

Arc Flash and Shock Hazard Safety Awareness Class Outline



OSHA compliance includes adherence to employee training requirements. Shock hazard, arc flash and arc blast awareness training is regulated by [NFPA 70E 2015 Edition](#), Articles 110.16 and 110.7 and is enforced under [OSHA 29 CFR Part 1910](#) Subpart S 1910.332.

NFPA Article 110.16(a) in part states: "Such employees shall be trained to understand the specific hazards associated with electrical energy, and shall be trained to identify and understand the relationship between hazards and possible injury." (Paraphrased).

NFPA Article 110.7(a) in part states: "The employer shall implement and document an overall electrical safety program that directs activity appropriate for voltage, energy level, and circuit conditions."

Here is the outline for the electrical arc flash safety awareness for the "qualified" worker.

The "qualified" worker description as per OSHA is "an individual who is trained and knowledgeable in the construction and operation of equipment or specific work method, and is able to recognize and avoid the electrical hazards. The worker is required to operate, maintain, or work on electrical distribution equipment."

Introduction

Objectives

The Need for Electrical Safety

Types of Electrical Hazards

Effects of Electric Shock

Shock and Arc Flash Approach Boundaries

- ✓ Approach Boundaries
- ✓ Limited Approach Boundary
- ✓ Restricted Approach Boundary
- ✓ Prohibited Approach Boundary

"Qualified" Person

Electric Arcs

- ✓ Components of an Electric Arc
- ✓ Arc Flash Hazard
- ✓ Arc Flash Hazard Analysis
- ✓ Flash Protection Boundary
- ✓ Incident Energy
- ✓ Cal/Cm²
- ✓ Warning Labels
- ✓ Example of a Warning Label
- ✓ Determine the Appropriate PPE
- ✓ Personal Clothing
- ✓ PPE Equipment List

Items Not to be Worn

Conductive Materials, Tools, and Equipment Being Handled

Burns

Arc Blast

Shock-Arc-Blast Summary

Safety Philosophy

Electrical Safe Work Rules

Rubber Insulating Gloves, Sleeves and Leather Protectors

- ✓ Inspection of Rubber Gloves
- ✓ Air Test

Electrical Safety Equipment

- ✓ General Safety Requirements for Electricians
- ✓ Requirements
- ✓ Hot Sticks (Shotguns)
- ✓ Electrical Test Equipment
 - Low Voltage Testers
 - Audio Type Voltage Testers
 - High Voltage Proximity Type
 - High Voltage Direct Contact Type the Live-Dead-Live Check
 - Test Equipment Use and Safety Precautions

Insulated Hand Tools

Power Cords

Protective Shields and Barricades

Insulating Blankets and Mats

The Lockout / Tagout Procedure

- ✓ Lockout
- ✓ Tagout
- ✓ Safety Lockout Process
- ✓ Lockout / Tagout Devices
- ✓ Procedure for Applying the Lock
- ✓ Removing the Lock

Grounding Electrical Systems

- ✓ Ground Fault Circuit Interrupters
- ✓ Ungrounded Systems
- ✓ Temporary Grounding
- ✓ Installing Temporary Equipment Grounds
- ✓ Removing Temporary Equipment Grounds

Re-Energizing Equipment

Task Planning and Control

Electro-Static Coupling

Capacitors

Auxiliary Hazards

Summary

For more information on DYMAX Training, contact Rick Edel – redel@dymaxengineering.com Phone: 763-717-3110 between 8:00 a.m. and 4:00 p.m. CST.

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