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# **NFPA 70E<sup>®</sup> 2012**

## **20 Most Frequently Asked Questions**

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**[nfpa.org](http://nfpa.org)**

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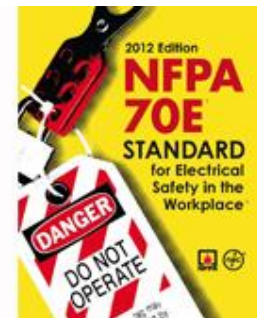
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We receive hundreds of questions each week and these are the 20 most frequently asked questions and the answers on NFPA 70E®. For more information on NFPA Membership go to: [nfpa.org/membership](http://nfpa.org/membership). NFPA Members, next time you have a question, call or log-in online and get answers.

### 20 Most Frequently Asked Questions

These are the top 20 questions that have been fielded in the past year.



**1. *What section of Article 130 do you consider to be the most important?***

I consider 130.1 to be the most important because it points out that all of the requirements in Article 130 apply whether the incident energy (calculation) method or hazard/risk category (table) method are used.

**ARTICLE 130  
Work Involving Electrical Hazards**

**130.1 General.** All requirements of this article shall apply whether an incident energy analysis is completed or if Table 130.7(C)(15)(a), Table 130.7(C)(15)(b), and Table 130.7(C)(16) are used in lieu of an incident energy analysis in accordance with 130.5, Exception.

**2. *Is the employer required to document electrical safety related training and for whom?***

In accordance with 110.2(E) the employer is required to document electrical safety training for qualified persons (110.2(D)(1)), and for unqualified persons relative to electrical safety-related practices necessary for their safety (110.2(D)(2)).

### **3. What type of training documentation is required?**

Per 110.2(E), training documentation is to include the content of the training, each employee's name and the dates of the training.

**(E) Training Documentation.** The employer shall document that each employee has received the training required by 110.2 (D). This documentation shall be made when the employee demonstrates proficiency in the work practices involved and shall be maintained for the duration of the employee's employment. The documentation shall contain the content of the training, each employee's name, and dates of training.

**Informational Note:** Employment records that indicate that an employee has received the required training are an acceptable means of meeting this requirement.

### **4. When is an employer required to retrain (provide additional training for) employees regarding electrical safety-related practices?**

As indicated in 130.2(D)(3) an employer is required to provide additional training when: (1) supervision or the annual inspection indicates that an employee is not following the required electrical safety-related work practices; or (2) when new technology or new equipment or changes in work procedures requires the use of electrical safety-related work practices that are different from those which the employee would normally use, or (3) when an employee is required to use electrical safety-related work practices that are new to them.

### **5. Is there a stated mandatory time period under which retraining (additional training) is required?**

As stated in 110.2(D) employees are to be given additional (retaining in) electrical safety-related work practices every three years. It should be noted the NFPA 70E, Standard for Electrical Safety in the Workplace is revised on a three year cycle.

**6. *In the process of performing electrical lockout/tagout (creating an electrical safe work condition) is lack of voltage verification by an adequately rated voltage detector required?***

Yes, see 120.1(5). However, there may be some situations where it would not be possible to perform lack of voltage verification where there is no accessible exposed point. In this case, the procedure, in accordance with 120.2(F)(2)(f)(5), is to establish planning considerations that include methods of lack of voltage verification.

**7. *What information is required to be included on an arc flash boundary hazard warning label?***

Items (1)a.b.c. apply when an incident energy analysis is performed. Item (1)d. applies when the hazard/risk category method is used. In accordance with 130.5(C) is to include all of the following information:

- (1) At least one of the following –
  - a. Available incident energy in cal/cm<sup>2</sup> and the working distance
  - b. Minimum arc rating of clothing
  - c. Required level of PPE
  - d. Highest hazard/risk category (HRC) for the equipment
- (2) Applicable nominal system voltage
- (3) Applicable arc flash boundary

**8. *Regarding arc flash warning labels are all of the items identified in 130.5(C)(1) applicable when the hazard/risk category (table) method used?***

When the HRC method is used the arc flash warning label is to include the highest hazard/risk category (HRC) for the equipment. Items 130.5(C)(1)a through c do not apply. They are only applicable when the incident energy (calculation) method is used.

**9. *Does Table 130.7(C)(15)(b) apply to an arc-in-a-box situation?***

Table 130.7(C)(15)(b) is only applicable to open air arcs. It is not applicable to enclosed equipment arc-in-a-box situations.

**10. *What are the available methods according to NFPA 70E of performing an arc flash hazard analysis?***

There are two methods that the technical committee (TC) to NFPA 70E consider applicable (i.e., equally valid). They are the incident energy (calculation) method and the hazard/risk category (table) method.

**11. *Is there a preferred method (single method) of performing an arc flash hazard analysis?***

The technical committee (TC) to NFPA 70E considers the two methods identified in NFPA 70E of performing arc flash hazard to be equally valid.

**12. *How do I determine if my equipment situation conforms with the overcurrent protective device parameters identified in the equipment headers to Table 130.7(C)(15)(a)?***

Several different methods are available. All of the method involves the assumption of some risk. It is up to the employer to determine if the risk involved with the method used is acceptable. The simplest method would be to determine the interrupting rating of the main circuit breaker on the equipment or that of the upstream circuit breaker and whether the device has an instantaneous trip element or a short time trip element. When the arcing current is within the instantaneous trip region of an insulated case or molded case circuit breaker, it should trip within 2 cycles (0.03 seconds). For electrical systems rated 600 volts or less the arcing current is always less than the short circuit current. Another method to determine short circuit current would be to use a simplified calculation method. The most detailed method would involve using power system analysis software and in that case, the party doing the calculation would most likely use the incident energy method.

**13. *When I use the hazard/risk category (table) method, how do I determine the arc flash boundary?***

Each equipment header includes the potential arc flash boundary in inches for the parameters used in the equipment header for the overcurrent protective device.

**14. Does the use of N in the “Rubber Insulating Gloves” and “Insulated and Insulating Hand Tools” columns of Table 130.7(C)(15)(a) in all case indicate that they are not required to be used?**

No, see Note (3) to Table 130.7(C)(15)(a). Rubber insulating gloves and insulated and insulating hand tools may be required by 130.4, 130.8(C)(7), and 130.8(D). Remember that 130.1 states that all of the section of Article 130 are apply.

**15. How is the arc rating of a layer system clothing system determined?**

As indicated in Informative Annex M, the arc rating is determined by testing. The arc rating of the individual layers cannot be added together to determine the arc rating of the layered clothing system.

**16. Can one wear non-melting flammable fiber garments under arc-rated clothing?**

In accordance with 130.7(C)(9)(a), yes provided the arc rating of the clothing system is sufficient to prevent break open.

**17. Can non-melting flammable fiber under garments be used to increase the arc rating of the layered clothing system?**

No, according to 130.7(C)(7)(9)(a) garments that are not arc rated cannot be used to increase the arc rating of a garment or clothing system.

**18. If a manufacturer’s label on arc-rated clothing indicates conformance or compliance with NFPA 70E, does it mean anything?**

No. The NFPA does not approve equipment. The label should indicate that the garment complies with the applicable American Society of Testing and Materials standard.

**19. Does NFPA 70E indicate the standards that arc-rated clothing and other personal protective equipment is to comply with?**

Yes, Table 130.7(C)(8) lists the standards that arc-rated clothing and personal protective equipment is to comply with.

**20. Does NFPA 70E indicate the standards that other personal protective equipment is to comply with?**

Yes, Table 130.7(F) indicates the standards that other personal protective equipment is to comply with. Table 130.7(C)(6)(c) list the standards that indicate maximum test intervals for rubber insulating equipment and what they are.

## **About Michael Fontaine**

Michael Fontaine is a Senior Electrical Engineer with the National Fire Protection Association. He is a Registered Professional Electrical Engineer and also has licenses in several other areas. He has approximately 40 years of electrical experience including 35 years as a Registered Professional Electrical Engineer. His experience includes engineering, designing, drafting, purchasing, testing and inspecting, writing about, developing training programs, and teaching about electrical systems and electrical safety issues. He is well versed in the requirements of NFPA 70, the *National Electrical Code*®, and NFPA 70E®, the *Standard for Electrical Safety in the Workplace*.

## **About National Fire Protection Association (NFPA)**

NFPA is a worldwide leader in fire, electrical, building, and life safety. The mission of the international nonprofit organization founded in 1896 is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA develops more than 300 codes and standards to minimize the possibility and effects of fire and other hazards. All NFPA codes and standards can be viewed at no cost at [www.nfpa.org/freeaccess](http://www.nfpa.org/freeaccess).