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IC 24244 (SHIPS)  
 Interim Change No. 1  
 5 September 1973

~~THIS DOCUMENT IS SUBJECT TO SPECIAL EXPORT  
 CONTROLS AND EACH TRANSMITTAL TO FOREIGN  
 COUNTRIES OR TERRITORIES SHALL BE ACCOMPANIED BY  
 A PERMIT OF THE NAVAL SHIP SYSTEMS COMMAND~~

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## MILITARY SPECIFICATION

Insulation Materials, Thermal, with Special  
Corrosion and Chloride Requirements

This interim change, when specified in contract documents, forms a part of MIL-I-24244 (SHIPS) dated 22 August 1966 together with Amendment 3 dated 29 December 1970.

Page 2, Paragraph 1.2 Types, add:

"Type 16H - Form D, Type III, Class 12"

Page 3, Paragraph 2.2, delete:

"ASTM Bulletin No. 225 - dated October 1957"

and substitute:

"ASTM Bulletin No. 225, TP196 dated October 1957"

(Xerographic or microfilm copies of Technical Paper TP196 from ASTM Bulletin No. 225 are available from University Microfilms, Inc., Article Reprints, Ann Arbor, Michigan 48106)."

Page 3, Paragraph 2.2, add:

"ASTM D 1428 - Standard Methods of Test for Sodium and Potassium in Water and Water-Formed Deposits by Flame Photometry"

Page 4, Paragraph 4.2.3, delete and substitute the following:

"4.2.3 Reports - Three copies of certified reports (Figure 3) shall be furnished by the supplier with the materials offered for delivery. They shall include the following:

- (a) The purchaser's order number
- (b) The type and subtype of material
- (c) The supplier's lot (or production batch) number
- (d) Certification of compliance with 3.5
- (e) The actual results of chemical analyses and pH determinations, Identification of the chemistry analysis procedures (methods) used. Results of tests and all retests when acceptance of the lot

Additional copies of this document may be obtained from the contract issuing agency.

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Classification (canceled) (changed to  
 Unclassified) by authority of  
 on 26/04/94 by M. Hopper  
 (Date) (Signature) (Rank)  
 NAVAL SEA SYSTEMS COMMAND  
 Department of the Navy

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is based on any of the following provisions:

- (1) Replacement of test specimens
- (2) Retest of additional specimens from the lot
- (3) Resubmittal of a rejected lot for test after rework or removal of non-conforming material"

Page 3 of Amendment, Paragraph 4.2.4.1.1(c), delete and substitute the following:

"4.2.4.1.1(c) Specimens of insulation cements, approximately 20 grams dry basis, shall be air dried for 24 hours in tared 70 mm (minimum) diameter metal, teflon or polyethylene dishes. Actual dry weight shall be determined after drying. If the cement cakes, it shall be pulverized. Caution: Protect from contamination during air drying.

4.2.4.1.1(d) Liquid adhesive specimens shall be prepared as follows:

- (1) Two 70 mm (minimum) tared aluminum dishes shall be used for each determination. Liquid adhesive, 5 - 7½ grams dry basis, shall be placed in each dish for a total of 10-15 grams dry basis of adhesive for each determination. Dishes containing adhesive shall be dried in a convection type oven at 160° +20°F for 24 ±1 hours. Drying under these conditions will result in a material that is not powder dry but it shall be free of fluid adhesive trapped under a surface film.

- (2) Dried specimens shall be removed from the oven and cooled to room temperature in a desiccator. Cooled specimens shall be weighed to the nearest 0.1 g. Weight of dried adhesive shall be determined by subtracting weight of aluminum dishes determined above."

Page 5, Paragraph 4.2.4.1.2, delete and substitute the following:

"4.2.4.1.2 Water leaching

- 4.2.4.1.2.1 Hard materials, materials having wire insertions, and dry cements (see 4.2.4.1.1 a, -b and -c) Place each specimen in an individual 800 milliliter (ml) pyrex beaker (or equal) and cover the specimen with 400 ml. of water. Cover the beaker with a watch glass and heat for ½ hour at 205° to 212°F, then remove heat. Cool the beaker and its contents naturally (do not agitate)

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to a room temperature of 68° to 86°F. Filter the leach solution through a prewashed No. 41 Whatman, or equal, filter in a Buchner funnel, transferring the specimen to the funnel and using light suction as necessary. The beaker and the specimen shall be washed thoroughly using a minimum of ten small washes to make up the filtrate to 500 ml. (Centrifuge filtration may be used as an alternate method). The filtrate shall be transferred to a polyethylene container and marked as solution A. This solution A shall be the source of aliquots for the chemical tests. Approximately 150 ml of solution A, from which aliquots for the sodium and silicate tests are to be taken, shall be refiltered through a 0.45 millipore filter.

#### 4.2.4.1.2.2 Adhesive (see 4.2.4.1.1d)

After dry weight has been determined, pairs of dishes comprising each determination shall be placed back to back in acid washed (15% HNO<sub>3</sub>) 600 ml. pyrex beakers containing approximately 400 ml. of demineralized water. The beaker shall be covered with an acid washed watch glass and heated for 1 hour at 207° + 4°F in a boiling water bath. The beaker and contents shall then be cooled to room temperature.

The leachate as prepared above shall be filtered through a 0.45 millipore filter; the beaker and contents shall be washed thoroughly using a minimum of ten small washes (To facilitate filtering, the leachate, especially if cloudy, may be centrifuged to remove the majority of the particulate material, which interferes with filtration.) The filtrate shall be transferred quantitatively to a 500 ml polyethylene volumetric flask, diluted to volume, and marked as solution "A". This solution "A" shall be the source of aliquots for all chemical tests."

Page 3, Paragraph 4.2.4.2.1 of Amendment 3, delete the last sentence and substitute the following:

"The pH shall be corrected to 77°F."

Page 4 of Amendment 3, Paragraph 4.2.4.2.2.1 (b)(3)b, delete and substitute the following:

"4.2.4.2.2.1 (b)(3)b A saturated solution of Hg(SCN)<sub>2</sub> in methyl alcohol prepared by adding 7.5 grams of Hg(SCN)<sub>2</sub> to 500 ml of methyl alcohol, stirring for one hour, and filtering through a Whatman No. 41 paper to remove undissolved Hg(SCN)<sub>2</sub>.

Store in brown bottle."

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Page 6, Paragraph 4.2.4.2.2.3, delete and substitute the following:

"4.2.4.2.2.3 Analysis for sodium - A 100 ml aliquot of millipore filtered solution "A" shall be analyzed by one of the following methods:

- (a) Spectrographic method - The solution shall be reduced to dryness. The residue shall then be analyzed spectrographically for sodium.
- (b) Flame photometric method - The solution shall be analyzed by Methods A, B, or C of ASTM D-1428.
- (c) Atomic absorption - The solution shall be analyzed using atomic absorption.

NOTE: Corrections must be made if high concentration of alkaline or alkaline earth metals such as calcium, potassium or magnesium are present."

Page 9, Paragraph 5.1.2, add the following:

"5.1.2.3 For all containers Supplier's lot number shall be marked on each container. Lot numbers shall be preceded by the proper designation, e.g., Lot No. 53."

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Figure 31/

# Certification of Quality Conformance

To MIL-I-24244

Manufacturer or distributor \_\_\_\_\_ Customer's Name \_\_\_\_\_  
 Address \_\_\_\_\_ Customer's Order No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Type 2/ \_\_\_\_\_ Subtype 2/ \_\_\_\_\_ (Complete Description)  
 Lot No. \_\_\_\_\_

## Lot Analysis

Testing Laboratory \_\_\_\_\_

Date of Report \_\_\_\_\_

Leachable Chloride, ppm \_\_\_\_\_

Sodium, ppm \_\_\_\_\_

Silicate, ppm \_\_\_\_\_

pH of Leach Water \_\_\_\_\_

## Preproduction Corrosion Test

Testing Laboratory \_\_\_\_\_

Date of Report of Acceptable Test \_\_\_\_\_

## Specification for Specific Type of Material

Specification No. \_\_\_\_\_

We hereby certify that the above material has been tested in accordance with the listed specification and is in conformance with all the requirements. We further certify that the material was manufactured, tested and inspected in accordance with the requirements of Paragraph 3.5.

1/ This form is applicable to the quality conformance tests required for each lot, and a copy shall be forwarded with each shipment.

2/ See Paragraph 6.3.2

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