

METRIC

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 SUPERSEDING
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 (See 6.6)

MILITARY SPECIFICATION

BATTERIES, STORAGE, LEAD-ACID, PORTABLE;

GENERAL SPECIFICATION FOR (METRIC)

This specification is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers portable, lead-acid storage batteries for use in engine starting and standby or emergency power on Naval ships.

1.2 Classification.

1.2.1 Battery type designation. The type designation of portable lead-acid storage batteries shall be identified in the following form, as specified (see 3.1 and 6.2.1).

<u>V-</u>	<u>Ah-</u>	<u>L/D or H/S-</u>	<u>A or B</u>
Voltage (see 1.2.1.1)	Capacity (see 1.2.1.2)	Rate/discharge (see 1.2.1.3)	Battery type (see 1.2.1.4)

1.2.1.1 Battery voltage. The battery voltage shall be 2, 6, 8, or 12 volts (V).

1.2.1.2 Battery capacity. The battery capacity is a nominal value and shall be stated in ampere-hours (Ah) at the 10-hour rate and 1.220 specific gravity.

1.2.1.3 Battery rate/discharge. The battery rate and discharge shall be one of the following:

L/D - low rate/deep discharge
 H/S - high rate/shallow discharge

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 3112, Department of the Navy, Washington, DC 20362 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1.2.1.4 Battery type. The battery type shall be one of the following:

- A - normal intercell connections.
- B - opposite intercell connections to reduce stray magnetic fields (for use on mine sweepers).

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

- O-S-801 - Sulfuric Acid, Electrolyte; For Storage Batteries.
- QQ-S-571 - Solder, Tin Alloy; Tin-Lead Alloy; and Lead Alloy.
- PPP-B-636 - Boxes, Shipping, Fiberboard.

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- MIL-B-208 - Battery, Storage, Lead Acid, Automotive and Navy Portable (Except Aircraft), Packaging and Packing of.
- MIL-L-10547 - Liners, Case, and Sheet, Overwrap; Water-Vapor-proof or Waterproof, Flexible.

See supplement 1 for list of associated specification sheets.

STANDARDS

FEDERAL

- FED-STD-H28 - Screw-Thread Standards for Federal Services.
- FED-STD-H28/2 - Unified Thread Form and Thread Series for Bolts, Screws, Nuts, Tapped Holes and General Applications.

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- MIL-STD-105 - Sampling Procedures and Tables for Inspection By Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MS35446 - Terminal, Lug, Solder Type, Copper Tubing, One Hole.

(Copies of specifications, standards, drawings, 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.)

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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.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- B 29 - Pig Lead.
- D 639 - Battery Containers Made From Hard Rubber or Equivalent Materials, Testing.

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

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

- J537J - Storage Batteries.

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.)

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.)

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, N.W., Washington, DC 20036.)

BATTERY COUNCIL INTERNATIONAL (BCI)

- BCI Group Numbers, Dimensional Specification and Ratings

(Application for copies should be addressed to the Battery Council International, 111 East Walker Drive, Chicago, IL 60601.)

(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.)

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3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between requirements of this specification and the specification sheet, the latter shall govern.

3.2 Materials. Acceptance of any constituent material shall not be construed as a guarantee of the acceptance of the finished product. Flammable material shall not be used.

3.2.1 Lead. Lead shall conform to ASTM B 29.

3.2.2 Containers and covers. Battery containers and covers shall be molded from hard rubber or plastic whose chemical, electrical, and physical properties conform to ASTM D 639.

3.2.3 Sealing compound. The sealing compound shall not shrink or separate from the holding surface, nor crack during any of the tests specified. The chemical, electrical, and physical properties shall conform to ASTM D 639.

3.2.4 Electrolyte. The electrolyte (for batteries in the dry-charged condition) shall be a solution of sulfuric acid and water. The capacity and performance requirements herein are based on the electrolyte specific gravity of 1.265 ± 0.005 regardless of the gravity at which the batteries are used in service, or as specified in the individual specification sheets. The sulfuric acid shall conform to O-S-801.

3.2.5 Solder. Solder used in making electrical connections, tinning of copper inserts, and other soldering or tinning operations, shall conform to QQ-S-571.

3.2.6 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products 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 Design and construction. Batteries shall conform in design, construction, physical dimensions, and mass to the applicable specification sheet. The parts of the battery shall be as specified in 3.3.1 through 3.3.8.

3.3.1 Battery containers. Battery containers shall be constructed in one piece (monobloc construction). The inner surfaces of battery cell containers shall have a smooth finish free from pitting, blowholes, rough spots, scales, blisters, or other deformation.

3.3.1.1 Sizes. The battery containers shall conform to the dimensions shown on the applicable specification sheet. Where Battery Council International (BCI) numbers are referenced, these apply to external case dimensions only.

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3.3.1.2 Handles. When handles are provided, they may be molded as an integral part of the battery container or constructed of non-conducting synthetic cord, resistant to acid. Handles are required on batteries over 20 kilograms (kg) (filled) and may be supplied on any battery at the manufacturer's discretion.

3.3.2 Covers. Covers shall be of the same material used for battery containers. Covers shall be of one piece or individual cell design and shall be sealed to the container. Covers shall be properly seated and level before sealing. Provisions shall be made to permit filling with electrolyte.

3.3.3 Grids and plates. The grids shall be cast lead alloy and shall be of lattice construction. They shall be free from cracks, blowholes, or other imperfections that may affect their structural strength. A break in that part of a grid used only to retain the active material is permissible if the location of the break does not impair its strength, or permit active material to become loosened or separated therefrom. Plates shall be of the size, number, and thickness that will enable the battery to meet its electrical performance requirements.

3.3.4 Plate-connecting straps. Plate-connecting straps shall be of the pillar-post type, and of sufficient size and strength to provide electrical conductivity and mechanical support to the group of connected plates, to meet the requirement for high-discharge rate (see 3.5.3). All plates of like polarity in each cell of the battery shall be made integral with their strap by burning.

3.3.5 Baffles. A hard rubber, synthetic hard rubber, or plastic horizontal perforated baffle, at least 0.8 millimeter (mm) thick, shall be securely held in place in each cell above the plates and separators, and shall be placed so that separators will not be damaged when instruments are inserted through the filling apertures in the cell cover. The baffle shall not rest or bear on the plate. This requirement is not applicable to the 2V battery of DOD-B-15072/3.

3.3.6 Intercell connectors. Intercell connectors shall be lead alloy or lead alloy with copper inserts, and shall be the burned-on type. Intercell connectors shall not obstruct the filling apertures. They may be external or internal to the cover. Type "A" or "B" intercell connections shall be as specified in the applicable specification sheet.

3.3.7 Terminals. All metal parts of the terminals, except wire leads, shall be lead or lead-, tin-, or solder-(tin/lead) coated. Screws, nuts, and other threaded parts shall be in accordance with FED-STD-H28 and FED-STD-H28/2. Both positive and negative terminals shall receive terminal lugs as specified in the applicable specification sheet and conforming to MS35446.

3.3.7.1 Terminal marking. Positive terminals shall be legibly indicated by "POS," "P," or "+" and negative terminals by "NEG," "N," or "-"; and the polarity markings shall be placed on the applicable terminal or as close thereto as possible. Raised or depressed characters, of sufficient size to be readily recognized, shall be used.

3.3.7.2 Terminal locations. Terminals shall be located on the top of the battery cover and shall not be closer than 15 mm to any edge of the battery top.

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3.3.7.3 Terminal seals. Terminal seals shall be provided to prevent leakage between terminal and cover of the individual cells. If sealing nuts are used, they shall be of lead alloy, and the threads shall be upset during assembly to prevent loosening. If rubber gaskets or bushings are used as a seal, they shall be made in one piece. Cut gaskets shall be of uniform thickness.

3.3.8 Vents. Batteries shall be provided with non-splash vent caps of the screw or bayonet type. Vent caps shall contain no material which would unfavorably affect the electrolyte. The non-splash vent caps shall be made of rubber or acid-resistant compound and shall be provided with baffles or an equally effective means of preventing leakage. When a separate filling aperture is provided, it shall be molded into the cover of each cell and shall be provided with a filler plug.

3.4 Battery condition. Batteries shall be furnished only in the charged-and-dry condition. The plates shall be so constructed and processed as to minimize oxidation of the active negative material prior to putting the battery into service. The vents of each cell shall be constructed to prevent the entry of water or other detrimental material into the battery, until the battery is prepared for service. Electrolyte shall not be furnished.

3.5 Electrical requirements.

3.5.1 Capacity. Batteries shall deliver no less than 80 percent of specified capacity when tested in accordance with 4.6.

3.5.2 Retention-of-charge. Batteries shall deliver no less than 80 percent of the specified capacity when tested in accordance with 4.7.3.

3.5.3 High-discharge rate. When batteries are subjected to the high-discharge rate test (see 4.6) they shall meet the following requirements:

- (a) The plate-connection straps, intercell connectors, terminal posts and any other current-carrying parts shall not be distorted or melted.
- (b) The terminal voltage shall be within the value specified in the applicable specification sheet 5 seconds after the test is started.
- (c) The voltage after the discharge time shall be not less than 1.2V per cell.

3.5.4 Reserve capacity. When tested in accordance with 4.6.6, the average reserve capacity shall be not less than the value specified in the applicable specification sheet.

3.5.5 Cold cranking performance at minus 18 degrees Celsius (°C). When tested in accordance with 4.6.7, the battery shall meet the performance requirements specified in the applicable specification sheet.

3.6 Life. When tested in accordance with 4.7.4, the battery shall meet the life cycle requirements as specified in the applicable specification sheet.

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3.7 Identification label. Unless otherwise specified (see 6.2.1), each battery shall be provided with an electrolyte resistant label permanently attached to one end of the battery container. The label shall provide information for batteries as specified in the applicable specification sheet. All data for blank spaces, except date placed into service, shall be furnished on the identification label. The following is an example of a typical identification label:

NAVY STANDARD BATTERY TYPE _____	
(Manufacturer's name) Contract No. _____	
Mfr. type	_____
Capacity	_____ Ah at 10-hour rate and 1.220 specific gravity
Discharge rate	_____ amps for 10 hours.
	_____ amps for 2 hours.
	_____ amps for 5 minutes.
Final voltage	_____ volts per cell at 10-hour rate.
	_____ volts per cell at 2-hour rate.
	_____ volts per cell as 5-minute rate.
Normal full charge specific gravity 1.220 at 27°C	
Charge rate	Start _____ amps
	Finish _____ amps
Date placed into service	_____

3.8 Instruction tag. An instruction tag shall be attached to each charged-and-dry battery. The instruction tag shall provide complete instructions for placing the battery into service, for charging the battery and for its use and care. The following instruction tag applies to all batteries under this specification, unless otherwise specified in the individual specification sheets:

"INSTRUCTIONS

This battery is supplied with plates in a charged-and-dry condition, without electrolyte in the cells. Keep vent plugs tightly in place, and do not disturb any seals on vent plugs or cover hole until the battery is placed in service.

PLACING INTO SERVICE

1. Remove vent plugs and remove seal on the vent plugs or from the cover hole. Make sure vent passage is clear. Fill each cell with diluted sulfuric-acid electrolyte of 1.215 specific gravity to a height level with the top of the separators. Allow battery to stand 4 hours. Add more electrolyte to bring level to 9 mm above top of separators and adjust specific gravity corrected to 1.220 at 27°C. Replace vent plugs. When the electrolyte is placed in the cells, the battery will have between 70 to 80 percent charge and is available for immediate use in case of emergency.

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2. It is preferable to give the battery an equalizing charge after filling. Charge the battery at the required amperes until four consecutive readings of specific gravity and voltage taken 1 hour apart show no further increase, but not less than 4 hours. The battery is now ready for use.

OPERATION AND MAINTENANCE

1. When the battery discharges, the specific gravity decreases. The battery should be recharged when the specific gravity decreases to 1.060, corrected to 27°C (to correct to 27°C, add 0.001 to the hydrometer reading for each 1.7°C the temperature is above 27°C and subtract 0.001 for each 1.7°C the temperature is below 27°C). Recharge when voltage drops to 1.75 volts per cell.
2. To charge the battery, connect the positive lead of a direct-current charging source to the positive terminal (marked "POS" "P", or "+") of the battery and the negative lead to the negative terminal (marked "NEG" "N", or "-") of the battery. Charge at the required amperes until the specific gravity and voltage show no further rise on three consecutive readings, taken 1/2 hour apart. If the temperature of the electrolyte rises above 50°C during charging, temporarily suspend charging the battery.
3. Check the electrolyte level frequently. Add distilled water, as required to maintain the level of 9 mm above the top of the separators. Add water only while the battery is being charged.
4. Keep top and sides of the battery dry and clean. When cleaning is required, wash with water.
5. When battery is not in service, it should be charged each month if possible."

3.9 Hazardous warning tag. Each battery shall be provided with an electrolyte resistant "HAZARDOUS WARNING" label permanently attached to the top of the battery. The label shall provide the warning as stated. The following warning label or the current hazardous warning label required by OSHA and as designated by BCI applies to all batteries under this specification:

"HAZARDOUS WARNING"
"DO NOT REMOVE THIS TAG"

Lead-acid batteries generate EXPLOSIVE GASES. Keep sparks, flames, and lighted tobacco products away from battery. When charging or using battery in an enclosed space, provide ventilation.

This battery contains SULFURIC ACID. If acid contacts eyes, skin or clothing, flush immediately with large amounts of water. Also, in case of eye contact, see a physician immediately.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor 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) Quality conformance inspection (see 4.3).
- (b) Verification inspection (see 4.4).

4.3 Quality conformance inspection. Quality conformance inspection shall be conducted at the manufacturer's plant on completed dry-charged batteries and materials and parts. Quality conformance inspection shall consist of the examination specified in 4.5 and the tests specified in 4.6.6 and 4.6.7. Manufacturer shall ship the lot represented by sample batteries upon successful completion of quality conformance inspection. The contractor shall prepare test reports in accordance with the data ordering document (see 6.2.2).

4.3.1 Samples of batteries for quality conformance inspection. Sample batteries from each lot shall be selected for quality conformance inspection. The selected sample batteries shall be furnished in addition to the number specified on the contract or order. The number of sample batteries for quality conformance inspection shall be as specified in table I.

TABLE I. Sample batteries for quality conformance inspection.

Number of batteries on contract or order	Number of sample batteries
1 to 100	1
101 to 200	3
201 to 1,000	6
1,001 to 3,000	9
<u>1/</u> 3,001 to 5,000	12

1/ For quantities greater than 5,000, an additional three sample batteries shall be selected for each additional 5,000 or fraction thereof (not less than 2500).

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4.3.2 Materials and parts. Quality conformance inspection of materials and parts, before being assembled into the batteries, shall be selected in accordance with MIL-STD-105. The acceptable quality levels (AQL) shall be 1.0 (percent defective) for major defects and 4.0 (percent defective) for minor defects. Major and minor defects shall be as classified in MIL-STD-105.

4.3.3 Disposition of sample batteries for quality conformance inspection. Upon completion of quality conformance inspection, disposition of the sample batteries shall be at the manufacturer's option.

4.4 Verification inspection. Verification inspection shall be conducted in a Government laboratory (see 6.2.1) on batteries shipped dry-charged. Verification inspection shall consist of the examination specified in 4.5.1 and the tests specified in 4.6 through 4.7.6. Sample batteries for verification inspection shall be furnished in addition to the number specified in the contract or order (see 6.4).

4.4.1 Samples of batteries for verification inspection. The number of sample batteries for verification inspection shall be as shown in table I and shall be selected in the same manner as samples of batteries for quality conformance inspection (see 4.3.1). The sample batteries for verification inspection shall be selected at the same time as sample batteries for quality conformance inspection.

4.4.2 Storage of sample batteries for verification inspection. Verification inspection shall begin no later than 90 days after receipt at the designated laboratory. Batteries shall be stored under standard test conditions (see 4.6.2) prior to filling and activation for testing.

4.4.3 Acceptance criteria. In evaluating the verification test results, the capacities of all batteries may be averaged for each specific discharge rate. Future batteries will not be accepted by the Government from a manufacturer who has failed to meet the requirements specified in the applicable specification sheet.

4.5 Visual and mechanical examination.

4.5.1 Batteries. Batteries shall be examined to verify that the design and construction, physical dimensions, mass, labeling, and marking are in accordance with 3.1, 3.3, 3.7, 3.8, and 3.9.

4.5.2 Materials and parts. Materials and parts shall be examined to the extent necessary to ensure that the materials and parts conform to 3.2.

4.6 Electrical tests. Batteries shall be filled and allowed to stand at least 4 hours and then charged in accordance with the instruction tag. Batteries shall be submitted to three test discharges, one for each rate specified in the applicable specification sheet, in the order selected by the manufacturer. Batteries shall meet the capacity, voltage, and time requirements specified in the applicable specification sheet. In case of failure of one discharge, the test may be repeated once.

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4.6.1 Conditioning. Conditioning may be performed as instructed by the manufacturer if instructions are submitted with batteries. Up to three conditioning cycles of charge and discharge may be given before starting the test sequence of 4.6, 4.6.6, 4.6.7, 4.7.3 and 4.7.4. In case of failure (see 4.7.5), one conditioning cycle only may be given after testing has started.

4.6.2 Test conditions. Unless otherwise specified (see 3.1), storage, measurements, and tests shall be made at ambient temperatures between 20°C and 35°C. The specific gravity of the electrolyte at the beginning of the test shall be 1.220 corrected to 27 ± 1°C.

4.6.3 Test equipment. Test equipment shall be of sufficient accuracy and quality to permit performance of the required inspection. Voltmeters and ammeters used in testing the batteries shall be accurate within plus or minus 1 percent of the full-scale value. The sensitivity of voltmeters shall be at least 100 ohms per volt. The voltmeter and ammeter ranges used shall be such that all readings are taken on the upper half of the scale.

4.6.4 Fully charged batteries. Batteries shall be charged at a rate equal to 1 percent of the minus 18°C cranking performance test rate until all cells are gassing freely and the charge voltage or the specific gravity of electrolyte is constant over three successive readings taken at 1 hour intervals. During the period of charge, the electrolyte temperatures shall be maintained between 15°C and 43°C. In the case of the battery with charge indicators, the battery is fully charged when the green ball has floated for 1-1/2 hours and voltage readings have been constant for 1 hour.

4.6.5 Discharged batteries. Batteries are discharged when a specified discharge rate is continued until a specified final voltage (see 3.1) is reached.

4.6.6 Reserve capacity test. To determine conformance to 3.5.4, the reserve capacity test shall be conducted as specified in SAE J537J.

4.6.7 Cold cranking test. To determine conformance to 3.5.5, the cold cranking test shall be conducted as specified in SAE J537J at minus 18°C.

4.7 Life tests.

4.7.1 Discharges. All discharges shall be done at one of the two life test rates specified in the applicable specification sheet.

4.7.2 Capacity. Batteries shall deliver at least 80 percent of the rated capacity for any test discharge rate.

4.7.3 Retention-of-charge test. Following the electrical tests (see 4.6), and prior to the life test routine (see 4.7.4), the batteries shall be charged in accordance with 4.6.4, and discharged at the lower rate of the life test routine, recharged, stored in an environmentally controlled area for 28 days, then discharged at the same lower rate. Batteries shall meet the requirements of 3.5.2.

4.7.4 Life test routine. Batteries shall be tested by charging in accordance with 4.6.4 and discharging in accordance with the applicable specification sheet number of cycles in blocks of 50 cycles as follows:

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- (a) 49 cycles at the lower rate specified in the applicable specification sheet to rated capacity.
- (b) One cycle at the higher rate specified in the applicable specification sheet to the final cut-off voltage.

4.7.5 Failure. In case of failure at any time during the tests of 4.7.4, the battery may be given one conditioning cycle in accordance with 4.6.4 (if conditioning procedures were submitted by the manufacturer with the sample batteries) and the same test repeated before continuing the test sequence. If no manufacturer conditioning procedure exists, the battery will be retested on the same test it failed. If the battery fails the same test twice in succession (with or without a conditioning cycle), the test shall be discontinued, and the battery deemed to have failed.

4.7.6 Cycles counted for guarantee. Any cycle which the battery has completed since the time of the first filling shall be counted as part of the life test for computation of the cycle life.

4.8 Inspection of packaging. The packaging shall be inspected for compliance with section 5 of this document.

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 6.5.)

5.1 Preservation-packaging. Preservation-packaging shall be level A or C, as specified (see 6.2.1).

5.1.1 Level A. Charged-and-dry batteries shall be packaged, blocked, and cushioned in the quantities specified in the applicable specification sheet and in accordance with MIL-B-208, except that top framing and filler pads may be fabricated from other materials (except loose-fill) if the same protection is afforded the battery without increase in weight, cubage, or cost. The pads shall conform dimensionally for the figure and type battery as shown in MIL-B-208. The method of fabrication and assembly of the top framing and filler pads shall be at the contractor's option.

5.1.2 Level C. Preservation-packaging of charged-and-dry batteries shall protect against corrosion, deterioration, and physical damage during shipment from the supply source to the first receiving activity for immediate use. The contractor's normal retail wholesale preservation-packaging methods may be used if they meet the requirements of this level.

5.1.2.1 Packaging material. Charged-and-dry batteries shall be wrapped, bagged, boxed, or otherwise protected in a manner that will prevent the entrance of dust, dirt, or other detrimental matter. Any packaging material used in direct contact with surfaces adversely affected by hygroscopic material shall be chemically neutral. The use of asbestos is prohibited.

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

5.2.1 Level A. Charged-and-dry batteries, packaged as specified in 5.1.1 shall be packed in the quantities specified in the applicable specification sheet and in accordance with MIL-B-208.

5.2.1.1 Shipping containers. Wood and plywood containers shall be closed, strapped or banded in accordance with the applicable container specification or appendix thereto. Fiberboard containers shall be closed, waterproofed and reinforced with tape as specified in the appendix to the applicable specification with method V closure applying to PPP-B-636 container. When specified (see 6.2.1), shipping containers shall have case liners conforming to MIL-L-10547. Case liners shall be closed and sealed in accordance with the MIL-L-10547. The gross mass of wood, wood cleated, or triple wall corrugated containers shall not exceed 90.7 kg. Containers conforming to PPP-B-636 shall not exceed the mass limitation of the specification.

5.2.2 Level B. Batteries packed as specified in 5.1.1, shall be packed in the quantities specified in the applicable specification sheet and in accordance with MIL-B-208.

5.2.2.1 Shipping containers. Shipping containers shall be closed, strapped, or banded in accordance with the applicable container specification or appendix thereto. The gross mass of wood, wood cleated, or triple wall corrugated containers shall not exceed 90.7 kg. Containers conforming to PPP-B-636 shall not exceed the mass limitation of the specification.

5.2.3 Level C. Batteries, charged-and-dry, packaged as specified in 5.1.1, shall be packed in a manner to insure carrier acceptance and safe delivery to the destination at the lowest applicable rate. Container's packing or method of shipment shall comply with the 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 herein or by the contract or order (see 6.2.1), interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129. Marking on shipping containers containing batteries shall include on two faces the words "UP" and "HANDLE WITH CARE," and shall also be marked with the word "FRAGILE".

6. NOTES

6.1 Intended use. This specification covers rechargeable portable storage batteries of the lead-acid type, constructed in the dry-charged condition, intended for use in engine starting and standby applications.

6.1.1 Standby batteries. Standby batteries are intended for use as auxiliary lighting and power, telephone, fire control, interior communication, and gunfiring and sight lighting purposes. These batteries are rarely discharged by actual use and are usually float charged from a motor-generator set (see 1.2.1.3).

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6.1.2 Engine starting batteries. Engine starting batteries are intended to start ship's propulsion engines, small boat engines, or ship's service engine generator sets. These systems require frequent starts and short periods of engine operation, low charging rate for batteries which are being charged from their own charging circuit, and cold weather starting conditions causing short periods of heavy drain on the batteries (see 1.2.1.3).

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification and specification sheet, as applicable.
- (b) Type and quantity required (see 1.2.1 and 6.4).
- (c) If identification label is other than specified (see 3.7).
- (d) Laboratory to which samples for tests are to be shipped (see 4.4).
- (e) Levels of preservation-packaging, and packing required (see 5.1 and 5.2).
- (f) Case liners for shipping containers (see 5.2.1.1).
- (g) Special marking required (see 5.3).

6.2.2 Data requirements. When this specification is used in a contract which incorporates a DD Form 1423 and invokes the provisions of 7-104.9(n) of the Defense Acquisition Regulation (DAR), the data requirements identified below will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (DD Form 1423) and incorporated in the contract. When the provisions of the DAR-7-104.9(n) are not invoked, the data specified below will be delivered by the contractor in accordance with the contract requirements. Deliverable data required by this specification is cited in the following paragraph.

<u>Paragraph</u>	<u>Data requirements</u>	<u>Applicable DID</u>	<u>Option</u>
4.3	Reports, test	DI-T-2072	10.1.b

(Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

6.2.2.1 The data requirements of 6.2.2 and any task in section 3, 4, or 5 of the specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract, regardless of whether an identical item has been supplied previously (for example, test reports).

6.3 Guarantee. Batteries shall meet the minimum cycles in accordance with the applicable specification sheet.

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6.4 Total number of batteries to be delivered. The total number of batteries to be delivered shall consist of the following (see 6.2.1):

- (a) Batteries for the contract or order.
- (b) Verification inspection batteries (see 4.4.1).

6.4.1 Verification data. Invitations for bids shall provide that the Government reserves the right to waive the requirement for samples for verification inspection as to those bidders offering a battery which has successfully completed verification inspection within the preceding 18 months of the date of invitation for bids. Bidders offering such batteries, who wish to rely on such testing, must furnish evidence with the bid that successful Government verification testing has been completed and is presently appropriate for the pending acquisition.

6.5 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.

6.6 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.

Preparing activity:
Navy - SH
(Project 6140-N532)

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