

STORAGE & SHIPPING INSTRUCTIONS LEAD ACID BATTERIES

(This EO replaces EO 40-5A-9 dated 7 Nov 51)

STORAGE

DRY CHARGED BATTERIES

1 Dry charged batteries are manufactured (the battery "sealed off" to prevent oxidation) shipped and stored with the plates dry charged. No electrolyte is added until the battery is required for use.

2 New batteries as received from the manufacturer are to be stored in a cool dry location, preferably in their cartons, and removed for service in the order in which they are received. The date of manufacture is marked on the cartons so that the age of the batteries can be determined. The maximum dry storage life is not to be more than 7 years from the date of shipment from manufacturer. Any batteries that have been stored for a period of 24 months, are to be considered as dry uncharged and given a capacity test prior to installation by the user organization.

WET CHARGED BATTERIES

3 Wet charged batteries are to be stored in a cool dry location, away from hot air ducts and radiators in winter and shielded from direct sunlight in summer. These batteries are to be given a recharge once every month if stored in temperatures below 80°F and every two weeks in temperatures above, 80°F. The maximum wet storage life is not to be more than 4 years from the date of shipment from repair depot storage facility. Any batteries that have been stored for a period of 16 months or longer, are to be given a capacity test prior to installation by user organization.

4 Wet batteries in storage are subject to self discharge (EO 40-5A-2 Part 3 Page 10 Para. 6). This self discharge if allowed to continue with no recharge or booster charge to make up for the loss will result in the plates becoming sulphated and render the battery un-serviceable for use. The number of days required for a fully charged battery to lose half its charge at various temperatures is as follows:-

Battery Temperature	Days
60°F	90
80°F	45
100°F	14
120°F	6

5 Related to specific gravity readings the effect of temperatures on self discharge for the average fully charged battery in good condition is approximately as follows:-

At 100°F	.003 Sp. Gr. per day
At 80°F	.002 Sp. Gr. per day
At 50°F	.0005 Sp.Gr. per day

The above values are approximate for about the first 10 days of standing after being fully charged.

USED WET BATTERIES

6 Batteries which have been in service and are still considered serviceable are to be fully charged and stored in accordance with Para. 3. Batteries which have not been returned to service use after a 12 month period are to be removed from storage, identified and used in accordance with Para. 10.

SHIPPING

DRY CHARGED BATTERIES

7 Batteries will be shipped "dry charged", electrolyte to be added to the battery only when preparing for service. Whenever dry charged batteries are shipped from the supply depot they are to be contained in the original carton complete with manufacturer's shipping date or date put into storage.

WET CHARGED BATTERIES

8 Wooden boxes conforming to Figure 1 shall be used for the shipment of batteries containing electrolyte.

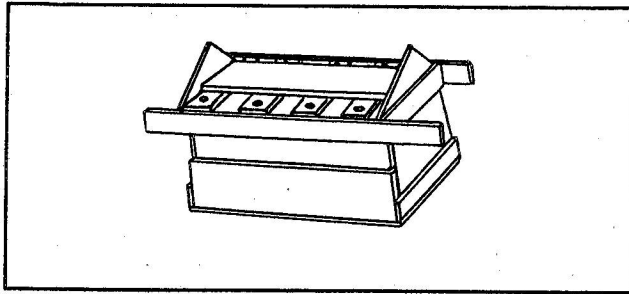


Figure 1 - Shipping Box for Wet Storage Battery

- (a) Batteries are to be fully charged at the repair depot before shipment.
- (b) Electrolyte is not to be removed in preparation for shipment.
- (c) Terminals are to be protected so as to prevent shorting or any possibility of damage in transit.
- (d) Vent plugs are to be screwed firmly in place to avoid spilling of electrolyte.
- (e) Batteries are to be shipped complete with cover.
- (f) When more than one battery is placed in a container, sufficient packing material is to be used between the batteries to prevent their coming in contact with each other.
- (g) Batteries are to be securely packed and blocked in the container to prevent shifting.
- (h) The weight of the contents of any container is not to exceed 70 pounds.

NOTE

Shipment to be plainly marked "Acid Battery, Fragile, This Side Up".

PREPARATION FOR SERVICE

DRY CHARGED BATTERIES

9 The following procedure is to be observed in the preparation of dry charged batteries for service:-

- (a) Inspect the battery for signs of damage.
- (b) Remove the vent plugs from the cells.
- (c) Fill each cell with the electrolyte prepared, as described in EO 40-5A-2 Part 7, to a specific gravity of 1.275. The temperature of the filling electrolyte should never exceed 90°F (32.2°C). Fill to 3/8" above the protector on top of the separators.

NOTE

For Type K1 batteries use the Safety Fill method for initial filling.

- (d) Allow the battery to stand for at least 3 hours after filling with electrolyte. If the electrolyte has fallen, add more electrolyte to restore it and replace vent plugs in cells. If any electrolyte was spilled on the battery, it is to be removed with a cloth dampened with a solution of bicarbonate of soda and water.
- (e) Both the battery and the electrolyte must be maintained above freezing for this operation and must not be exposed to freezing temperatures until after initial charge.
- (f) The battery can be placed in service one hour after the restoration of the electrolyte level if necessary and will deliver approximately 50% of its rated capacity. However, a freshening charge is preferable. The charging rate is to be in accordance with the manufacturers instructions attached to each battery. Make certain that the positive terminal of the battery (marked POS + or painted red) is connected to the positive terminal of the charging circuit and the negative terminal of the battery (marked NEG - or painted black) is connected to the negative terminal of the charging circuit. Reduce the charging rate and lengthen the time proportionately if the electrolyte temperature exceeds 15°F above room temperature.

DISPOSAL OF WORN OUT BATTERIES

10 Batteries which are no longer fit for service in aircraft may be painted bright yellow and stencilled on two sides with black letters DO NOT INSTALL IN ANY AIRCRAFT - FOR GROUND USE ONLY. These batteries may then be used on testing devices, battery carts or other equipment. Batteries known to be completely worn out or which cannot be utilized at the unit shall be reported for disposal as per CAP 16 Vol 1 Chap. 13, and SB 13.1/05.

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

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