

MIL-I-17563B
4 April 1985
SUPERSEDING
MIL-I-17563A
12 March 1957
MIL-I-6869
14 January 1971
(See 6.6 and 6.7)

MILITARY SPECIFICATION

IMPREGNANTS FOR ALUMINUM, COPPER, IRON, MAGNESIUM AND ZINC ALLOY CASTINGS

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

1. SCOPE

1.1 Scope. This specification covers the requirements for impregnants suitable for use in sealing the porosity in castings, only when specifically authorized in the detail drawings or when specifically authorized by the contracting activity.

1.2 Castings which may not be impregnated. Castings exhibiting structural defects shall under no circumstance be impregnated.

1.3 Classification. The impregnants shall be of the following classes:

- Class 1 - Aerobic/thermal cure, suitable for service temperatures up to 300 degrees Fahrenheit (°F) (149 degrees Celsius (°C)).
- Class 2 - Aerobic/thermal cure, suitable for service temperatures up to 500°F (260°C).
- Class 3 - Aerobic/thermal cure, for use where air pollution requirements apply, suitable for service temperatures up to 300°F (149°C).
- Class 4 - Anaerobic/ion cure, suitable for service temperatures up to 300°F (149°C).

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 5523, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 6850

MIL-I-17563B

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

- O-T-236 - Tetrachloroethylene (Perchloroethylene), Technical.
- P-C-111 - Carbon Removing Compound.
- TT-S-735 - Standard Test Fluids; Hydrocarbon.
- PPP-C-96 - Cans, Metal, 28 Gage and Lighter.
- PPP-P-704 - Pails, Metal: (Shipping, Steel, 1 Through 12 Gallons).

MILITARY

- MIL-T-5624 - Turbine Fuel, Aviation, Grades JP-4 and JP-5.
- MIL-L-7808 - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number O-148.
- MIL-P-7962 - Primer Coating, Cellulose-Nitrate Modified Alkyd Type, Corrosion-Inhibiting, Fast-Drying (For Spray Application Over Pretreatment Coating).
- MIL-C-8514 - Coating Compound Metal Pretreatment, Resin-Acid.
- MIL-E-9500 - Ethylene Glycol, Technical.
- MIL-F-17111 - Fluid, Power Transmission.
- MIL-H-17672 - Hydraulic Fluid, Petroleum, Inhibited.
- MIL-F-18264 - Finishes: Organic, Weapons System, Application and Control of.
- MIL-L-19537 - Lacquer: Acrylic-Nitrocellulose Gloss (For Aircraft Use).
- MIL-T-81533 - 1,1,1 Trichloroethane (Methyl Chloroform) Inhibited, Vapor Degreasing.

STANDARDS

FEDERAL

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

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-276 - Impregnation of Porous Nonferrous Metal Castings.

MIL-I-17563B

2.1.2 Other Government publication. The following other Government publication forms a part of this specification to the extent specified herein.

DEPARTMENT OF TRANSPORTATION (DOT)
Code of Federal Regulations, Title 49

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Copies of specifications, standards 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. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
ANSI Z129.1 - Hazardous Industrial Chemicals - Precautionary
Labels. (DoD adopted)

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

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, NW, Washington, DC 20036.)

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.)

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

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Qualification. The impregnants 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).

MIL-I-17563B

3.2 Materials. The impregnant shall not contain filterable materials in suspension (see 4.5.2), inert liquids, nor materials which react to produce gaseous or liquid by-products, either alone or in contact with materials present. When cured, it shall produce a solid seal throughout the casting porosity without exhibiting a weight loss exceeding 3 percent when tested as specified in 4.5.3. In addition, the volatile content of class 3 sealant shall consist of nonphotochemically 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.

3.2.1 Recovered materials. Unless otherwise specified herein, material covered by this specification shall be new and shall be fabricated using materials produced from recovered materials to the maximum extent practicable without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification unless otherwise specifically specified.

3.3 Visual inspection. When visually inspected, the test specimen (casting) shall be free of obvious surface defects, holes, pits, and fissures.

3.4 Pot life. When tested as specified in 4.5.4, the activated impregnant shall have a pot life of not less than 1 month at $75 \pm 5^{\circ}\text{F}$ ($24 \pm 2.8^{\circ}\text{C}$) except for class 4 impregnant which shall have a pot life of not less than 1 month at $45 \pm 5^{\circ}\text{F}$ ($8 \pm 2.8^{\circ}\text{C}$).

3.5 Storage life. Materials in unopened containers shall be usable when stored up to 1 year.

3.6 Curing. The impregnant shall show normal curing characteristics in contact with aluminum, copper, iron, magnesium, and zinc alloys materials when tested as specified in 4.5.5.

3.7 Leakage. Impregnated test specimens shall show no leakage when impregnated as specified in 4.5.6.6 and tested as specified in 4.5.6.7.

3.8 Effect on paint. The cured sealant shall not cause the paint system to chip, peel, or show loss of adhesion when tested as specified in 4.6.

3.9 Toxicity. When used for its intended purpose (see 4.7), the material shall have no adverse effect on the health of personnel. Questions pertinent to this effect shall be referred by the contracting activity to the appropriate department medical service who will act as an advisor to the contracting activity.

MIL-I-17563B

3.10 Material safety data sheet (MSDS). The contracting activity shall be provided a MSDS at the time of contract award. The MSDS is form OSHA-20, 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 or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for this 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 the 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 inspection shall consist of the examination of 4.4 and the tests of 4.5. Pressure testing shall be performed after impregnation and again after conditioning, as specified in 4.5.6.7.

4.4 Quality conformance inspection. Quality conformance inspection shall consist of the tests specified in 4.5.6.5, 4.5.6.6, and 4.5.6.7.

4.4.1 Sampling for quality conformance inspection. Quality conformance sampling shall be as follows:

4.4.1.1 Inspection lot. A sampling lot shall consist of all impregnant manufactured as one batch and offered for delivery at one time.

4.4.1.2 Sample for conformance to preparation for delivery. A sample of filled exterior containers shall be selected from each lot in accordance with the provisions of MIL-STD-105 for inspection level I and an acceptable quality level (AQL) of 2.5 percent defective.

4.4.1.3 Rejection criteria. If any sample of impregnant fails to conform completely with the requirements of this specification, or if the preparation for delivery sample contains more defective units than permitted by AQL of 2.5 percent, the lot represented by the sample shall be rejected. Disposition of rejected lots shall be in accordance with MIL-STD-105.

4.4.1.4 Inspection of curing. After curing, the impregnate shall be examined to determine that it had formed a hard mass free of visual defects.

MIL-I-17563B

4.5 Tests.

4.5.1 Test sample. The test sample shall consist of 1 gallon (3.8 liters) of the impregnant plus the necessary activator and curing instructions supplied by the manufacturer.

4.5.2 Test for filterable solids. The test sample shall be drawn through a Whatman No. 5 filter paper or equivalent. The filter paper shall be examined visually during and after the filtration for evidence of loading by solids.

4.5.3 Component test. Not less than 5 cubic centimeters (cm^3) of the activated impregnant shall be carefully weighed on an analytical balance, cured in accordance with the manufacturer's instructions, and reweighed for evidence of weight loss.

4.5.4 Pot life test. Not less than 10 cm^3 of the activated impregnant shall be maintained for 1 month continuously at $75 \pm 5^\circ\text{F}$ ($24 \pm 2.8^\circ\text{C}$); at $45 \pm 5^\circ\text{F}$ ($8 \pm 2.8^\circ\text{C}$) for class 4 impregnant while under aeration. At the end of this period it shall be examined for evidence of thickening, curdling and other objectionable property changes which prevent its use for the impregnation processes specified in 4.5.6.6.

4.5.5 Cure tests. Cure test for impregnant shall be as follows:

4.5.5.1 Cure test specimens. Cure test specimens shall consist of fine dry chips of aluminum, copper, iron, magnesium, and zinc alloy materials.

4.5.5.2 Cure test method. Sufficient activated impregnant (not less than 5 cm^3), shall be used to cover each cure test specimen in a test tube. After contact for not less than 24 hours, the impregnant shall be cured in accordance with the manufacturer's instructions.

4.5.6 Test specimens. Test specimens (castings) shall consist of a metal powder or a sintered metal powder fused together to form a porous casting 1 inch long with a nominal 0.75-inch (1.9 cm) inside diameter (id) and a 1.00-inch (2.5 cm) outside diameter (od) as shown on figure 1. The interconnected voids by volume (porosity) shall not be less than 18 percent as determined by the method specified in 4.5.6.1. The chemical composition of the test specimens shall conform to one of the three types as specified in table I.

MIL-I-17563B

TABLE I. Chemical composition.

Element	Composition percent		
	Type I	Type II	Type III
Copper	82.0 - 90.0	----	----
Iron	1.0 (max)	95.0 (min)	----
Tin	9.5 - 10.5	----	----
Lead, maximum	4.0	----	----
Zinc, maximum	1.0	----	----
Aluminum, minimum	----	----	99.0
Carbon, maximum ^{1/}	1.75	----	----
Total other elements by diff., maximum percent	0.5	4.0	1.0
Combined carbon ^{2/} (on basis of iron only)	---	0.60-1.00	----

1/ Commonly graphite. A maximum of 1-1/2 percent of another type of solid lubricant may be substituted when authorized.

2/ The combined carbon may be a metallographic estimate of the carbon in the iron.

4.5.6.1 Void volume. Percent interconnection void by volume shall be determined on representative throw away samples of specimens using the following formulas:

$$\text{Percent void by volume, } V = \frac{B-A}{(B-C) S} \times 100$$

In which: V = Interconnected void by volume, percent.

A = Weight of lubricant-free sample in air, grams.

B = Weight of sample as received or impregnated with oil, grams.

C = Weight of sample in water as received or impregnated with oil, grams.

S = Specific gravity of impregnant at temperature of test.

The weights A, B and C shall be determined to the nearest 0.001 gram or to within 0.10 percent of each weight, whichever is greater. The sample shall be impregnated by immersion for a minimum of 4 hours in oil (approximately 200 seconds, Saybolt Universal at 100°F (38°C)), held at temperature of 180 ± 10°F (82.2 ± 5°C) and then cooled to room temperature in oil or by immersion in oil at room temperature, reducing the pressure over the oil and sample to an absolute pressure of not more than 2 inches (5 cm) of mercury for a minimum of 30 minutes, or until it ceases bubbling. The sample shall then be left in the oil for at least 10 minutes after atmospheric pressure has been established. After impregnation, excess oil shall be removed by wiping with a soft cloth. The effect of the surface tension of the water in weighing the sample in water may be minimized by the addition of a wetting agent to the water.

MIL-I-17563B

4.5.6.2 Pressure test apparatus. The pressure test apparatus shall be made by adapting a standard #474 DE-STA-CO clamp or equivalent as shown on figure 2.

4.5.6.3 Pressure test procedure. The pressure test procedures for specimens shall be the following:

4.5.6.3.1 Pressure test method. Test specimens of each type (types I, II, and III) shall be placed in the test apparatus as shown on figure 2, immersed in water, and subjected to 20 pounds per square inch (lb/in²) (1.4 atmospheres) for a minimum of 5 minutes. Only castings from the batch with porosity as specified in 4.5.6 may be impregnated and used for penetration and conditioning tests as specified in 4.5.6.6 and 4.5.6.7 respectively.

4.5.6.4 Pressure testing sequence. After impregnation as specified in 4.5.6.6, the test specimens shall be pressure tested for leakage at 50 lb/in² (3.4 atmospheres) as specified in 4.5.6.5. Only specimens showing no leakage shall be conditioned as specified in 4.5.6.7 and again pressure tested at 50 lb/in² (3.4 atmospheres).

4.5.6.5 Penetration test. One impregnated test specimen of each type (types I, II, and III) shall be machined to remove a minimum of 1/16-inch (0.59 cm) of material from outer surface, then etched with 6N nitric acid to remove 0.005-inch (0.013 cm) of material from surface, and then subjected to 50 lb/in² (3.4 atmospheres) aerostatic pressure for not less than 3 minutes with no leakage.

4.5.6.6 Impregnation process. Test specimens of each type (types I, II, and III) shall be impregnated in accordance with MIL-STD-276 (including the ferrous castings). The external surfaces of the impregnated cylinder shall be machined clean, if necessary, to remove excess impregnating compound before testing.

4.5.6.7 Conditioning test. The impregnated test specimens shall be subjected to 50 lb/in² (3.4 atmospheres) aerostatic pressure for not less than 3 minutes. A specimen showing leakage may be reimpregnated once more as specified. A maximum of two impregnations per specimen is permitted. Two impregnated test specimens, showing no leakage, shall be conditioned in each of the following media and shall show no leakage when subjected to 50 lb/in² (3.4 atmospheres) aerostatic pressure for not less than 3 minutes.

4.5.6.7.1 Water. Two test specimens of each type (types I, II, and III as specified in table I) shall be conditioned in boiling water (212°F (100°C)) for not less than 14 days.

4.5.6.7.2 Oil. Two specimens of each type (types I, II, and III) shall be conditioned in MS2075 oil in accordance with MIL-H-17672 at 210 ± 5°F (99 ± 2.8°C) for not less than 14 days.

4.5.6.7.3 Hydraulic fluid. Two specimens of each type shall be conditioned in hydraulic fluid in accordance with MIL-F-17111 at 210 ± 5°F (99 ± 2.8°C) for not less than 14 days.

MIL-I-17563B

4.5.6.7.4 Hydrocarbon fluid. Two specimens of each type (types I, II, and III as specified in table I) shall be conditioned in hydrocarbon fluid in accordance with type II of TT-S-735 at room temperature for not less than 14 days.

4.5.6.7.5 Resistance to carbon removing compound. Two specimens of each type shall be immersed in a container of carbon removing compound in accordance with P-C-111 for 30 minutes, then thoroughly rinsed in hot water and subjected to the test procedure as specified in 4.5.6.3, and no leakage shall occur as specified in 3.7.

4.5.6.7.6 Resistance to turbine fuel. Two specimens of type III shall be immersed in grade JP-4 turbine fuel in accordance with MIL-T-5624 and allowed to stand for 48 hours at room temperature. The fuel shall then be filtered for evidence of precipitation. The specimens shall then be subjected to the specified pressure test procedure as specified in 4.5.6.3 and shall show no evidence of leakage nor evidence of precipitation of the impregnating material of the casting alloy or compounds thereof, and no leakage shall occur as specified in 3.7.

4.5.6.7.7 Resistance to lubricating oil. Two test specimens of each type shall be immersed in lubricating oil in accordance with MIL-L-7808 and placed in an oven at $255 \pm 5^\circ\text{F}$ ($121 \pm 2.8^\circ\text{C}$) for 48 hours. The specimens shall then be drained and thoroughly cleaned with tetrachloroethylene in accordance with O-T-236 or 1,1,1 trichloroethane in accordance with MIL-T-81533. After cleaning, the test specimens shall be subjected to the pressure test procedure as specified in 4.5.6.3 and no leakage shall occur as specified in 3.7.

4.5.6.7.8 Ethylene glycol. Four specimens of each type shall be immersed in condensing 1,1,1 trichloroethylene vapor for not less than 30 minutes. Two impregnated specimens of each type, showing no leakage and containing class 1 impregnant shall be conditioned in atmospheric air at $300 \pm 5^\circ\text{F}$ ($149 \pm 2.8^\circ\text{C}$) and in ethylene glycol in accordance with MIL-E-9500 at $300 \pm 5^\circ\text{F}$ ($149 \pm 2.8^\circ\text{C}$) for 14 days; two specimens of each type containing the class 2 impregnant shall be conditioned in atmospheric air at $500 \pm 5^\circ\text{F}$ ($260 \pm 2.8^\circ\text{C}$) and boiling ethylene glycol for 14 days. Specimens conditioned as specified above shall be subjected to 50 lb/in² (3.4 atmospheres) aerostatic pressure for not less than 3 minutes.

4.6 Effect on paint systems (class 3 only). Two test specimens of each type shall be heated at 300 to 325°F (149 to 163°C) for 4 hours, air cooled to room temperature, then placed in a refrigerated area held at $-65 \pm 5^\circ\text{F}$ ($-54 \pm 2.8^\circ\text{C}$) for not less than 1 hour. Immediately upon removal from refrigeration, the specimens shall be subjected to the internal aerostatic pressure, using an 80 percent (by volume) ethyl alcohol-neutral soap solution and no leakage shall occur. The test specimens shall be reimpregnated in accordance with method A or B of MIL-STD-276. The following lacquer system shall be applied to the test specimens in accordance with MIL-P-18264: One coat each of wash primer in accordance with MIL-C-8514, lacquer primer in accordance with MIL-P-7962, and acrylic-nitrocellulose lacquer in accordance with MIL-L-19537. The system shall be allowed to dry for 48 hours and then tested in accordance with method 6304 of FED-STD-141 to meet the requirement as specified in 3.8.

MIL-I-17563B

4.7 Toxicity. A manufacturer of material shall disclose the formulation of his product to the Naval Medical Command, MEDCOM 42, Washington, DC 20372. The disclosure of proprietary information, which shall be held in confidence by the Naval Medical Command, shall include: the name, formula, and approximate percentage by weight and volume of each ingredient in the product; the results of any toxicological testing of the product; identification of its pyrolysis products; and any such other information as may be needed to permit an accurate appraisal of any toxicity problem associated with the handling, storage, application, use, or disposal of the material.

4.8 Inspection of packaging. Sample packages and packs, and the inspection of the preservation-packaging, packing and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

5. PACKAGING

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

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

5.1.1 General requirements. General requirements for packaging shall be as follows:

- (a) Class 1, 2 and 3 - Unless otherwise specified (see 6.2.1), the impregnant shall be packaged in screw top or multiple friction top rectangular cans, steel pails, or metal drums, whether furnished in a liquid, jelly or powdered form. When components of the impregnant are packaged separately, components required to equal one unit of issue, producing the specific quantity of product, shall be packaged together as a kit in a unit container. The capacity and style of the containers shall be as specified by the contracting activity (see 6.2.1).
- (b) Class 4 - Unless otherwise specified (see 6.2.1), the impregnant shall be packaged in rectangular screw top low density polyethylene carboy.

5.1.2 Level A.

5.1.2.1 Liquid materials. Liquid materials shall be packaged in rectangular cans with a screw cap closure not exceeding 1-gallon capacity in accordance with type I of PPP-C-96; closed top style 5-gallon steel drum in accordance with type I, class 4, 5 and 6 of PPP-P-704 with screw cap closure; or in 17C or 5B metal drums, with closed top style and double seamed-in head in accordance with 17E of the Department of Transportation (DOT) Regulations, Title 49.

5.1.2.2 Powdered and jelly-type material. Powdered or jelly-type materials shall be packaged in round containers with a multiple friction top closure not exceeding 1-gallon capacity in accordance with type V, class 2 of PPP-C-96; 5-gallon round open top style containers with 16 lug closures, in accordance

MIL-I-17563B

with type V, class 2 of PPP-C-96; or in 6- to 55-gallon open top style metal drums, with bolted ring seal closures and with side seams welded, in accordance with 37D of DOT Regulations, Title 49.

5.1.3 Level C. Preservation-packaging shall afford protection against deterioration and physical damage. The contractor's normal retail or wholesale preservation-packaging methods may be utilized when such meets the requirements.

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

5.2.1 Levels A and B containers. The cans shall be packed in accordance with the appendix of PPP-C-96. Drums will require no overpacking.

5.2.2 Level C. The impregnant shall be packed for shipment in a manner acceptable to the common carrier and which will ensure safe delivery at destination, in a satisfactory condition, at the lowest applicable rate. Containers, packing, or method of shipment shall comply with Uniform Freight or National Motor Freight Classification Rules or Regulations or other carrier rules, as applicable, to the mode of transportation.

5.3 Marking. In addition to any special marking required (see 6.2.1), unit containers and exterior shipping containers shall be marked in accordance with MIL-STD-129, and shall include the date of manufacture and special storage instructions, as necessary.

5.3.1 Warning label. Packaged units of hazardous chemicals shall have affixed thereto such warning labels and markings, as may be required by DOT Regulations, Title 49 and ANSI Z129.1.

5.4 Special marking. When specified (see 6.2.1), the container shall be marked with recommended mixing and impregnating procedures.

5.5 Material safety data sheet. A copy of the material safety data sheet (Form OSHA-20) shall be attached to the shipping document for each destination (see 3.10).

6. NOTES

6.1 Intended use. The impregnating material covered by this specification is intended to seal porosities present in aluminum, copper, iron, magnesium, and zinc alloy castings. Impregnating materials are not to be used to effect acceptance of an unacceptable casting.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Levels of packaging and packing required (see 5.1 and 5.2).
- (c) Size and type of containers required (see 5.1.1).
- (d) Special marking, if required (see 5.3 and 5.4).

MIL-I-17563B

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-17563, whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, 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 purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 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 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 acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.5 Material safety data sheet. In order to obtain the MSDS, which is found as part of FED-STD-313, FAR clause 52.223-3 must be in the contract.

6.6 Supersession data. This specification includes the requirements of MIL-I-6869D, dated 14 January 1971 (see table II).

TABLE II. Supersession data.

MIL-I-17563B	MIL-I-17563A	MIL-I-6869D
Class 1	Class 1	Class 1
Class 2	Class 2	---
Class 3	---	Class 2
Class 4	---	---

6.7 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

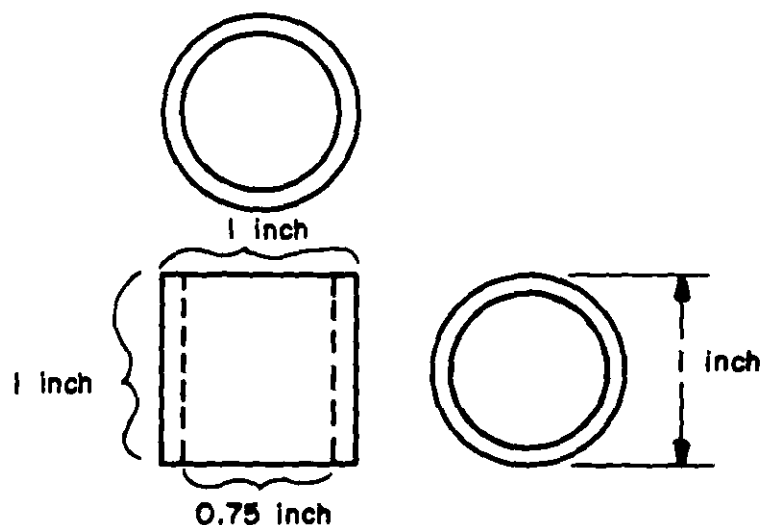
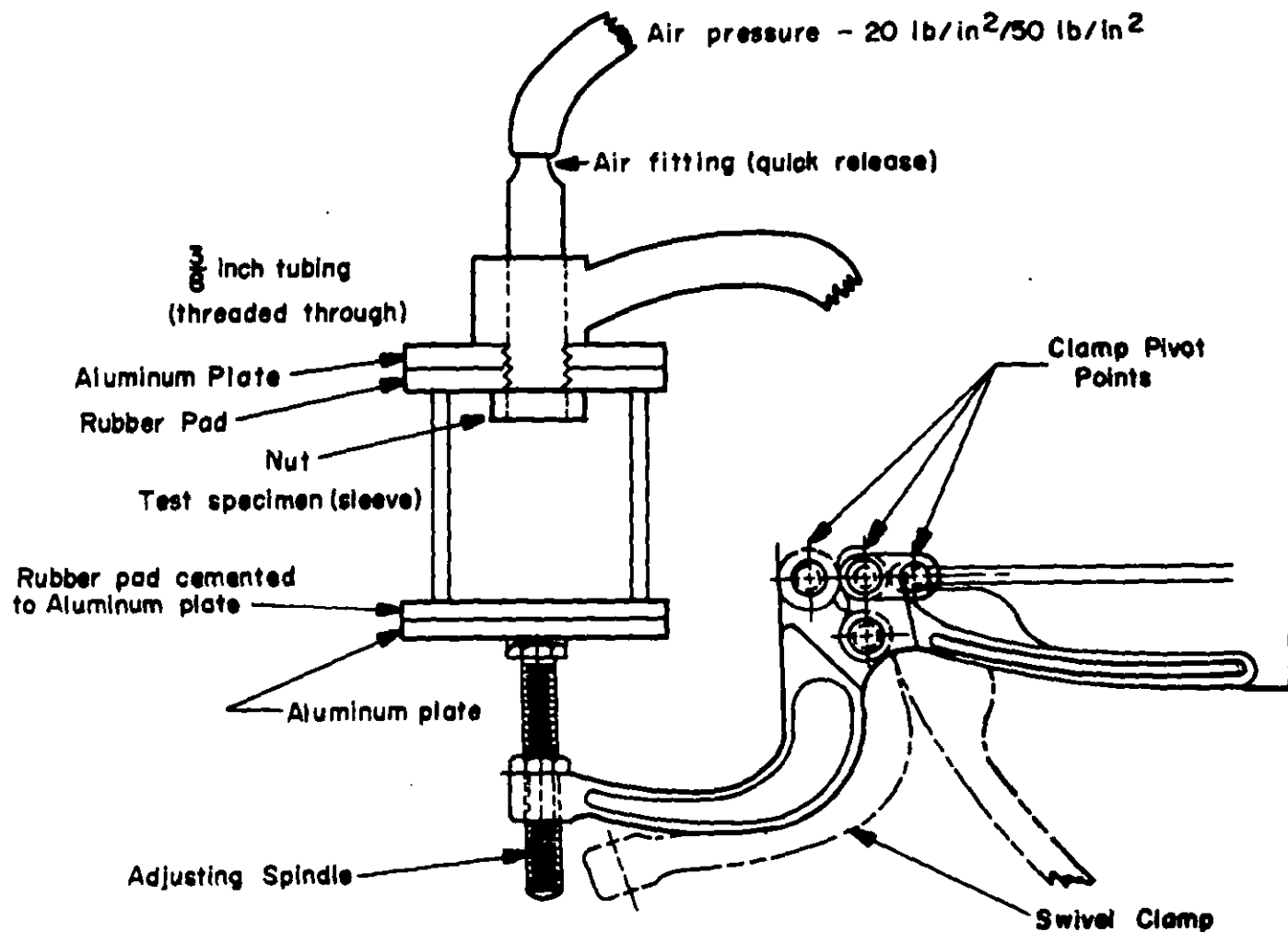
Custodians:
Army - AR
Navy - SH

Preparing activity:
Navy - SH
(Project 6850-0762)

Review activities:
Army - MR
DLA - GS

User activity:
Navy - AS

MIL-I-17563B

FIGURE 1. Test specimen dimensions (nominal).FIGURE 2. Test apparatus with test specimen adaptation of
DE-STA-CO clamp #474.

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

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DEPARTMENT OF THE NAVY

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UNITED STATES

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL*(See Instructions - Reverse Side)***1. DOCUMENT NUMBER**

MIL-I-17563B

2. DOCUMENT TITLEALLOY CASTINGS
IMPREGNANTS FOR ALUMINUM, COPPER, IRON, MAGNESIUM AND ZINC**3a. NAME OF SUBMITTING ORGANIZATION****4. TYPE OF ORGANIZATION (Mark one)**☐

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OTHER (Specify): _____

b. ADDRESS (Street, City, State, ZIP Code)**5. PROBLEM AREAS****a. Paragraph Number and Wording:****b. Recommended Wording:****c. Reason/Rationale for Recommendation:****6. REMARKS****7a. NAME OF SUBMITTER (Last, First, MI) - Optional****7b. WORK TELEPHONE NUMBER (Include Area Code) - Optional****c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional****8. DATE OF SUBMISSION (YYMMDD)**

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