

## Lead Acid Flooded batteries: Guidelines of Storage and Maintenance

Proper storage of batteries is crucial to ensure their longevity, performance, and safety. Lead-acid batteries contain sulfuric acid and emit gases that can be hazardous if not handled correctly. Improper storage can lead to reduced battery efficiency, damage, or even safety risks such as short circuits, leaks, or explosions. To prevent these issues, it is essential to follow strict Dos and Don'ts when handling and storing batteries. Below are the recommended practices to ensure safe and effective battery storage.

### Dos (Best Practices for Battery Storage)

- **Store Properly:** Batteries should be stored in pallets or on racks in an upright position in a cool, well-ventilated area away from heat sources and direct sunlight.
- **Organized Storage:** Batteries must be stored part-number-wise/model-wise with clear demarcation to prevent mix-ups.
- **Stacking Guidelines:**
  - Do not exceed 5 layers for batteries up to 80Ah.
  - Do not exceed 4 layers for batteries above 80Ah.
- **Monitor Shelf Life: (Best Practices for Lead Acid Batteries \*)**
  - Lead-acid batteries should be installed within 90 days for best performance.
  - If stored for more than 90 days, they must be recharged as per guidelines.
  - Batteries should be installed within 180 days (with one refresh charge) for maximum life.

Note – \* However this may vary based on temperature condition and local factor
- **Check Battery Voltage (OCV):**
  - Ensure OCV does not drop below 12.5V.
  - Check random 5 batteries in a pallet. If any battery is below 12.5V, the entire pallet needs recharging.
- **Follow FIFO:** Use the First In, First Out (FIFO) method to dispatch batteries.
- **Train Manpower:** Lead-acid batteries must be handled by skilled and trained personnel during storage, shifting, and charging.
- **Handle with Care:** Avoid tilting, acid spillage, and rough handling.
- **If acid spills:**
  - Neutralize with baking soda and water.
  - Rinse thoroughly with clean water.

### Don'ts (Storage Mistakes to Avoid)

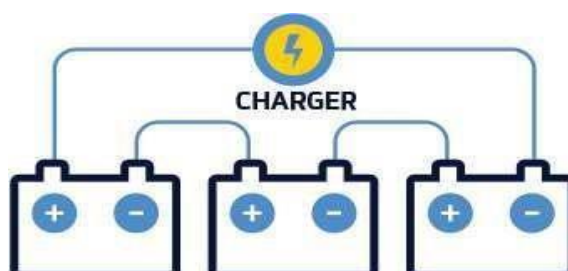
- **No Direct Contact with Water or Moisture:** Batteries should never be immersed in water or exposed to high humidity.
- **No Storage Near Heat or Fire:** Batteries should not be stored near fire, heat sources, welding areas, or direct sunlight, as high temperatures can cause overheating and hazards.
- **No Improper Stacking:** Do not store batteries pallet-on-pallet. Do not store batteries beyond the recommended layers.

- **No Mixing of Batteries:** Do not mix different battery types, capacities, production dates, or brands.
- **No Direct Connection to Wall Sockets:** Batteries must never be connected directly to a power outlet, as it can cause severe hazards.
- **No Physical Damage:** Avoid puncturing, stepping on, or using sharp objects on batteries, as this can lead to leaks or internal damage.
- **No Rough Handling:** Batteries must not be subjected to strong shocks, impacts, or incorrect placement.
- **No Unauthorized Opening:**
  - Batteries are factory-sealed and maintenance-free.
  - They should never be opened or disassembled as they contain hazardous Sulphuric acid.
- **No Exposure to Corrosive Chemicals:** Batteries should not come in contact with corrosive substances that may weaken their casing.
- **No Use of Damaged Batteries:**
  - Batteries should not be used if they emit an unusual odor, feel warm, change color/shape, or behave abnormally.
  - If any issue occurs, remove the battery and have it inspected by an expert.

### General Rules for Flooded Battery Charging:

- Ensure the battery surface, terminals, and connectors are clean to maintain good connections.
- Regularly inspect cables, battery case, and vent caps for any signs of damage or leaks.
- Check and maintain the electrolyte level regularly, topping up with distilled water as needed to keep plates submerged.
- Before charging, record the Open Circuit Voltage (OCV) for at least five batteries per pallet, including batch details.
- Ensure the OCV does not drop below 12.5V.
- Always use a charger designed for Flooded Lead-Acid batteries and follow the recommended charging profile to prevent sulfation or overcharging.

### Connection reference:



## Charging Procedure for Flooded Lead Acid Batteries:

- Always charge batteries @ room temperature in a well-ventilated area and wear eye protection & protective clothing during handling.
- Connect batteries to the charger as shown in above images if batteries quantity >1
- Switch on the charger and set bank voltage (i.e. 16.0V/Battery x batteries quantity) charger maximum voltage rating) and set charging current as 10% of battery C20 rated capacity.
- Duration of charging should be 6-8 hours.
- After completion of charging, battery to be kept under rest.
- Clean the battery surface
- If battery OCV after rest period should be more than 12.70V, then it can be allowed for dispatch by doing proper packaging activities.

## General Storage & Refresh charge Guidelines for Lead Acid Batteries

S. No	Models	Age from MFG. date (days)	Charging Voltage /Battery (V)	Charging current (A)	Duration (hrs)	Rest (hrs)
1	Lead Acid Batteries	>90 to < 180	16.0V/Battery	10% of C <sub>20</sub> Capacity	6-8 Hrs.	5 to 6 hrs

## TRANSPORT:

- The batteries are hazardous as per UN2794 standards and contain Sulphuric acid. Therefore, work safely according to the instructions and according to the MSDS (material safety data sheet).
- Always transport the battery in an upright position and avoid tilting to prevent leakage or damage.
- When transporting, the battery must be fully charged for at least 90%.
- The battery must be well insulated and shock-resistant to avoid damage from impact or shock.
- During transport, the battery must be handled with care during loading and unloading.
- Do not throw the battery; avoid shocks and bumps. Never put the battery on its head or side.
- Never transport batteries together with flammable, explosive substances or with sharp metal objects.

### **UN2794 FLOODED LEAD ACID BATTERY**

Always use protective goggles and protective clothing when working with a battery. The batteries are hazardous UN2794 and containing Sulphuric acid and can leak or explode. Work safely and exclusively according to the mentioned instructions and according to the instructions stated on the provide MSDS (Material Safety Datasheet).

### **Always Recycle Amaron Lead Acid batteries**

