

Tailgate Safety Training for Landscaping and Horticultural Services

Agricultural Safety Program, 590 Woody Hayes Drive, Columbus, OH 43210

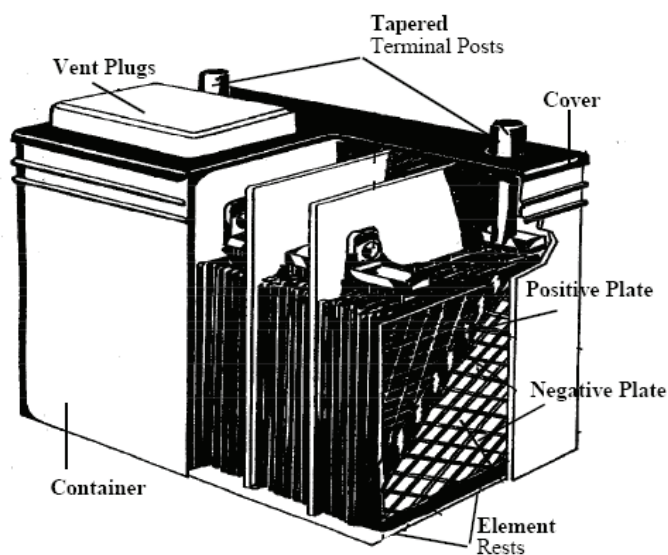
Battery Safety

Objective: Use and store batteries safely.

How to Use This Module

Batteries produce power on demand — and accidents on occasion. For this module:

- Read the information below on different types of batteries.
- Ask your supervisor to show examples of the types of batteries you use and their features.
- Ask your supervisor to demonstrate how to connect a battery safely.
- Practice connecting a battery safely while your supervisor observes.
- Review the important points.
- Take the True/False quiz to check your learning.



Background

Lead-acid storage batteries are chemical storage devices that produce power. The typical battery has a number of cells with layers of lead plates in sulfuric acid. When sulfuric acid contacts the lead plate inside the cell, energy is produced. The main battery terminals are the positive and the negative posts. The battery may also

have vent caps on top. These permit the checking and maintenance of water and acid levels. They also provide a vent for the escape of gases formed when the battery charges.

Types of Batteries

Car-starting batteries start cars and trucks quickly 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 are compact and inexpensive. They should 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 are used in aircraft and are portable. They are usually small and work in any position. They have sealed gel cells to prevent 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 temperatures above 78°F accelerates self-discharge and shortens the battery's life. This battery is more expensive but safer and cleaner.

Safety Tips for Working With Batteries

- Keep sparks and flames away from the battery. Inspect the battery in natural light.
- Remove wristwatches, which might make electrical contact and create sparks.
- Wear gloves and a chemical apron when handling lead acid batteries. Sulfuric acid can cause painful burns that damage tissue. Battery surfaces often have a film of acid mist and lead that has leached out of the battery.
- Wear chemical splash goggles or a face shield with splash protection when inspecting or cleaning the battery. For more details, see the Tailgate Safety Training module *Personal Eye Protection*.
- If acid does enter the eye, immediately flush 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.
- Always make the negative/ground connection first, then the live connection.
- A match, incorrect connection of battery cables, or careless use of tools around the battery can set off explosive gases.
- Use proper lifting techniques when moving batteries. Batteries are small but heavy and awkward to lift. For more information, see the Tailgate Safety Training module *Preventing Lifting and Over-Exertion Injuries*.

Review These Important 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.

About These Modules

The author team for the training modules in the landscape and horticultural tailgate training series includes Dee Jepsen, Program Director, Agricultural Safety and Health, Ohio State University Extension; Michael Wonacott, Research Specialist, Vocational Education; Peter Ling, Greenhouse Specialist; and Thomas Bean, Agricultural Safety Specialist. Modules were developed with funding from the Occupational Safety and Health Administration, U.S. Department of Labor, Grant Number 46E3-HT09.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture or the U.S. Department of Labor.

Answer Key: 1 = F, 2 = T, 3 = F, 4 = T, 5 = T.

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Keith L. Smith, Associate Vice President for Agricultural Administration and Director, Ohio State University Extension

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Battery Safety

Name _____

True or False?

- | | | |
|---|---|---|
| 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 |