

# Forklift Battery Use and Maintenance Meeting Kit



## What's At Stake

Every time you operate a forklift or other powered industrial truck, inspect it to ensure that it is operating properly. Ongoing battery maintenance is critical so that the forklift is always safe and ready to get your work done. First and foremost, the forklift must be checked for enough battery charge to get the job task done.

### FORKLIFT BATTERY CHARGING RULE

The general rule of thumb is to recharge the battery after an eight-hour shift or when it's discharged more than 30%. If you charge too frequently when it is not more than 30% discharged, you will shorten the battery life.

## What's the Danger

### WEAR PROTECTIVE GEAR

Batteries contain sulfuric acid, a chemical that can cause severe burns. Follow OSHA recommendations for protective gear and remove all metallic jewelry when handling and charging industrial batteries.

Forklift batteries are generally lead acid or nickel iron. They are charged by plugging the forklift into a fixed station or an "on-board" charger may be brought to the forklift itself. Because the batteries contain corrosive chemicals that can burn eyes and skin, wear personal protective equipment to prevent contact and splashes. This includes:

- Rubber gloves.
- Safety goggles and face shield.
- Steel toe boots to protect your feet from crush hazards.
- An apron.

## HOW TO PROTECT YOURSELF

### FORKLIFT CHARGING STATION SAFETY PRECAUTIONS

- Choose a well-ventilated area to prevent the buildup of gases.
- Label the area with signage and floor striping that outlines and separates the battery charging station area.
- Have emergency eyewash and shower stations near the charging area in case of

- acid splashes and exposures.
- Place the location near a spill kit with acid neutralization materials and posted instructions and firefighting and/or suppression equipment.
- Prohibit smoking near the designated battery changing area.
- Avoid wearing metallic jewelry while recharging lift truck batteries.
- Use appropriate handling equipment for lifting and moving heavy batteries.
- Wear appropriate protective equipment (safety goggles, gloves, apron, and/or face shield).
- Position forklifts appropriately and apply breaks before charging or changing batteries.
- For batteries with sealed vents, do not recharge with a current greater than 25 amperes.
- If the battery becomes hot or electrolyte fluid begins leaking from the vents, turn off the charger. When the battery has cooled, restart at a lower charging rate.
- Keep accurate records of battery watering, cleaning, inspections, and other maintenance, etc.
- Recycle or follow specified local procedures for battery disposal as they contain hazardous waste.

### **BEST FORKLIFT CHARGING TIPS**

- If possible, let the forklift battery charge completely once you've started to charge it. Cutting a charging cycle short can also be harmful for the battery's longevity. Be sure to fully recharge the battery once every day.
- Don't let a discharged battery sit for too long – not more than a few hours to one day. By doing so, you increase the likelihood that hard sulfation will develop, which will reduce the run time and life of the battery.
- Don't over discharge your lift truck battery. If you discharge beyond 80% you'll be doing long term irreparable damage to the battery and significantly shorten the battery life.
- Be aware of battery temperature when charging. Excessive heat will shorten battery life by half. Keep the forklift battery as close to 25 C as is practical. And charging a cold battery around 15C or less requires extra time as well as temperature compensation on the battery charger to achieve proper charge voltages.

### **PROPER FORKLIFT BATTERY MAINTENANCE PRACTICES**

**Charge The Battery Correctly.** It can be tempting to charge a battery whenever it is convenient, but the fact is that in order to properly maintain a forklift battery, it should only be charged at certain times and to certain degrees. Charge a forklift's battery only when it dips below 30% charge and be sure to charge it until it is full and then stop charging it. Remember to never interrupt a charge cycle.

**Equalize Batteries Regularly.** Flooded or wet cell batteries should be equalized on a regular basis. This process reverses the chemical process of stratification when the battery acid becomes more concentrated at the bottom of the battery. When the acid and water become stratified, the battery is no longer able to hold a charge as well.

Equalizing rebalances the electrolyte concentration and also helps to remove sulfate crystals from the battery plates. Equalizing can only take place with a battery charger that has an equalizing setting. Many batteries need equalization approximately each five to ten charging cycles, but be sure to check the maintenance specifications for a battery before initiating the process.

**Check Fluid Levels.** Forklift batteries need to have the right amount of water to work at optimum capacity. Approximately every five charge cycles, be sure to check the forklift battery fluid levels by opening up the battery. Check two to three cells and ensure that there is enough fluid to cover the plastic battery element. If you are unsure, check all of the cells. If there is not enough fluid upon inspection, move on

to the next step and add water.

**Maintain Water Levels.** If the water levels are not appropriate, you will want to top off the fluid in the battery. This will be necessary approximately every 10 charges. If the battery is brand new, you'll want to add enough water to cover the battery's plastic element protector.

It's important to be aware of how much water your battery needs and how water levels impact your batteries over health and performance. Extra space is needed for the expansion that happens when the battery is in use, which is why overfilling a battery can cause permanent damage.

You will only want top off a battery after the battery is fully charged. It is also important to use the right water, which measure between 5 and 7 on the pH scale and is within recommended limits for impurities. Impure water can lead to battery damage.

**Keep Batteries At A Safe Temperature.** Forklifts can be used in extreme environments, so it is essential to consider the ambient temperature for the battery when in use. Keeping any battery at a safe temperature, where its operating temperature does not exceed 45° (113°), will help to prolong its life.

## FINAL WORD

During battery charging, potentially flammable oxygen and hydrogen gas can be emitted. Choose and maintain the battery charging station carefully to avoid injury.