

## Guide to Electrical Safety Compliance

### NFPA 70E Maintenance Requirements

The NFPA 70E Standard for Electrical Safety in the Workplace requires maintenance of electrical equipment as follows:

#### 205.3 General Maintenance Requirements

Electrical equipment shall be maintained in accordance with manufacturers' instructions or industry consensus standards to reduce the risk associated with failure. The equipment owner or the owner's designated representative shall be responsible for maintenance of the electrical equipment and documentation.

For industry consensus standards that provide further guidance on maintenance frequency, methods, and tests, refer to:

- NFPA 70B, Recommended Practice for Electrical Equipment Maintenance
- ANSI/NETA MTS, Standard for Maintenance Testing Specifications for Electrical Power Distribution Equipment and Systems
- IEEE 3007.2, IEEE Recommended Practice for the Maintenance of Industrial and Commercial Power Systems

### Arc Flash Requirements

An employer must assess the workplace for electrical hazards and the need for personal protective equipment (PPE) under OSHA 29 CFR 1910.335(a)(1)(i). The employer is expected to use the best means available

to comply with this requirement, and that is accomplished by following consensus standard NFPA 70E. Compliance with 70E will assure compliance with this OSHA requirement.

These four separate industry standards together establish practices for the prevention of arc flash incidents in the United States. Companies will be cited and fined for not complying with these four standards. See how each standard informs compliance below:

### OSHA 29 Code of Federal Regulations (CFR) Part 1910, Subpart S

OSHA regulations state an employer must identify and assess electrical hazards and protect employees from those hazards. This includes arc flash and shock. However, OSHA itself does not specify how to comply with this regulation, instead deferring to NFPA 70E, the consensus standard for electrical safety in the workplace.

### NFPA 70E, "Standard for Electrical Safety Requirements for Employee Workplaces"

The guidance of 70E serves as a bridge between OSHA regulations and actual compliance. This standard contains information vital to avoiding accidents involving arc flash, including proper hazard identification through compliant labeling. Employers are required to field mark electrical equipment as part of their arc flash analysis. Examples of equipment that require



field marking are switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers.

### National Electrical Code

The NEC, also known as NFPA 70, sets comprehensive regulations for electrical equipment installation, and contains vital information on properly marking hazards. The 2008 revision included information on labeling compliance and arc flash hazards (Article 116.10).

### IEEE Standard 1584, "Guide for Performing Arc Flash Hazard Calculations"

This guide provides empirical formulas for determining arcing fault current, flash protection boundaries, and incident energy. IEEE 1584 establishes a nine-step process for gathering information and calculating arc flash hazards used to meet the assessment and labeling requirements of the standards above.

### United States Department of Labor Requirements

The governing standards used by the U.S. Department of Labor can be found on OSHA's website. For 1910.132, the sections labeled (d)(1), (d)(2), and (f)(1) deserve particular attention.

#### OSHA 1910.132, General requirements:

[https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9777](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9777)

#### OSHA 1910.331, Scope:

[https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9908](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9908)

#### OSHA 1910.335, Safeguards

##### for personnel protection:

[https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9912](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9912)



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