



# Tailgate Safety Training for Landscaping and Horticultural Services

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

## Arc Welding Safety

**Objective: Using safe arc welding practices.**

### *How to Use This Module*

It is important to weld using safety precautions. There are many dangers related to welding. For this module:

- Review the information below on the hazards of arc welding and safety practices to avoid them.
- Ask your supervisor to demonstrate how to use personal protection equipment (PPE).
- Try on personal protection equipment while your supervisor observes.
- Review the important points.
- Take the True/False quiz to check your learning.

## Background

Arc welding includes shielded metal-arc, gas-shielded, and resistance welding. Arc welding equipment varies in size and type, so it is important to read and follow the manufacturer's recommendations.

## General Arc Welding Safety

- Read all warning labels and instruction manuals, especially if this is the first time you're using the equipment.
- Proper eye protection is mandatory.
- Before starting any welding, make a complete inspection of the welder.
- Remove all potential fire hazards from the welding area.
- Always have a fire extinguisher ready.
- Equip welding machines with power disconnect switches for quick shut off.
- Disconnect the power to the machine before making repairs.
- Proper grounding of welding machines is essential.
- Electrode holders should not be used if they have:
  - ◆ Loose cable connections
  - ◆ Defective jaws
  - ◆ Poor insulation
- Remove rods when the job is finished.
- Do not strike an arc if someone without proper eye protection is nearby.

## Personal Protective Equipment

- Infrared radiation can burn your retinas. It can also cause cataracts. Protect your eyes and face with a welding helmet properly fitted and with the proper grade of filter plate.
- Protect your body from welding spatter and arc flash with protective clothing such as:
  - ◆ Woolen clothing
  - ◆ Flameproof jacket
  - ◆ Flameproof apron
  - ◆ Gloves
  - ◆ Properly fitted clothing — not frayed or worn
  - ◆ Long-sleeve shirts
  - ◆ Straight-legged trousers that cover shoes
  - ◆ Fire resistant cape or shoulder covers for overhead work
- Check protective clothing before each use to make sure it is in good condition.
- Keep clothes free of grease and oil.

## Proper Ventilation

Sometimes workers weld in confined areas with barriers to air movement. Be sure there is adequate ventilation available. Natural drafts, fans, and positioning of the head can help keep fumes away from the welder's face.

### When Is Natural Ventilation Sufficient?

- If the room or welding area contains at least 10,000 cubic feet for each welder.
- If the ceiling height is not less than 16 feet.
- If partitions, equipment, or other structural barriers do not block cross ventilation.
- If welding is not done in a confined space.

If requirements for natural ventilation are not met, then the area needs to be mechanically ventilated. Ventilation must exhaust at least 2,000 cubic feet per minute of air for each welder, except:

- Where local exhaust hoods or booths are used.
- Where air-line respirators are used.

## Avoiding Electrical Shock

Electrical shock can kill. To prevent electrical shock:

- Use well insulated electrode holders and cables.
- The electrode holder, or stinger, should be in good condition with no cracks or missing insulation.
- Never leave the welding electrode in the electrode holder, or stinger, when not attending the work.
- Make sure welding cables are dry and free of grease and oil.
- Keep welding cables away from power supply cables.
- Wear dry hole-free gloves.
- Clothing should also be dry.
- Insulate the welder from the ground by using dry insulation, such as a rubber mat or dry wood boards.
- Ground frames of welding units.
- Never change electrodes with bare hands or wet gloves.

## Review These Important Points

- Proper personal protection equipment is important.
- Electrical shock can be deadly.
- If ventilation is not sufficient, the welding area should be mechanically ventilated.
- Always have a fire extinguisher ready for immediate use.

## 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.

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

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## Arc Welding Safety

*Name* \_\_\_\_\_

### True or False?

- |  |   |   |
|--|---|---|
| 1. All fire hazards should be removed from the welding area.               | T | F |
| 2. Use natural drafts or fans to keep the fumes away from your face.       | T | F |
| 3. Eye protection is not always needed.                                    | T | F |
| 4. It is acceptable to use electrode holders with loose cable connections. | T | F |
| 5. Electrodes should not be changed with bare hands or wet gloves.         | T | F |