

INCH-POUND  
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19 October 1988  
SUPERSEDING  
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(See 6.10)

## MILITARY SPECIFICATION

### HYDROMETER SETS AND PARTS, SYRINGE, LEAD-ACID STORAGE BATTERY TESTING

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

#### 1. SCOPE

1.1 Scope. This specification covers hydrometer sets and replacement parts for use in measuring the specific gravity of electrolyte in submarine, portable, radio, and aircraft lead-acid storage batteries and for measuring mixing acid used for electrolyte in such batteries.

1.2 Hydrometer sets shall be of the following types as specified (see 6.2). Types A and B shall be furnished as complete sets or as individual parts (see 3.5 and 6.5).

- Type A - For submarine lead-acid storage batteries.
- Type B - For portable and radio lead-acid storage batteries.
- Type C - For aircraft lead-acid storage batteries.
- Type D - For measuring mixing acid.

#### 2. APPLICABLE DOCUMENTS

##### 2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

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 55Z3, 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.

AMSC N/A

FSC 6630

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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## SPECIFICATIONS

## FEDERAL

- GG-T-258 - Tester, Battery Electrolyte Solution.
- PPP-F-320 - Fiberboard, Corrugated and Solid, Sheet Stock (Container Grade), and Cut Shapes.

## MILITARY

- MIL-P-116 - Preservation, Methods of.
- MIL-T-3618 - Thermometer, Self-Indicating, Bimetallic.
- MIL-L-19140 - Lumber and Plywood, Fire-Retardant Treated.

## STANDARDS

## MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-2073-1 - DoD Materiel Procedures for Development and Application of Packaging Requirements.

(Unless otherwise indicated, copies of federal and Military specifications and standards are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.1.2 Other Government publications. The following other Government publication forms a part of this document to the extent specified herein. Unless otherwise specified, the issue is that cited in the solicitation.

## PUBLICATION

## MARE ISLAND NAVAL SHIPYARD

- Procedure CAK-173 - For Checking the Accuracy of Hydrometers Used in the Maintenance/Operation of Lead-Acid Storage Batteries.

(Copies of Procedure CAK-173 are available from Mare Island Naval Shipyard, Vallejo, CA 94592.)

2.2 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D 3951 - Standard Practice for Commercial Packaging.  
(DoD adopted)

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

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(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 First article. When specified (see 6.2), prior to beginning production a sample shall be subjected to first article inspection (see 6.4) in accordance with 4.3.

3.2 Material. Material shall be as specified herein (see 6.3).

3.2.1 Rubber. Soft rubber bulbs, plugs, and tubes shall be made of rubber compound, properly vulcanized, and containing a minimum of 25 percent, by volume, crude rubber and a total rubber hydrocarbon content of at least 60 percent. Free sulfur shall not exceed 0.5 percent. The mineral fillers shall be free from all substances likely to have a deleterious effect on the rubber compound. The rubber articles shall be of such size that they will fit as applicable, with airtight connections. The slight ridge left by the parting of the mold will not be considered objectionable. The rubber shall be free of abrasions, blemishes, blooms, breaks, deformation or pits.

3.2.2 Glass. All glass parts shall be of high grade transparent flint glass, or equivalent, free from blisters, spots, chips, checks, scratches, bubbles, or defects of any nature. Glass tubing shall be of uniform diameter and wall thickness throughout, and the ends shall be carefully finished.

3.2.3 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and may 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 Operation. The hydrometer shall measure the specific gravity of storage battery electrolyte referred to water at 60 degrees Fahrenheit (°F) temperature through the scale ranges and with the accuracy specified herein. The accuracy shall not be impaired by contact, friction, or adhesion between the hydrometer and the syringe barrel.

3.4 Construction.

3.4.1 Hydrometer. The hydrometer shall consist of a scale enclosed in a ballasted airtight glass tube float. The lower end of the tube shall form the float bulb, and shall enclose ballast material in a fixed position. The upper