.

4.6 Test methods.

4.6.1 Preparation of specimens. Specimens of the sizes as specified in the following tests shall be made by mixing the deck covering underlay material in accordance with the manufacturer's instructions (see 3.2). The deck covering underlay material shall be trowelled on 1/8 inch thick clean steel plates to a thickness of approximately 1/4 inch in one coat by

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means of wooden templates. The specimens shall be allowed to cure for 96 hours at room temperature before conducting tests except those specimens required for the indentation tests specified in 4.6.4. Unless otherwise specified, all tests are referred to atmospheric conditions at a temperature of 70° to 75° Fahrenheit (F) and a relative humidity of 50 ± 2 percent. For specimens intended for immersion tests where corrosion of the steel may occur, areas not covered by the deck covering underlay material may be protected by a suitable anti-corrosion coating.

4.6.2 Weight. The deck covering underlay material shall be applied to three 6 inch square, 1/8 inch thick mild steel plates which have been previously measured and weighed. When the material has dried for 96 hours, the three test specimens, including the steel plates, shall each be weighed to the nearest 0.1 gram. The length and width shall be measured to the nearest 0.1 inch, and the thickness to the nearest 0.001 inch. From the difference between the weight of the covered steel plate and the uncovered steel plate, the weight of the material shall be computed in ounces per square foot for a thickness of 1/4 inch. The final weight shall be the average of the three specimens. The thickness shall be by measuring the steel plates, with and without the covering, at 16 equally distributed points on the specimen, by means of a dial thickness gage and a template. The difference in thickness of the steel plate and the covered steel plate shall be averaged to determine the thickness of the material.

4.6.3 Resistance to impact. Two specimens, prepared as specified in 4.6.1, 6 inches square shall be used. Each specimen shall be tested separately after being firmly held on a solid horizontal base. A 2-pound steel ball shall be dropped vertically from a height of 8 feet on to the underlayment such that the impact will be at the center of the specimen. Each specimen shall be subjected to two impacts of the ball.

4.6.4 Indentation.

4.6.4.1 Specimens. Four specimens 6 inches square, prepared as specified in 4.6.1, shall be used except two of the specimens shall only be allowed to cure for 24 hours at room temperature before undergoing indentation.

4.6.4.2 Procedure.

4.6.4.2.1 Indentation. Three indentations shall be made on the deck covering underlay material of each specimen and the results averaged. The center of each indentation shall be not less than 1-1/2 inches from the edge of the specimen and not less than 2-1/2 inches from the center of the adjoining indentation. A load of 2,000 pounds shall be applied on the underlayment for 30 minutes by means of a flat faced circular indenter. The indenter's flat face shall have an area of 1 square inch and its perimeter shall be rounded to a radius of 1/64 inch.

4.6.4.2.2 Thickness. Thickness readings are taken before and immediately after indentation at the center of each indented area. For determination of residual indentation the thickness is measured two hours after removal of the load. The percent indentation is calculated on the basis of the measured specimen thicknesses. The thickness measurements are made using a micrometer dial gauge with a 4 ounce weight and a 1/4 inch diameter flat foot.

4.6.4.2.3 Special precautions. Care should be taken to ensure that the indenter surface is maintained parallel to the plane of the specimen mounting plate and that it travels perpendicular to that plane. In addition, the specimen mounting plates selected for the indentation tests should be checked for flatness before being used.

4.6.4.3 Initial indentation. The initial indentation shall be taken as the difference in percent between the thickness of the deck covering underlay material before indentation and immediately after the load has been removed.

4.6.4.4 Residual indentation. The residual indentation shall be taken as the difference in percent between the thickness of the deck covering underlay material before indentation and 2 hours after the load has been removed.

4.6.5 Resistance to elevated temperature. The resistance of the material to elevated temperature shall be determined as follows:

4.6.5.1 Flow or slip or both. A specimen, prepared as specified in 4.6.1, 6 by 2 inches, shall be scribed with a line parallel to and approximately 1 inch from a 2-inch edge used as

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a reference. The distance between this line and the edge of the steel plate shall be measured to the nearest 0.01 inch. The specimen shall then be suspended vertically from the end opposite the reference end in an oven maintained at a constant temperature of $150^{\circ} \pm 2^{\circ}\text{F}$ for 5 hours. When the specimen has cooled to room temperature, the distance between the reference edge and the line shall be measured again. The difference between the two measurements is called the flow or slip or both.

4.6.5.2 Softening. The deck covering underlay material shall be examined by touch, immediately after the specimen has been removed from the oven, to determine whether the material has softened under the action of heat.

4.6.6 Resistance to moisture and temperature changes. Two specimens, prepared as specified in 4.6.1, 6 by 2 inches, shall be immersed in a solution of 4 percent sodium chloride in water, under a pressure of 8 lb/in², for 48 hours. Immediately after immersion, the specimen shall be subjected to two complete cycles of alternate exposure to a temperature of $0^{\circ} \pm 5^{\circ}\text{F}$ for 24 hours followed by a temperature of $120^{\circ} \pm 5^{\circ}\text{F}$ for 24 hours. The deck covering underlay material shall then be examined for evidence of cracking or other failure. A portion of the underlayment shall be carefully removed from the plate to observe any signs of rusting or corrosion beneath the underlayment.

4.6.7 Moisture absorption. Three specimens, 2 inches square by 1/4 inch thick, shall be prepared by applying the deck covering underlays to oiled surfaces of steel plate, so that upon drying the underlayment will not adhere to the plates. Each specimen without the steel backing plate shall be weighed dry, dipped into tap water at room temperature, lightly wiped on all surfaces with a paper towel, and again weighed to the nearest 0.1 gram. Immediately after weighing, the specimen shall be immersed in the above water for 24 hours, lightly wiped, again weighed. The percent gain in moisture shall be based on the weight of the dry specimen and the difference between the weight after 24-hour immersion and the weight after dipping and wiping.

4.6.8 Resistance to corrosion. Two specimens, prepared as specified in 4.6.1, 6 by 2 inches shall be used. The specimens shall be immersed in a 10 percent salt (NAC) solution for 15 days, during which time a continuous stream of air shall be passed through the solution in order to promote corrosion. The specimens shall then be examined to determine whether the material has softened or detached from the steel backing plates. A portion of the deck covering underlay material shall be removed carefully from the steel plates to observe any signs of rusting or corrosion of the steel plates beneath the underlayment.

4.6.9 Fire resistance. The char length and combustion + ignition shall meet the requirements of MIL-STD-1623.

4.6.10 Resistance to oil. Three specimens, 2 inches square by 1/4 inch thick, shall be prepared as for the moisture absorption test. Each specimen without the steel backing plate shall be weighed dry, dipped into SAE 10W oil, and lightly wiped on all surfaces with a paper towel. The specimen shall then again be weighed in air, and also while totally immersed in tap water. Immediately after weighing, the specimen shall be immersed for 24 hours in the oil specified herein, lightly wiped, and again weighed in air and while totally immersed in tap water. The percent gain in weight shall be based on the weight of the dry specimen and the difference between the weight after 24 hours immersion and the weight after dipping and wiping. The percent change in volume shall be based on the weight of the specimen immersed in water, before and after 24 hours immersion in oil.

4.6.11 Shock resistance. Three specimens 6 inches square shall be prepared by applying underlay material centrally to three 8 inch square by 1/8 inch thick mild steel plates, by means of wooden templates such that a 1 inch wide portion of the steel plate is exposed along the periphery of the specimen. Each specimen shall be subjected to high impact (HI) shock in a testing machine conforming to MIL-8-901. Each specimen is centrally secured to the test plate of the testing machine by eight 1/4 inch diameter machine screws, equally located along the periphery of the specimen plate, 1/2 inch away from the edge of the specimen steel plate. Each specimen shall then be subjected to a series of shocks consisting of consecutive blows of 100, 200, 400, 700, 1,000, 1,400, and 2,000 foot-pounds to provide approximately uniform increase of striking velocity. The 2,000 foot pounds blow shall then be immediately followed by a second 2,000 foot pounds blow. The underlayment shall then be examined for chipping, cracking, or detachment from the steel backing plate.

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4.6.12 Adhesive strength. Eighteen 2 by 6 inch specimens shall be prepared as specified in 4.6.1 except that the underlay material shall only cover 2 inches square on each specimen. By using a wooden template the underlay shall be applied such that 1 inch of the steel plate is exposed at one end, and 3 inches exposed at the opposite end. Specimens shall be tested by measuring the load required to shear the 2 inch square area of deck covering underlay from the steel backing plate by means of a shear test jig as shown on figure 1. Six specimens shall be tested to determine the initial adhesive strength. Six specimens shall be tested after aging in an oxygen bomb for 96 hours under a pressure of 300 lb/in² and temperature of 158°F. The remaining six specimens shall be tested after a moisture and temperature cycle as specified in 4.6.6. All specimens shall be tested by compression loading at a rate of 0.25 inch per minute. The load at failure, shall be recorded and the average of six readings taken for computations of the adhesive strength in lb/in² for the respective conditions.

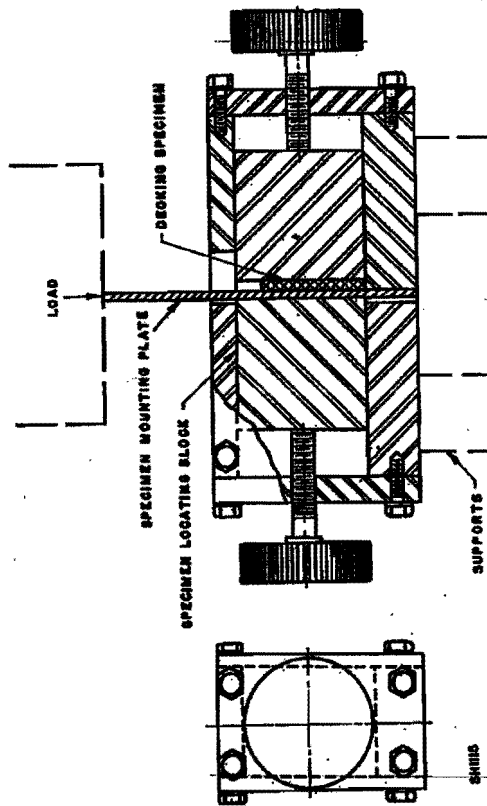


Figure 1 - Shear test jig for hard-setting deck covering materials.

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4.6.13 Serviceability. The deck covering underlay material shall be applied in wet places aboard ship and undergo a minimum 6 months' service test.

4.6.14 Odor test. The odor test shall be conducted in accordance with ASTM D 1391-57.

4.7 Inspection of preparation for delivery. The packaging, packing, and marking shall be inspected for compliance with section 5 of this specification.

5. PREPARATION FOR DELIVERY

(The preparation for delivery requirements specified herein apply only for direct Government procurements. For the extent of applicability of the preparation for delivery requirements of referenced documents of referenced documents listed in section 2, see 6.4.)

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

5.1.1 Level A.

5.1.1.1 Latex. The synthetic rubber latex shall be furnished in 1-gallon cans or 5-gallon pails as specified (see 6.2).

5.1.1.1.1 Cans. Cans shall conform to type V, class 2, round of PPP-C-96, exterior plan B coating and side seam striping is required. Cans shall be provided with wire handles and shall be galvanized or coated to resist corrosion.

5.1.1.1.2 Pails. Pails shall conform to type I, class 5 or type II, class 4 of PPP-P-704. Container selection shall be at the suppliers option. Interior and exterior coatings are required, except, exterior coating shall approximate color number 26270 of FED-STD-595.

5.1.2 Level C. Latex shall be furnished in 1-gallon or 5-gallon containers as specified (see 6.2), which will afford protection against deterioration and loss of contents or physical damage during shipment from the supply source to the first receiving activity for immediate use. The suppliers normal retail or wholesale packaging methods may be utilized when such meet the requirements of this level.

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

5.2.1.1 Latex. Latex packaged in 1-gallon containers as specified (see 6.2), shall be packed in accordance with the appendix to PPP-C-96 as specified for level A. Latex packaged in 5-gallon pails will require no further packing.

5.2.1.2 Dry ingredients. The dry ingredients (underlay powder), shall be packed in 50 or 100 pound quantities as specified (see 6.2), in any one of the following containers, selection of which shall be at the suppliers option.

Specification	Container	Container Number	
		50-pounds	100-pounds
UU-S-48	Sack, Shipping, Paper	9-9X	17-17X
PPP-B-35	Bag, Textile, Shipping	P15B	P15B
PPP-B-1714	Bag, Shipping	PP4-6	PP4-6

Container closure shall be in accordance with the applicable specification or Appendix thereto.

5.2.2 Level C. The latex and dry ingredients shall be packed for shipment in containers which will insure acceptance by the common carrier and safe delivery to destination at the lowest applicable rate. Containers, packing and method of shipment shall comply with the Uniform Freight or National Motor Freight Classification Rules and Regulations or other carrier rules as applicable to the mode of transportation.

5.3 Palletized unit loads. When specified (see 6.2), shipping containers shall be palletized in accordance with MIL-STD-147.

5.4 Marking. In addition to any special marking required by the contract or order (see 6.2), interior and exterior shipping containers and palletized unit loads shall be marked in accordance with MIL-STD-129 and the applicable container specification.

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6. NOTES

6.1 Intended use. The deck covering underlay material covered by this specification is intended for use in fairing of the decks, prior to applying latex-mastic (rubber terrazzo) deck covering specified in MIL-D-3134; magnesium-oxychloride deck covering specified in MIL-D-16680; ceramic tile specified in American National Standards Institute (ANSI), A 137.1; plastic tile specified in MIL-T-18830 and SS-T-312.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type required (see 1.2).
- (c) Levels of packaging and packing required (see 5.1 and 5.2).
- (d) Type container and quantity required (see 5.1.1.1, 5.1.2, 5.2.1.1, and 5.2.1.2).
- (e) Whether palletization is required (see 5.3).
- (f) Special marking required (see 5.4).

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 applicable Qualified Products List QPL-3135 whether or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and 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 the Naval Ship Engineering Center, Prince George's Center, Center Building, Hyattsville, Maryland 20782, 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, Pennsylvania 19120.

6.4 Sub-contracted material and parts. The preparation for delivery requirements of referenced documents listed in Section 2 do not apply when material and parts are procured by the supplier for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.5 THE MARGINS OF THIS SPECIFICATION ARE MARKED "*" TO INDICATE WHERE CHANGES (ADDITIONS, MODIFICATIONS, CORRECTIONS, DELETIONS) FROM THE PREVIOUS ISSUE HAVE BEEN 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.

Custodians: -
 Army - ME
 Navy - SH
 Air Force - 84
 Review activities:
 Army - MG, MI
 Navy - SH, CG
 Air Force - 84

Preparing activity:
 Navy - SH
 (Project 5610-0107)