

MIL-B-26220D  
 AMENDMENT 4  
 26 February 1985  
 SUPERSEDING  
 AMENDMENT 3  
 29 March 1984

# MILITARY SPECIFICATION

## BATTERIES, STORAGE, AIRCRAFT, NICKEL-CADMIUM GENERAL SPECIFICATION FOR

This amendment forms a part of Military Specification MIL-B-26220D dated 10 April 1974, and is approved for use by the Department of the Air Force and is available for use by all Departments and Agencies of Department of Defense.

### PAGE 1

#### \* 2.1 SPECIFICATIONS, Military,

Delete: "MIL-E-5272"  
 "MIL-C-18148"

Add: "MIL-P-18148, Plug, Electric, Aircraft Storage Battery"

STANDARDS, Military,

Delete: "MIL-STD-100"

Add: "DOD-STD-100, Engineering Drawing Practices"  
 "MIL-STD-810, Environmental Test Methods"

### PAGE 2

3.3 Materials: Add: "Reclaimed materials shall be utilized to the maximum extent possible."

### PAGE 3

\*3.4.6 Delete: "MIL-C-18148" and substitute: "MIL-P-18148"

Following paragraph 3.4.7.1, add:

\* "3.4.7.2 Cell Vent/Filler Cap: The cap shall be made of electrically non-conductive materials."

3.4.8 State and Storage: Delete and substitute: "Cells shall be furnished wet and discharged with a removable shorting device installed across the positive to negative terminals."

\* 3.4.10 Line 4. Delete: "and 4.6.20.2"

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Following paragraph 3.4.10.9, add:

**"3.4.11 Gas Barrier Material**

- 3.4.11.1 The cell separator shall include a layer of precrosslinked, methacrylic acid-grafted, low density, polyethylene (Permion 2291, manufactured by RAI Research Corporation, Hauppauge, L.I., New York 11787, or Celgard 3400, manufactured by Celanese Fiber Co., Charlotte, North Carolina 28232) in lieu of cellophane.
- 3.4.11.2 The resistivity of the Permion 2291 shall not exceed 20 milliohm-in<sup>2</sup> measured in a 31 percent solution of potassium hydroxide at room temperature. <sup>2</sup>For Celgard 3400 the resistivity shall not exceed 10 milliohm-in<sup>2</sup> when measured in the same manner of Permion.
- 3.4.11.3 The thickness of the Permion 2291 film, when dry, should be 0.0012  $\pm$  0.0003 in. The thickness of the Celgard 3400 film, when dry, should be .0010  $\pm$  .0001 in.
- 3.4.11.4 The cell cover to cell case seal shall be cured by one of the following methods to avoid excessive heating of the cell separator:
  - a. Room temperature cure.
  - b. Hot water cure by inverting the cell and immersing only the seal area in a hot water bath.
  - c. Machine applied heat seal applied locally to the seal area.
- 3.4.12 Electrolyte (for Permion P-2291 cells only)
  - 3.4.12.1 The cell electrolyte shall be formulated as follows:
    - a. Materials List:
      - (1) Deionized water
      - (2) Emulphogene BC-610  
(General Aniline & Film Corporation  
140 W. 51 Street  
New York, NY 10020)
      - (3) Lithium Hydroxide Monohydrate  
(LiOH.H<sub>2</sub>O), Reagent Grade  
  
LX 350 CB 884  
(Matheson, Coleman & Belle)
    - b. Stock Solution A: Two percent by volume Emulphogene BC-610 in deionized water (2 cc Emulphogene added to 98 cc water).

**WARNING**

Emulphogene BC-610 may cause severe eye irritation on contact. Eye protection consisting of goggles is required. In event of accidental eye contact, immediately flush eyes with clean water and obtain medical attention.



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c. Stock Solution B:

- (1) Dissolve 110 grams of lithium hydroxide monhydrate in 950 cc of deionized water.

WARNING

Lithium hydroxide monhydrate can cause severe burns on contact. Avoid inhalation of dust. To prevent contact with eyes and skin, the use of face shield, rubber gloves and apron type personal protective equipment is required.

- (2) Add while stirring 50 cc of Stock Solution A.
- (3) Add while stirring, gradually, 75 grams of oxidized cellulose powder.
- (4) Let stand overnight. Decant.
- (5) Keep stoppered in cool ambient.

- d. Stock Solution C (cell electrolyte): Add 135 cubic centimeters of Stock Solution B to one (1) gallon of between 36° and 40° Baume potassium hydroxide electrolyte. Mix. This is the electrolyte to be added to cells during manufacture.

WARNING

Potassium hydroxide can cause severe burns upon contact. Avoid splattering while mixing or making solutions. To prevent contact with eyes, skin and clothing, the use of face shield, rubber gloves and apron type personal protective equipment is required. Do not breath mist or sprays or take internally."

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\*3.6 Delete: "MIL-STD-100", substitute: "DOD-STD-100"

Following paragraph 3.8.1, add:

"3.8.2 Cell Marking: The part number of all cells shall contain a "P" indicating Permion cells, or a "C", indicating Celgard cells, as the last symbol. All battery cases shall not be marked with a "p" or "C" or any other marking to indicate that it contains either Permion or Celgard cells."

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4.4.4 Qualification Test Report: Delete and substitute: "After completion of the qualification tests, the vendor shall prepare a qualification test report in accordance with MIL-STD-831 and furnish three complete copies of report to the Sacramento Air Logistics Center, ATTN: MMIRE, McClellan AFB California 95652."

.5.1 Individual Tests: Delete the following: "c. Cell capacity."



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4.5.2.2 Sampling Plan: Add the following: "e. Cell capacity."

\*4.6.2 Delete: "MIL-C-18148" and substitute: "MIL-P-18148"

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\*4.6.6 Line 2: Delete: "MIL-E-5272" and substitute: "MIL-STD-810."

\*4.6.7.1 Line 1: Delete the first sentence and substitute: "Upon successful completion of the test for thermal shock, the battery shall be subjected to the vibration test, Procedure XII of MIL-STD-810."

Line 3: Delete: "MIL-E-5272" and substitute: "MIL-STD-810."

Line 5: Delete: "MIL-E-5272" and substitute: "MIL-STD-810."

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\*4.6.8 Line 2: Delete: "MIL-E-5272." and substitute: "MIL-STD-810."

\*4.6.9 Line 2: Delete: "MIL-E-5272." and substitute: "MIL-STD-810."

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4.6.18.2 Line 2: Delete: "4.6.19.1" and insert "4.6.18.1."

\*4.6.19.1 Line 2: Delete: "MIL-E-5272" and insert "MIL-STD-810."

4.6.19.2 Line 2: Delete: "4.6.20.1" and insert "4.6.19.1"

\*6.4 Qualification: Delete last sentence and substitute: "The Activity responsible for the Qualified Products List is SM-ALC/MMIRE. Information pertaining to the qualification of products may be obtained from SM-ALC/MMIRE, McClellan AFB, CA 95652."

"The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship of the last previous amendment."

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