

NFPA 70E Electrical Safety & Arc Flash Training

OSHA 1910.332(a) Training,

1910.332(a)

Scope. The training requirements contained in this section apply to employees who face a risk of electric shock that is not reduced to a safe level by the electrical installation requirements of 1910.303 through 1910.308.

OSHA Table S-4 also list the typical occupational categories of employees that face a higher than normal risk of electrical accidents.

Table S-4

Blue collar supervisors
Electrical and electronic engineers
Electrical and electronic equipment assemblers
Electrical and electronic technicians
Electricians
Industrial machine operators
Material handling equipment operators
Mechanics and repairers
Painters
Riggers and roustabouts
Stationary engineers
Welders

Workers in these groups do not need to be trained if their work or the work of those they supervise does not bring them or the employees they supervise close enough to exposed parts of electric circuits operating at 50 volts or more to ground for a hazard to exist.

Liberty Electric Inc. NFPA 70E Electrical Safety & Arc Flash Training

PURPOSE OF TRAINING:

Liberty Electric's NFPA 70E 2015® Electrical Safety and Arc Flash training is designed and used to save lives, avoid disabling injuries and prevent damage to buildings and equipment.

Based on NFPA 70E 2015®, those attending this course will gain an immense respect for the power of electricity. Students will learn about personal safety, working on or around energized electrical systems and equipment, how to use proper materials and procedures for doing electrical work and above all the potential consequences for themselves or others if they don't.

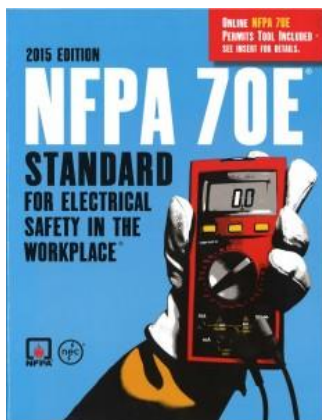
Students will be involved in practical discussions and instruction applicable to their specific job task while working on or around energized electrical equipment. This course will also help your company meet its OSHA training obligations as outlined in CFR 1910.331-335 and the NFPA 70E 2015 standards that require training once every three years.

TRAINING OUTCOMES:

Attendees will learn:

1. How OSHA and NFPA rules apply to your workplace
2. What changed with the new 2015 NFPA 70E updates
3. The difference between "qualified" and "unqualified" electrical workers
4. Identify different electrical hazards
5. Understand the damage electricity can have on people and equipment
6. Use proper response methods for electrical safety accidents
7. How to recognize and work in hazardous boundaries
8. Read arc flash data
9. Apply arc flash and shock hazard warning information
10. Use safe work practices to help prevent accidents and injuries
11. How to choose, use and care for electrical safety PPE
12. Use and care for testing equipment and tools
13. The importance of electrical preventive maintenance for electrical safety

14. Electrical preventive maintenance best practices
15. Electrical safety concerns for special equipment and hazardous locations
16. How to apply their knowledge of arc flash safety



COURSE AGENDA

This training focuses on working safely on and around electrical equipment and is designed for Qualified Persons. Each subject matter is designed to help workers comply with OSHA, NEC, NFPA 70E. Training includes lecture, videos and hands-on demonstrations for using PPE equipment properly.

Learning Objectives:

Electrical Worker Safety Standards

OSHA 29CFR 1910 Subpart S (Electrical) Paragraphs 1910.331-335

OSHA (Occupational Safety & Health Administration)

CFR (Code of Federal Regulations)

NFPA 70E

Assessing the Workplace Hazard

Equipment suitability

Voltage and insulation rating

Hazards equipment arcing

Class of equipment (type, size & current capacity)

Safety Signs and Tags

OSHA 29 CFR 1910.145 (Standards for signs and tags in the workplace)

What type of barricades are approved

Attendants for Safety

Unsafe Acts

OSHA conducted study

Electrical Shock

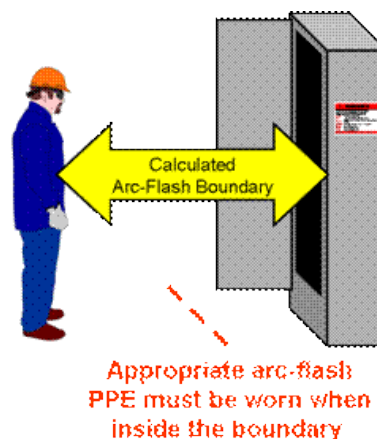
Effects of an electrical shock

Three factors of electrical shock

Electrical Burns and Delayed Trauma

Arc Flash

- Arc Flash Hazards - besides shock and electrocution; blast, heat, projectiles and pressure waves are explained in this presentation
- Incident energy
- NFPA 70E 130.5 (Arc Flash Risk Assessment) This assessment will determine
 - a. Appropriate safety-related work practices
 - b. The arc flash boundary
 - c. The PPE to be used within the arc flash boundary



➤ **Video: ERI Electrical Safety (19:30)**

Protection against Arc Flash

- Electrical Hazard Risk Assessment
- FR (Fire Rated) clothing and PPE (Personal Protective Equipment)

- NEC & NFPA 70E labeling requirements
- Practices to avoid an Arc Flash

Arc Flash Compliance

- OSHA, NFPA and IEEE regulations that govern electrical safety and arc flash

Voltage Sensors and Voltmeters

- OSHA requirements
- Voltage rating
- Tester Types



Qualified Person

- OSHA Subpart S rules and standards for qualified and unqualified persons

Lockout and Tagout

- Procedures (1910.147 and 1910.333)
- Safe methods for de-energizing the circuit
- Positive disconnecting means

- Stored electrical energy
- Non electrical energy
- Multiple or gang lock attachments
- Qualified person
- Testing and visual inspections

➤ **Video: Arc Flash Accident (4:00)**

Key Interlocking Systems

- Standard lockout devices only allow for localized lockout of a specific device. (This part of the presentation explains how a keyed interlock system is used)

Grounds

- IEE Standards for grounding systems; solidly grounded, impedance grounded and ungrounded
- Equipment grounding
- Grounding, grounded conductors and their connection
- Static grounding conductors, connections, identification and why and where it's needed
- Ground adaptors
- Sizing equipment grounding cables
- (GFR) Ground Fault Relays, (GFI)Ground
- Fault Interrupters, construction, where and why they are needed
- Temporary Protective Grounds and Shunts; clamps, cables inspection, connection and removal

Working On or Near Exposed Energized Parts OSHA Subpart S 1910.333

- OSHA 1910.333
- Qualified Persons
- Testing
- Unqualified Persons
- Voltage levels and working distances
- Proper PPE
- Illumination
- Conductive Material and Equipment
- Insulated Tools and Equipment (NFPA 70E)
- Protective Shields
- Portable Ladders

Confined or Enclosed Work Spaces

- Confined space permits required per OSHA

Housekeeping and Janitorial Duties

- Cleaning procedures and proper material

Interlocks

- Qualified persons

Use of Equipment

- Portable electrical equipment
- Electric power and lighting circuits
- Test instruments and equipment

Occasional Use of Flammable or Ignitable Materials

- Extinguishing Electrical Fires
- Safeguards for Personnel Protection (1910.335)

Personal Protective Equipment

- General protective equipment and tools
- Fuse handling equipment
- Ropes and handlines
- Electrical “Linemen’s” Gloves and Insulated Blankets

General Electrical Safety

Explosion Proof & Dust Ignition Proof Applications

- Class I, II, and III
- Division I and II

For more information on how Liberty Electric Inc. can help you make your facility safer and OSHA compliant with NFPA 70E Electrical Safety & Arc Flash Training use Liberty Electric’s Contact Tab on our home page.