



Forklift Battery Maintenance



The lead-acid batteries of forklifts require periodic maintenance that includes cleaning and watering to ensure safe and proper operations. These batteries contain hazardous materials including sulfuric acid and lead plates, so it is important for persons to wear Personal protective equipment, commonly referred to as "PPE", and follow requirements and instructions provided by original equipment manufacturers. MTC offers a variety of battery cleaning equipment and battery racks and stands that support forklift battery maintenance.

FORKLIFT BATTERY WATERING

The fluid in forklift lead-acid batteries is an electrolyte generally composed of very hazardous sulfuric acid and deionized water. This electrolyte reacts with the lead-based plates inside a battery to store and release energy in the form of direct current (DC) electricity. The level of electrolyte declines with battery usage so it must be periodically checked and maintained.

Adding deionized water to batteries is necessary. It replaces water that has evaporated due to battery heating, has been converted to oxygen and hydrogen by the electrolysis process that occurs during charging, or has boiled away during charging. The sulfuric acid portion of the electrolyte is intended to be permanent so adding more acid is rarely or never required. Lead-acid batteries that are losing an abnormal amount of water are not operating properly and should be inspected by a certified technician.

How to safely and correctly water batteries:

1. Personnel should be trained in watering batteries and must wear required and appropriate safety equipment.
2. Follow the battery watering instructions provided by the original battery manufacturer.
3. Inspect batteries for damage, leaks, and other potential issues before attempting to add water.
4. Use water that is known to be PH-neutral, distilled and deionized to avoid damage to the batteries.

5. Add water after batteries are fully charged to minimize the chances of future electrolyte overflows.
6. Fill each battery cell to the correct level for that specific battery and never overfill with water.
7. Use a battery watering automated system or manual device that is correctly setup, if available.

Failure to perform the basic maintenance of watering lead-acid batteries causes preventable problems including equipment safety risks, lower forklift productivity, and higher operational costs. Batteries with low electrolyte levels are prone to overheat, risking operator and facility safety. Poorly maintained batteries accept partial charges, allowing forklifts to operate for shorter periods each day. Chronically abnormal electrolyte levels minimize the number of charging cycles available before battery replacement is required.

Consult the Occupational Safety and Health Administration (OSHA)—and other applicable national, state, local, and industry organizations—for regulations, guidelines, and other information relevant to watering forklift batteries.

FORKLIFT BATTERY CLEANING

Cleaning and drying the lead-acid batteries of forklifts is vital because these batteries vent electrolyte, water vapor, and other gases during operation, charging, and filling. This creates a film of moisture on the batteries that accumulates airborne dust, oils, and other substances found in the environment. And since the heat from batteries evaporates the water portion of this film, what

remains behind is very hazardous sulfuric acid and other impurities that make the film dangerously conductive to electricity. Dirty batteries can discharge through electrically conductive paths created between battery post connections and battery metal cases or forklift metal parts, which can result in the ignition of vented gases causing fires or explosions. For these reasons and others, it is necessary to keep forklift batteries clean and dry.

How to safely and correctly clean batteries:

1. Personnel should be trained in cleaning batteries and must wear required and appropriate safety equipment.
2. Follow the battery cleaning instructions provided by the original battery manufacturer.
3. Inspect batteries for damage, leaks, and other potential issues before attempting to clean.
4. Moisture from water spills can be absorbed and removed with rags, if it is safe to do so.
5. Electrolyte spills should be removed with a recirculating water system and wash cabinet or rack.

Maintaining clean and dry lead-acid batteries makes forklift battery handling and charging safer by minimizing the opportunity for staff to come into contact with spilled water (avoids potential slips and falls), vented electrolyte (avoids potential chemical burns), and conductive battery surfaces (avoids potential electrical shorts). Cleaner batteries also prevent damage to battery terminals and cables, plus they prevent the unnecessary and expensive corrosion damage that would occur if battery fluids and residue were allowed to come into contact with forklift components and electronics.

MTC offers a number of battery cleaning solutions including battery wash racks, battery wash cabinets, and recirculating water systems designed to help maintain the cleanliness of forklift fleets and designed to reduce potential environmental problems associated with battery cleaning.