

## General safety when working with batteries

- When working with batteries it is very important to wear the proper PPE. Safety glasses, goggles, face shields, acid resistant gloves, and acid resistant aprons or lab coats must be available and used when handling and moving a battery.
- Know where the nearest safety shower and eyewash stations are located.
- In addition, know proper first aid treatment for dealing with acid splashes.
- Keep metal objects and jewelry away from batteries and cover terminals when storing or transporting batteries to prevent unwanted discharge or a short circuit.
- Always use the proper sized non-conductive or insulated wrench when tightening cable clamp nuts and do not use excessive force when tightening. <https://amzn.to/3tJkCP3>
- Use battery boxes to provide secondary containment <https://bit.ly/33YeCHP>
- Check electrolyte levels, if not maintenance-free, and only use distilled water when refilling
- Inspect the battery for any corroded/broken battery terminals, cracked cases or covers, etc.
- Never use damaged batteries
- All batteries must be disposed of through the UCR [eWaste](#) system or taken for exchange to a vendor. They can not be thrown in the dumpsters or other trash receptacles
- Clean your hands with soap and water immediately after working with batteries

## Wiring

- Clearly mark the positive and negative terminals and use consistent wire colors - Red positive and black negative
- Ensure wiring is sufficient for the load
- Use a connector instead of connecting directly to the battery to attach chargers, inverters, and other equipment. This limits the possibility of reversing the connections and keeps hands safely away from the battery

## Charging Batteries

During charging, lead-acid batteries produce hydrogen, oxygen, and/or hydrogen sulfide. These gases if not well ventilated can build-up causing a highly flammable or toxic situation. Batteries with low electrolyte levels can explode when charging as the gas builds up in the battery case.

- Complete training for how to use your charging system
- Wear acid resistant gloves and goggles
- An ABC fire extinguisher is required within 20 feet.
- Post “Flammable-No Smoking or Open Flame” signs in the battery charging area.
- Charge batteries in a properly ventilated area
- Check that the battery ventilation holes are clear to allow the hydrogen gas to escape
- Never overcharge a lead-acid battery. Use a smart charger if possible
- Make sure the power is shut off at the charger before connecting or removing the cable clamps
- Turn off charger immediately if you notice the smell of rotten eggs. That is hydrogen sulfide. And the battery is likely damaged and needs to be replaced.