Safety: Electrical Part 1 – Fundamentals, Materials & Equipment Grounding (RV-10743)

Course Description

Welcome to this 2-hour interactive online course that is the first of a two-part series which introduces you to many workplace situations that require you to work safely with electricity. You'll learn how and why electricity can be dangerous. You'll also learn about various methods used for protection. Safety begins with the careful installation of electrical components by means of approved wiring methods. You should use safety procedures and practices that insulate you from electricity's power anytime you work with or near electrical equipment or components.

Specifically, Part 1 looks at:

- Fundamentals of electricity & associated hazards
- Using proper materials and components
- Equipment grounding

Course Outline

Introduction – 10 minutes

Electricity helps people in many ways: It provides light and powers appliances and tools, both at work and at home. It makes tasks easier to perform, often with a more efficient result. Electricity does its work safely—when it is kept under control.

- Course Overview
- Learning Objectives

Fundamentals of Electricity – 15 minutes

Before you can recognize and prevent hazardous situations when working with or near electrical equipment, you must understand how electricity works. The best place to start, therefore, is with the basics—the composition of matter.

- Protons and Electrons
- Conductive and Nonconductive Materials
- How Electricity Flows

Injury – 15 minutes

Electric shock and fire are the primary electrical hazards. Electric shock injury is caused by accidental physical contact with energized electrical components. Fire is caused by the arcing and overheating of electric equipment and insulators

- Personal Injury: Shocks and Burns
- Types of Injury
- Helping a Victim

Hazards Associated with Electricity – 15 minutes

All electric devices produce heat. The greater the amperage, the greater the heat. Under correct design conditions, the heat produced by an electric circuit is not a fire hazard. Proper component sizing for the current circuits and ventilation of control panels and boxes keep an electrical system safe.

- Fire Hazards
- Common Causes of Electrical Fires
- Wiring Systems
  Extinguishing Electrical Fires

Components – 15 minutes

Electrical safety requires the installation of the correct materials, components, and equipment. It also requires their proper maintenance. Literally thousands of different types of electrical parts and devices are in use today.

- Using Proper Materials and Components
- Products Listed and Labeled
- Standards and Codes

Wiring – 15 minutes

If more than the maximum amperage for a given wire size flows through the wire, the temperature of the wire goes up. The insulation becomes damaged, leading to a shortened life of the wire and dangerous short circuits, which can also result in electric shock.

- Wiring Protection and Fuses
- Fuse Designs
- Circuit Breakers
- Conductor Identification
- Polarity
- Identification and Use of Terminals

Emergency Power Systems – 15 minutes

Emergency electric power and supply systems include an added safety measure. These systems have fire detection and alarm circuits, emergency lighting circuits for escape routes, and any auxiliary electric circuits for equipment used in an emergency.

- Signaling and Power-limited Circuits
- Fire-Protective Signaling Systems

Grounding – 15 minutes

OSHA regulations require the grounding of electric circuits and electric equipment. The purpose of grounding, as you may already know, is to protect you against electric shock, to safeguard against fire, and to protect electric equipment from damage.

- Equipment Grounding
- DC Circuits
- AC Circuits
- Cord-Connected Equipment
- Fixed Electric Equipment
- High-Voltage System Grounding
- Ground Fault Interrupters

Conclusion – 5 minutes

In this course, we showed you situations that require you to work safely with electricity. You learned how and why electricity can be dangerous. You also learned about various methods used for protection when working with electricity.

- Summary & Implications

Course Material:

https://www.redvector.com/training-for-individuals/course-search/detail/?course=d244169d-c698-4092-98bd-cbb0a0ec7149