

How to Interpret OSHA Requirements for Electrical Hazard Assessments (Arc Flash Studies)

Standard 29 CFR 1910 Subpart S is an OSHA safety regulation regarding employees in the workplace. It requires that work be done de-energized and with lockout/tagout. All work must also comply with the standards 1910.132(d), 1910.303(g) (2), 1910.331-1910.335 as well as the General Duty Clause.

In order to comply with OSHA requirements:

- 1) Identify all hazards above 50V.
- 2) Put safeguards in place for hazards above 50V
- 3) Train employees on safe work practices.

Any potential or actual hazards must be absent from the workplace.

Examples of workplace hazards are:

- Shock and Electrocution
- Arc-Flash and Arc-Blast
- Toxic Gases, Sound and Light
- Fire and Explosion
- Improperly Protected Equipment
- Improperly Maintained Equipment
- Equipment Deficiencies
- Equipment with Improper SCCR

In order to comply with 1910 Subpart S, NFPA 70E must also be followed. NFPA 70E is a consensus standard established by OSHA dealing with workplace electrical safety. **OSHA HAS ADOPTED AND IS ENFORCING NFPA 70E.**

Furthermore, OSHA has stated that employers must provide workers with appropriate PPE as per the OSHA 29 1910.132 (h)(1) PPE payment requirement, i.e., (PPE) used to comply with this part, shall be provided by the employer at no cost to employees. Paragraph (h) became effective February 13, 2008, and employers must implement the PPE requirements no later than May 15, 2008



Important information about NFPA 70E

- NFPA 70E explains how to do 50V and above Hazard Assessments
- NFPA 70E establishes Hazard Risk Categories, Protection Boundaries and Use of Work Permits.
- NFPA 70E defines workers training requirements

Questions, Facts, and Answers:

What is IEEE 1584 and can it be used as a guideline to become OSHA compliant?

IEEE 1584 can only be used as a guide when performing arc flash calculations. Because following IEEE 1584 would omit certain hazards, it cannot be used to become fully OSHA compliant.

Which guideline does OSHA use when inspecting a facility?

NFPA 70E was developed for OSHA for de-energizing, developing safe work practices and conducting Electrical Hazard Tests.

Why are warning labels necessary?

OSHA requires that all potential hazards are identified and communicated to workers. Labels are the industry standard method of compliance with this requirement. NFPA-70E requires that arc flash labels be installed on electrical equipment. Furthermore, NFPA-70E states that the owner of the electrical equipment install arc flash warning labels listing either the Hazard Category or the calculated Cal/cm² at a specific working distance. The Arc Flash boundary and voltage is also required to be on the label.

How should one start?

A Hazard Assessment must be conducted to identify all potential hazards. Arc-Flash Hazard Assessments (Studies) are required to determine the arc flash energy and boundary.

What information should be included on warning labels?

According to NEC 110.16, it is required that minimal Arc-Flash warning information be present on the label. Informational Note 1 points to NFPA-70E for more information about what must be included on an Arc Flash label. Section 130.5 (H) lists the items that should be shown on the Arc Flash labels. Electrical equipment such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are in other than dwelling units and that are likely to require examination, adjustment, servicing, or maintenance while energized shall be field-marked with a label containing all the following information:

- (1) Nominal system voltage
- (2) Arc flash boundary
- (3) At least one of the following:
 - a. Available incident energy and the corresponding working distance, or the arc flash PPE category in Table 130.7(C)(15)(a) or (b) or Table 130.7(C)(15)(b) for the equipment, but not both
 - b. Minimum arc rating of clothing
 - c. Site-specific level of PPE

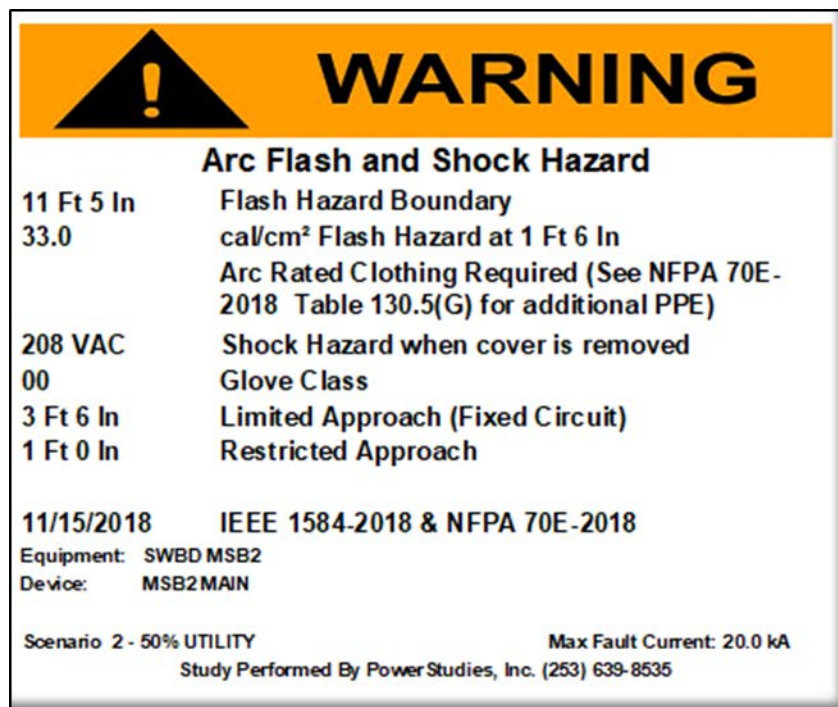


Figure 1 – NFPA 70E – 2018 Compliant Arc Flash Label