

MIL-I-6869C
14 January 1971
SUPERSEDING
MIL-I-6869C
12 May 1966

MILITARY SPECIFICATION
IMPREGNANTS FOR ALUMINUM ALLOY AND
MAGNESIUM ALLOY CASTINGS

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

1. SCOPE

- * 1.1 Scope - This specification covers impregnants suitable for use in sealing porosity of aluminum alloy and magnesium alloy castings to permit conformance to the paragraph of MIL-STD-276 titled "When castings may be impregnated". It does not cover structurally sound castings containing micropores which are incorporated in fire control instruments or mortar shells (see 6.3).
- * 1.2 Classification - The impregnants shall be furnished in one type and two classes, as specified (see 6.2).

Class 1 - For use where AIR POLLUTION REGULATIONS do not apply.
Class 2 - For use where AIR POLLUTION REGULATIONS are in force.

2. APPLICABLE DOCUMENTS

- * 2.1 The following documents of the issue in effect on date of invitation for bids or request for proposals, form a part of this specification to the extent specified herein:

SPECIFICATIONS

Federal

O-E-760

Ethyl Alcohol (Ethanol) Denatured Alcohol,
and Proprietary Solvent

FSC 8030

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SPECIFICATIONS

Federal

O-T-236	Tetrachloroethylene (Perchloroethylene), Technical Grade
P-C-111	Carbon Removing Compound
P-C-444	Cleaning Compound, Solvent, Grease Emulsifying
P-D-680	Dry Cleaning Solvent
QQ-A-250/1	Aluminum Alloy 1100, Plate and Sheet
QQ-A-601	Aluminum-Alloy Sand Castings
QQ-M-44	Magnesium Alloy Plate and Sheet (AZ31B)
TT-P-143	Paint, Varnish, Lacquer, and Related Materials; Packaging, Packing, and Marking of

Military

MIL-T-5624	Turbine Fuel, Aviation, Grades JP-4 and JP-5
MIL-R-7753	Remover, Paint and Varnish (Silicate Type)
MIL-M-775	Metal Cleaner, Silicate-Soap
MIL-L-7808	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base
MIL-P-7961	Primer Coating, Cellulose-Nitrate Modified Alked Type, Corrosion-Inhibiting, Fast-Drying (for Spray Application Over Pretreatment Coat- ing)
MIL-C-8514	Coating, Compound, Metal Pretreatment, Resin- Acid
MIL-F-18264	Finishes, Organic, Weapons Systems, Application and Control of
MIL-L-19537	Lacquer; Acrylic-Nitrocellulose, Gloss (for Aircraft Use)
MIL-G-21380	Grit, Abrasive, Blasting

SPECIFICATIONS

Military

MIL-T-81533 1, 1, 1 Trichloroethane (Methyl Chloroform)
Stabilized

STANDARDS

Federal

FED.STD.No. 141 Paint, Varnish, Lacquer, and Related Materials;
Methods of Inspection, Sampling, and Testing

Military

MIL-STD-105 Sampling Procedures and Tables for Inspection
by Attribute

MIL-STD-.76 Impregnation of Porous Nonferrous Material
Castings

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

3. REQUIREMENTS

- * 3.1 First article samples - When specified in the contract or order (see 4.4.3 and 6.2), first article samples of the impregnant shall be processed using materials, methods and processes proposed for the production lot. These samples are for the purpose of determining that the supplier's materials, product or methods and processes will produce impregnants for aluminum and magnesium alloy castings that will meet the requirements of this specification. These specimens shall be inspected as specified in Section 5 and shall be submitted as directed by the procuring activity for examination and written approval.
- * 3.2 Materials - The ingredient materials used in the sealer shall be of high quality and suitable for the intended use. The sealer shall not be of the superficial type but shall be capable of producing an impermeable condition throughout any previously porous sections of casting walls. The volatile materials shall be modified to conform with the requirements specified below.

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- * 3.2.1 Volatile contents -
- * 3.2.1.1 Class 1 - The volatile content of class 1 sealant shall consist of one or more solvents such as hydrocarbons, alcohols, ethers, esters, ketones, etc.
- * 3.2.1.2 Class 2 - The volatile content of class 2 sealant shall consist of non-photochemically reactive solvents. A nonphotoreactive solvent is any solvent with an aggregate of less than 20 percent of its total volume composed of the chemical compounds classified below or which does not exceed any of the following individual composition limitations, referred to the total volume of solvent:
 - (a) A combination of hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones having an olefinic or cycloolefinic type of unsaturation: 5 percent;
 - (b) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: 8 percent;
 - (c) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent.
- 3.2.2 Application - The sealant shall be suitable for application by both Method A, internal pressure, and Method B, vacuum and pressure, of MIL-STD-276. There shall be no observable exudation of impregnant from the surface of the test cup during curing operations, which cannot subsequently be removed without damage to the casting and the impregnant seal.
- * 3.2.3 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 procuring activity to the appropriate department medical service who will act as an advisor to the procuring activity.
- * 3.2.4 Material and property control - Prior to production, material and property controls shall be established for ingredients and application methods. The control shall be continued until application of sealant and curing of the impregnant practices have been established to produce materials conforming to this specification. When processing practices have been so established, the production shall not be changed without demonstrating to the satisfaction of the procuring activity that the changes do not adversely affect the quality of the impregnants for aluminum alloy and magnesium alloy castings.

* 3.2.4.1 Resampling and retesting - First article sampling and testing (see 3.1) shall be repeated whenever any change is made in the processing or the ingredients for the impregnant.

3.3 Effect on metals - The sealant shall show no deleterious effect on aluminum alloy or magnesium alloy when tested as specified in 4.6.3. The loss in weight shall not exceed 0.5 percent of the initial weight. There shall be no evidence of chemical reaction between the impregnant and the coupon material.

3.3.1 Effect on paint system - The sealant, after curing, shall not cause the paint system to chip, peel, or show loss of adhesion, when tested as specified in 4.6.5.

3.4 Performance - When tested as specified in 4.6.4.1, the sealant shall permit no leakage in the impregnated test cups.

3.5 Resistance properties -

3.5.1 Resistance to sandblasting - The sealant-impregnated test cup shall permit no leakage after sandblasting when tested as specified in 4.6.4.2.

3.5.2 Resistance to grease cleaning compound - The sealant-impregnated test cup shall permit no leakage after treatment with grease cleaning compound when tested as specified in 4.6.4.3.

* 3.5.3 Resistance to carbon removing compound - The sealant-impregnated test cup shall permit no leakage after treatment with carbon removing compound when tested as specified in 4.6.4.4.

3.5.4 Resistance to paint stripping compound - The sealant-impregnated test cup shall permit no leakage after treatment with paint stripping compound when tested as specified in 4.6.4.5.

3.5.5 Resistance to silicate-soap metal cleaner - The sealant-impregnated test cup shall permit no leakage after treatment with silicate-soap metal cleaner when tested as specified in 4.6.4.6.

* 3.5.6 Resistance to turbine fuel - The sealant-impregnated test cup shall permit no leakage after exposure to turbine fuel when tested as specified in 4.6.4.7.

3.5.7 Resistance to lubricating oil - The sealant-impregnated test cup shall permit no leakage after exposure to lubricating oil, as specified in 4.6.4.8.

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3.5.8 Resistance to cycling temperature - The sealant shall permit no leakage after exposure to heat and cold when tested as specified in 4.6.4.9.

- * 3.6 Product - The sealant furnished for first article tests, based on the results shown in the first article test report, shall be the standard for the quality conformance tests to be performed in accordance with 4.6.2. The results of the quality conformance tests shall be equivalent or better than those in the first article test report (see 4.4.1).

3.7 Workmanship -

- * 3.7.1 The component ingredients shall be intimately assembled and processed in accordance with high grade manufacturing practice covering this type of material. The resulting product shall be suitable for its intended use and free of defects which may affect its function.
- * 3.7.2 The first article test sample when accepted shall become the minimum quality standard for the product from the applicable supplier.

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 tests - The inspection and testing of the sealer shall be classified as follows:

- (a) First article tests (see 4.4)
- (b) Quality conformance tests (see 4.5)

4.3 Test conditions - The laboratory testing conditions shall be in accordance with Fed. Std. No. 141 and as described herein.

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4.3.1 Test specimens -

4.3.1.1 Test cups - Test cups shall be of such porosity that no less than 0.25 cubic inch nor more than 1.50 cubic inches of air per second shall pass through the walls. Test cups shall conform to Figure 1, and shall be cast in sand of aluminum alloy Class 4M conforming to QQ-A-601. The cups shall be tested for permeability prior to impregnation in accordance with the procedure specified in 4.3.1.1.1.

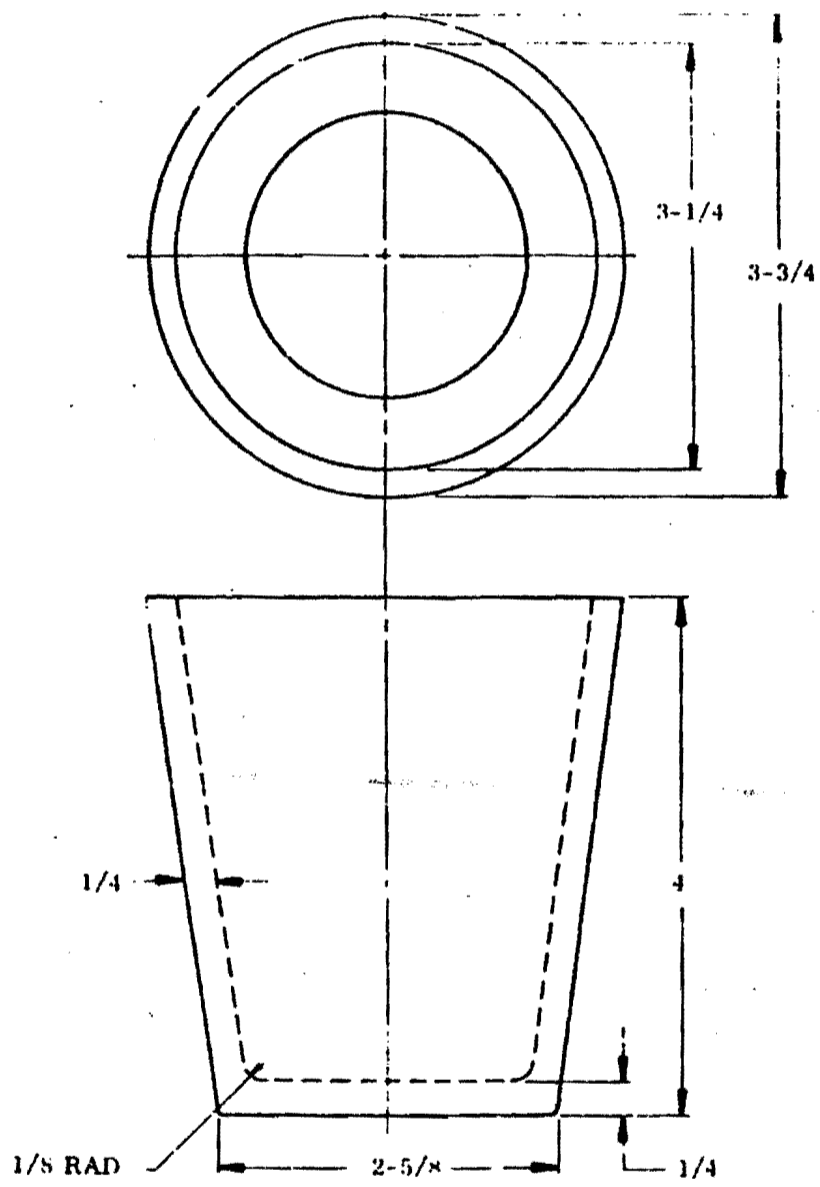
4.3.1.1.1 Permeability of untreated cups - Arrangement of test apparatus for determining air permeability of untreated cups shall be as shown in Figure 2. A lid and gasket shall be clamped to the top of the cup. The lid shall be connected by suitable adapters to an air source and the assembly placed under a bell jar or other suitable test chamber. The cups shall be subject to an internal aerostatic pressure of not less than 25 pounds per square inch (psi) of dry air. The volume rate of flow of air through the walls of the cup, in cubic inches per second, shall be determined by using a Precision Wet Test Meter, or equivalent instrument, having a minimum measurable indication of 0.001 cubic foot and an accuracy of 0.5 percent, attached to the outlet side of the test chamber. Constant atmospheric pressure shall be maintained on the exit side by means of a vacuum pump and needle valve which shall be so adjusted that the water manometer reads zero pressure.

4.3.1.2 Test coupons - The test coupons shall be cut from aluminum alloy sheets temper 0, conforming to QQ-A-250/1 and from magnesium alloy sheet, temper 0, conforming to QQ-M-44. The test coupons shall be 1 inch square by 0.064 inch thick. They shall have no machining, heat treatments, or conditioning performed on them.

4.3.2 Impregnation of test cups - Test cups shall be impregnated with the sealer under test in accordance with Method A or B of MIL-STD-276 in accordance with the supplier's instructions.

* 4.4 First article tests -

* 4.4.1 Sampling for first article inspection - Except as specified in 4.4.3, as soon as possible after the award of contract, the supplier shall submit to a testing activity designated by the procuring activity the first articles or samples of impregnants for aluminum alloy and magnesium alloy castings. Whether or not first articles or samples are required the supplier shall furnish a certified statement of prior tests which show the sealant complies with the requirements of this specification in accordance with Method 1031 of Fed. Std. No. 141. The statement shall also include the supplier's trade name for the material as well as each ingredient material which shall be identified as to the name of its manufacturer, manufacturer's trade name, and formula number. Regarding the composition of the sealer, the manufacturer may re-



DIMENSIONS IN INCHES
TOLERANCE: FRACTIONS $\pm 1/16$

FIGURE 1. TEST CUPS

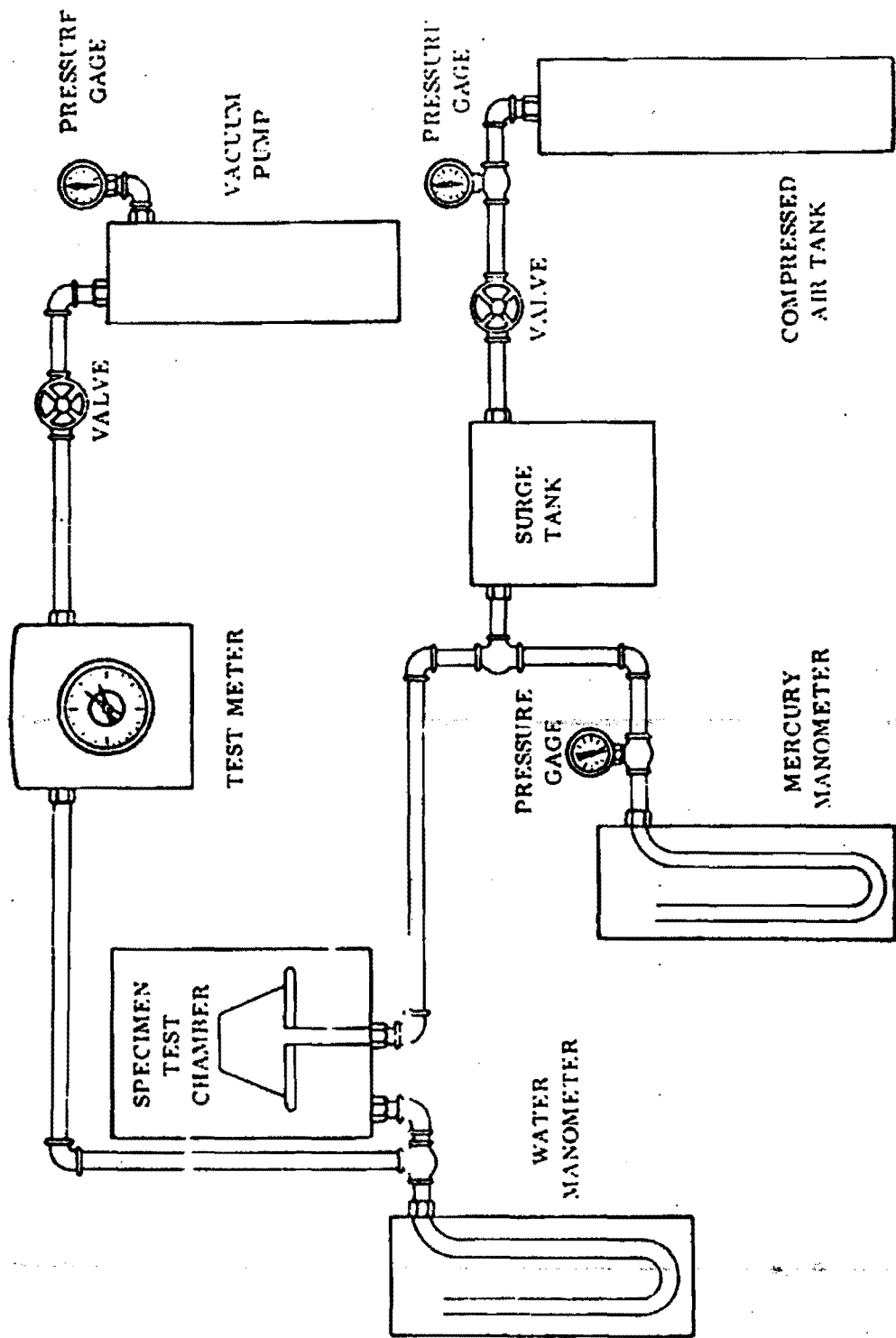


FIGURE 2. SCHEMATIC DRAWING OF PERMEABILITY APPARATUS

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port the results as "calculated" provided, in his opinion, analysis made by the procuring activity will yield the same results. Process and non-proprietary control data information pertinent to the impregnating of castings shall also be furnished.

- * 4.4.2 Further production - Further production of the impregnant for aluminum alloy and magnesium alloy castings by the supplier prior to approval by the procuring activity or completion of inspection of the first article sample shall be at the supplier's risk.
 - * 4.4.3 Previous sample and inspection for subsequent contract - If a supplier has previously delivered sealant material for impregnation in accordance with the requirements of this specification and his product has been found satisfactory, the requirements for a first article sample and its submittal in accordance with 4.4.1 for any subsequent contract or order may be waived at the discretion of the procuring activity provided the supplier certifies that the composition of his product has not been changed since acceptance of the first article test results (see 6.2).
 - * 4.4.4 First article testing - First article testing of the sealant shall consist of all the tests specified in 4.5 and all tests described under Test Methods (see 4.6) as well as such tests of the ingredient materials necessary to determine conformance with the supplier's statement of composition. The responsibility for performance of first article testing shall be as specified in the contract or order (see 3.1 and 6.2). Failure of any specimen to conform to any of the requirements of this specification shall be cause for rejection of the lot represented.
- 4.5 Quality conformance tests - Quality conformance testing shall consist of all tests of this specification except the resistance tests (see 4.6.4) and effect on paint systems (see 4.6.5).
- 4.5.1 Testing - Testing shall be conducted in accordance with Section 1000 of Fed. Std. No. 141 and as specified herein.
 - * 4.5.2 Batch data - Batch production data shall be furnished on a weight and volume basis in accordance with Method 1031, Fed. Std. No. 141.
 - 4.5.3 Report of tests - The supplier shall submit test reports, in accordance with Method 1031, Fed. Std. No. 141, for each batch, showing the results for all the Quality conformance tests specified herein. Each ingredient material shall be identified as to the name of its manufacturer and that manufacturer's trade-name and formula number.
 - * 4.5.3.1 In lieu of reporting analytical results on the breakdown of the nonvolatile and volatile composition of the sealer including non-

photochemically reactive solvents, the supplier may report such results as "calculated" under the condition that he has carefully described by separate report, attached to supplier's test reports, the character and detail of his production methods which in his opinion guarantee that any suitable analysis made by the Government will yield acceptable results.

4.5.4 Examination of product - The sealer shall be examined for conformance with the requirements of his specification with respect to material and workmanship.

4.5.5 Sampling -

4.5.5.1 Sampling for tests - Samples shall be selected as required by Method 1021 of Fed. Std. No. 141.

* 4.5.5.2 Ingredient materials - When requested by the procuring activity, a sample from each lot of ingredient materials shall be taken for test purposes.

4.5.5.3 Sampling for visual inspection of filled containers - A random sample of filled containers shall be selected in accordance with MIL-STD-105 at Inspection Level I, Acceptance Quality Level of 2.5 percent defective to verify all requirements of this specification in regard to fill, closure, packaging, backing, marking, workmanship, and other requirements not involving tests. Each sample filled container shall be examined for defects of construction relative to the container and the closure, for evidence of leakage, and for unsatisfactory markings; each filled container shall also be weighed to determine the volume of contents. The net weight divided by the determined weight per gallon will give the volume. Any container in the sample having one or more defects, or under the required fill, shall be rejected, and if the number of defective containers in any sample exceeds the acceptance number for the specified sampling plan of MIL-STD-105, the lot represented by the sample shall be rejected.

* 4.5.5.4 Resubmitted quality performance lots - Paragraph 6.4 of MIL-STD-105 shall apply, except that a resubmitted lot shall be inspected using tightened inspection. For visual examination, where the original acceptance number was zero, a sample size represented by the next higher sample size code letter shall be chosen.

4.6 Test methods - The tests of this specification shall be conducted in accordance with the specified methods of Fed. Std. No. 141 and as specified herein.

* 4.7.1 Ingredient materials - Ingredient materials submitted shall be tested to determine compliance with the applicable specifications.

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4.6.2 Product - The tests for color, odor, specific gravity, viscosity or other properties shall be made to assure the impregnant is identical with that previously submitted for first article inspection. The following tests shall be conducted in accordance with the specified methods of Fed. Std. No. 141.

<u>Test</u>	<u>Method No. of FED. STD. No. 141</u>
Condition in container	3011
Volatile and Nonvolatile contents	4041
Specific gravity	4183
Weight per gallon	4184
Color	4249
Viscosity (uncatalyzed)	4271

4.6.3 Effect on metals - One each of the aluminum-alloy and magnesium-alloy test coupons prepared as specified in 4.3.1.2 shall be dried and weighed on an analytical balance and their weights recorded. Each of the specimens shall be immersed in a container of the impregnating solution for 10 days. The specimens shall then be cleaned in Stoddards solvent conforming to P-D-680, Type I or alcohol conforming to O-E-760, Grade III. The specimens shall be dried, then examined visually and reweighed to determine conformance to 3.3.

4.6.4 Resistance tests - Two test cups, one in the range of 0.25 to 0.74, the other in the range of 0.75 to 1.50 cubic inches of air per second, when measured at the prevailing room temperature and atmospheric pressure, shall be impregnated as specified in 4.3.2 and after impregnation shall be subjected to an internal aerostatic pressure of not less than 50 psi for all the resistance tests specified herein. The permeability of the cups shall be tested by clamping a lid and a rubber gasket to the top of each of the cups and applying a neutral soap and water solution to the outside of the cups. The lid shall be connected by suitable adapters to a high pressure source. Both impregnated cups shall be subjected to the resistance tests in the order listed hereinafter.

4.6.4.1 Performance, as impregnated - The impregnated cups shall be subjected to the specified internal aerostatic pressure. The impregnated test cups shall show no evidence of leakage as specified in 3.4. Cups which do not pass the performance test may be reimpregnated once in

conformance with MIL-STD-276 and retested. Further impregnation is not permitted for resistance tests.

4.6.4.2 Resistance to sandblasting - Exterior and interior surfaces of cups tested as specified in 4.6.4.1 shall be sandblasted using aluminum oxide grit, Type I, Grade A, of MIL-G-21380. The cups shall then be subjected to aerostatic pressure, and no leakage shall occur as specified in 3.5.1.

4.6.4.3 Resistance to grease cleaning compound - Cups tested as specified in 4.6.4.2 shall be immersed in a container of solvent emulsion grease cleaning compound conforming to P-C-444, Type 1 for 30 minutes. The cups shall then be thoroughly rinsed in hot water and subjected to the internal aerostatic pressure, and no leakage shall occur as specified in 3.5.2.

* 4.6.4.4 Resistance to carbon removing compound - Cups tested as specified in 4.6.4.3 shall be immersed in a container of carbon removing compound conforming to P-C-111 for 30 minutes. The cups shall then be thoroughly rinsed in hot water and subjected to internal aerostatic pressure, and no leakage shall occur as specified in 3.5.3.

4.6.4.5 Resistance to paint stripping compound - Cups tested as specified in 4.6.4.4 shall be immersed in a container of paint stripping compound conforming to MIL-R-7751 for 30 minutes. The cups shall then be thoroughly rinsed in hot water and subjected to the internal aerostatic pressure, and no leakage shall occur as specified in 3.5.4.

4.6.4.6 Resistance to silicate-soap metal cleaner - Cups tested as specified in 4.6.4.5 shall be thoroughly cleaned on all surfaces with a stiff brush and hot water and silicate soap conforming to MIL-M-7752. The cups shall then be rinsed in hot water and subjected to internal aerostatic pressure, and no leakage shall occur as specified in 3.5.5.

* 4.6.4.7 Resistance to turbine fuel - Cups tested as specified in 4.6.4.6 shall be filled with Grade JP-4 turbine fuel conforming to MIL-T-562 and allowed to stand for 48 hours at room temperature. The gasoline shall then be filtered for evidence of precipitation. The test cups shall then be subjected to the specified internal aerostatic pressure, and shall show no evidence of leakage nor evidence of precipitation of the impregnating material or the casting alloy or compounds thereof, and no leakage shall occur as specified in 3.5.6.

* 4.6.4.8 Resistance to lubricating oil - Cups tested as specified in 4.6.4.7 shall be filled with lubricating oil conforming to MIL-L-7808 and placed in an oven at 121°C (250°F to 260°F) for 48 hours. The test cups shall then be drained and thoroughly cleaned with tetrachloroethylene.

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conforming to Q-T-236 or 1, 1, 1 Trichlorethane, conforming to MIL-T-8155). After cleaning, the test cups shall be subjected to the internal aerostatic pressure, and no leakage shall occur as specified in 3.5.7.

4.6.4.9 Resistance to cycling temperature - Cups tested as specified in 4.6.4.8 shall be heated at 149° to 163° C (300° to 325°F) for 4 hours, air cooled to room temperature, then placed in a refrigerated area held at -54° + 2° C (-65° + 5°F) for not less than 1 hour. Immediately upon removal from refrigeration, the cups shall be subjected to the internal aerostatic pressure, using an 80 percent, by volume, methyl alcohol-neutral soap solution in place of the neutral soap and water solution as specified in 4.6.4 and no leakage shall occur as specified in 3.5.8.

4.6.5 Effect on paint systems - Cups tested as specified in 4.6.4.9 shall be reimpregnated in accordance with 4.3.2. The following lacquer system shall be applied to cups in accordance with MIL-F-18264: One coat each of wash primer conforming to MIL-C-8514, lacquer primer conforming to MIL-P-7962 and acrylic-nitrocellulose lacquer conforming to MIL-L-19537. The system shall be allowed to dry for 48 hours and then tested in accordance with Method 6304 of Fed. Std. No. 141 (see 3.3.1).

4.6.6 Inspection for packaging, packing and marking - The sealer shall be inspected for compliance with the packaging, packing and marking requirements of Section 5.

* 4.7 Toxicological data and formulation - The supplier shall furnish the toxicological data and formulations required to evaluate the safety of the material for the proposed use.

4.8 Rejection criteria - If any of the test specimens fail to meet any of the tests required by this specification the lot represented by the sample shall be rejected.

4.8.1 Retest - Retest provisions shall be in accordance with Section 1000 of Fed. Std. No. 141.

5. PREPARATION FOR DELIVERY

5.1 Levels of packaging - The level of packaging shall be Level A or C, as specified (see 6.2).

5.1.1 Level A - The sealer shall be packaged in accordance with TI-P-143 in the manner specified for "Unit Packaging for Domestic and Overseas Shipment".

5.1.2 Level C - The sealer shall be packaged to afford the degree of protection necessary to prevent deterioration or damage during

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shipment under normal environmental conditions and commercial modes of transportation.

5.2 Levels of packing - Packing shall be Level A, B, or C as specified (see 6.2).

5.2.1 Level A - The sealer, packaged as specified in 5.1 shall be packed in accordance with TT-P-143 in the manner specified for "Overseas Shipment".

5.2.2 Level B - The sealer, packed as specified in 5.1 shall be packed in accordance with TT-P-143 in the manner specified for "Domestic Shipment".

* 5.2.3 Level C - Sealer which the carrier requires to be over-packed for shipment shall be packed in exterior type shipping containers in a manner that will insure safe transportation at the lowest rate to the point of delivery, and shall meet as a minimum, the requirements of the rules and regulations applicable to the mode of transportation selected.

5.3 Marking - Marking shall be in accordance with TT-P-143. Where Class 2 is applicable, the class shall be identified as nonphotochemically reactive.

6. NOTES

* 6.1 Intended use - The sealer material covered by this specification is intended for use on magnesium-alloy and aluminum-alloy castings designed to withstand pressure, but which because of faulty casting techniques or other reasons, are found to be porous. This specification does not cover the requirements for use on structurally sound castings which contain micropores which are incorporated in fire control instruments or mortar snells.

6.1.1 Limitations on usage of sealers for impregnating aluminum-alloy and magnesium-alloy castings shall be as specified in MIL-STD-276.

* 6.1.2 Class 1 or Class 2 material may be used where no Air Pollution Regulations are enforced, whereas Class 2 is intended to be used in areas where Air Pollution Regulations are in force.

* 6.2 Ordering data - Procurement documents should specify the following:

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- (a) Title, number, and date of this specification.
- (b) Class of material (1.2).
- (c) First article sampling (see 3.1, 4.4.1 and 4.4.2).
- (d) Responsibility of first article sample testing (see 4.4.4).
- (e) Total quantity required.
- (f) Size of the container for sealer. The sealer covered by the specification should be purchased by volume, the unit being one U.S. liquid gallon of 231 cubic inches at 15.6°C (60°F).
- (g) Levels of packaging and packing required (see Section 5).

6.3 Information - The following paragraph from MIL-STD-276 is offered for information only (see 1.1).

"When castings may be impregnated - Castings may be impregnated or reimpregnated only when specifically ~~authorized~~ authorized in the detail drawings, directives, or when specifically authorized by the bureau or agency concerned. Castings exhibiting structural defects shall under no circumstances be impregnated; neither shall those which exhibit minute (interdendritic) porosity by "sweating" or "weeping", with test water pressure (see 4.1.2.1) coming through at a rate greater than 25 drops per minute per square foot of casting surface, unless specifically authorized by the bureau or agency concerned."

* 6.4 Changes from previous issue - The outside margins of this specification have been marked * to indicate where changes (deletions, additions, etc.) from the previous issue have been made. This has been done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in those notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content as written irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - MR
Navy - AS
Air Force - 84

Preparing activity:

Navy - AS

(Proj. No. 8034-0326)

W12-11-11-11

Review activities:

Army - MR, MI,
Navy - AS
Air Force - 11

User activities:

Army - ME, AV, AT
Navy - MC, SH, EC
Air Force - None

Review/user information is current as of date of this document. For future coordination of changes to this document, draft circulation should be based on the information in the current DODISS.