



Compliance – Resource Bulletin

Electrical – Arc Flash Signs & Labels

Overview:

Arc flash is the sudden release of large amounts of heat and light energy at the point of an electrical fault. Exposure to an arc flash frequently results in a variety of serious injuries and in some cases death. Workers have been injured even when ten feet or more from the arc center. Both the National Fire Prevention Association (NFPA) and The Occupational Safety & Health Administration (OSHA) have addressed the hazards of arc flash occurrences in their standards on electrical safety in the work place.

OSHA Standards 29-CFR, Part 1910 (standard # 1910.333) addresses precautions for the prevention of arc flash injury and references NFPA 70E for safety measures to protect against arc flash hazards.

NFPA 70 (National Electric Code (NEC) and NFPA 70E (Standard for Electrical Safety in the Workplace) provide guidelines for the design and posting of signs warning of an arc flash hazard.

Resources:

OSHA Standard 1910.333: (Free)	http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9910
NFPA 70 (2017) (NEC): (\$\$\$)	http://www.nfpa.org/
NFPA 70E (2018): (\$\$\$)	http://www.nfpa.org/
ANSI Z535.4 (2011): (\$\$\$)	http://webstore.ansi.org/

Design of Arc Flash Signs & Labels:

- Electrical equipment that is likely to require examination or maintenance while energized should be marked with a clearly visible sign or label warning qualified persons of a potential arc flash hazard. Switchboards, panel boards, industrial control panels, meter socket enclosures, and motor control centers all present potential hazards and should be marked. (NFPA 70)
- The 2018 NFPA 70E includes standards for arc flash signs and labels. Three elements of information are required on these signs and labels: (NFPA 70E (2018))
 1. At least one of the following:
 - Available incident energy and the corresponding working distance. This is the amount of energy (cal/cm²) impressed on a surface at a certain distance away from its source.
 - Minimum arc rating of clothing as tested for arc flash exposure. (Formerly flame retardance).
 - Required level of personal protective equipment (PPE). Arc rating of PPE should be appropriate for the energy hazard level present.
 2. Nominal system voltage
 3. Arc flash boundary (distance of hazard risk by approach type). See NFPA 70E for explanation.
 - Limited Approach
 - Prohibited Approach Boundary
 - Restricted Approach Boundary



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(Arc Flash Signs & Labels Continued)

- The NFPA does not specify whether the sign must use a “DANGER” or “WARNING” header nor set forth requirements for the design or sign layout, but instead refers to the ANSI/NEMA Z535.4-2011, “Product Safety Signs and Labels,” for guidelines on the design.
- ANSI Z535.4 offers two header options. A “DANGER” header with white letters on a red background or a “WARNING” header with black letters on an orange background.
- Signs and labels must also direct a worker to wear proper personal protection equipment or clothing, (PPE). (NFPA 70E 130.7(c)(1))
- Though not required by NFPA 70E, the sign or label may include an arc flash symbol or pictogram. ISO 7010 has recently registered a “To warn of an arc flash” symbol.

For Arc Flash signs & labels please visit our store:

<https://www.compliancesigns.com/products/electrical/arc-flash-signs>