

Training Module: Battery Safety

Objective: To use and store batteries in a safe manner.

Trainer's Note: Discuss the different types of batteries and what types are used specifically within your operation. Examples may be helpful to have at the training session. The modules on lifting and eye protection could be reviewed along with this module.

Background

Lead-acid storage batteries are chemical machines that produce power on demand. The typical battery has a number of individual cells containing layers of lead plates immersed in sulfuric acid. When sulfuric acid contacts the lead plate inside the cell, energy is produced. The main battery terminals are the positive and negative posts. The battery may also have vent caps on top of it. These caps serve two purposes: they permit the checking and maintenance of water and acid levels and provide a vent for the escape of gases formed when the battery is charging.

Types of Batteries

Car Starting Batteries:

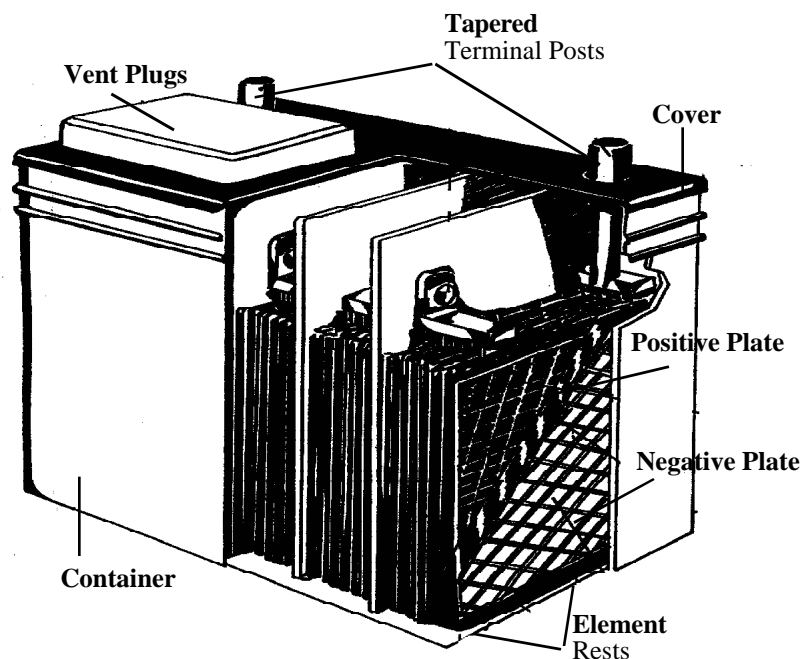
This battery was developed for the job of starting cars and trucks. Built to deliver quick starting at minimum weight, size and cost, these batteries have lead sponges rather than sturdy lead plates. These thin sponges are delicate and start to break down after less than 100 cycles.

Deep Cycle Batteries:

It is designed to be compact, inexpensive, and last for 200 to 400 charge-discharge cycles. These storage batteries are packaged in the same small automotive case and contain somewhat thicker plates of lead. Avoid acid spills by placing the battery in an upright and level position.

Gel Cell Batteries:

The gel cell battery, used in aircraft and designed for portability, are usually small and have gelled acid within a sealed case. This battery works in any position and is designed to be clean and usable in environments intolerant of acid vapors and spills. If charged or discharged too rapidly, gas will build up, causing the battery case to rupture. Besides possible rupture, storage at high temperatures (i.e., above 78° F) accelerates self-discharge and shortens the battery's life. Although more expensive, the sealed gel cell battery can be a safer and cleaner alternative.



Safety Tips for Working With Batteries

- Keep sparks and flames away from the battery. Inspect the battery in natural light.
- Remove wrist watches, which might make electrical contact and create sparks.
- Wear safety goggles or a face shield when inspecting or cleaning the battery.
- If acid does enter the eye, immediately flood with running water for at least 30 minutes. See a doctor as soon as possible.
- If acid contacts the skin, wash the affected area immediately with plenty of water.
- Avoid chemical burns by not rubbing eyes or skin while working with the battery.
- Wash your hands immediately after completing the job.
- Clean up all acid spills and flush clothing with a water and baking soda solution.
- Vent caps should be tight and level. Placing a damp cloth over vent caps when charging may act as a flame arrester.
- Keep batteries away from children.
- Smoking or open flames should never be present in a battery area, and ventilation is important.
- Store batteries in a cool, dry place. Storage temperature should be between 80°F and 32°F.
- Don't make live connection directly to the battery. Explosive gases can be set off by a match, incorrect connection of battery cables, and careless use of tools around the battery.
- Use proper lifting techniques when moving batteries. Batteries are small, but heavy and awkward to lift.

Review The Following Points:

- There are different types of batteries for different jobs.
- Smoking or an open flame should be kept away from batteries.
- Protect the eyes, face, and body from battery acid.
- Live connection directly to the battery should not be made.

True and False Answer Key

1. F, 2. T, 3. F, 4. T, 5. T

Battery Safety Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Ventilation is not important in the battery area. | T | F |
| 2. Batteries should be stored in a cool, dry place. | T | F |
| 3. It is acceptable to make live connections directly to the battery. | T | F |
| 4. The eyes, face, and body should be protected from battery acid. | T | F |
| 5. Batteries should be inspected in natural light. | T | F |