

Are your Arc Flash Labels Compliant with NFPA[®] 70E – 2018?

NFPA[®] 70E – Standard for Electrical Safety in the Workplace has been revised. The requirements in this document are being enforced by OSHA and other state run OSHA organizations. This document has recently been revised for 2018. The requirements for selection of Personal Protective Equipment (PPE) and Arc Flash labels have changed.

For many years, Arc Rated Clothing Manufacturers used the Hazard Risk Categories (HRC) from the PPE Matrix table 130.7(C)(15)(c). This allowed the user to select, and manufacturers to produce, Arc Rated (AR) garments in ranges that matched the hazard risk categories. This was an easy to understand approach that seemed to adequately protect the workers. However, it was not technically correct. The PPE Matrix table 130.7(C)(15)(c) was originally conceived to be used and applied only when using the Task that the electrician is performing. The table is based upon the hazard and the perceived risk.

The flow chart below shows the path on the left using this Task Method. Table 130.5(C) list various tasks that an electrician might perform. Then, based upon the task they are performing and the condition of the equipment, the user determines if there is an arc flash hazard. If there is an arc flash hazard, then the user must go to table 130.7(C)(15)(a) or (b) and look up the type and voltage of the equipment they will be working on. If the available short circuit current and upstream protective device clearing times are less than the table parameters, then the user can proceed and use the table to determine the Arc Flash PPE Category. Once the Arc Flash PPE Category is known, then the PPE Matrix Table 130.7(C)(15)(c) is used to determine the minimum energy level of the Arc Rated clothing and additional PPE.

The other assessment method involves using the IEEE 1584 equations or other methods. These equations and programs are used for calculating the Arc Flash energy and arc flash boundary. The user uses a different PPE Matrix table 130.5(G) to determine the required PPE.

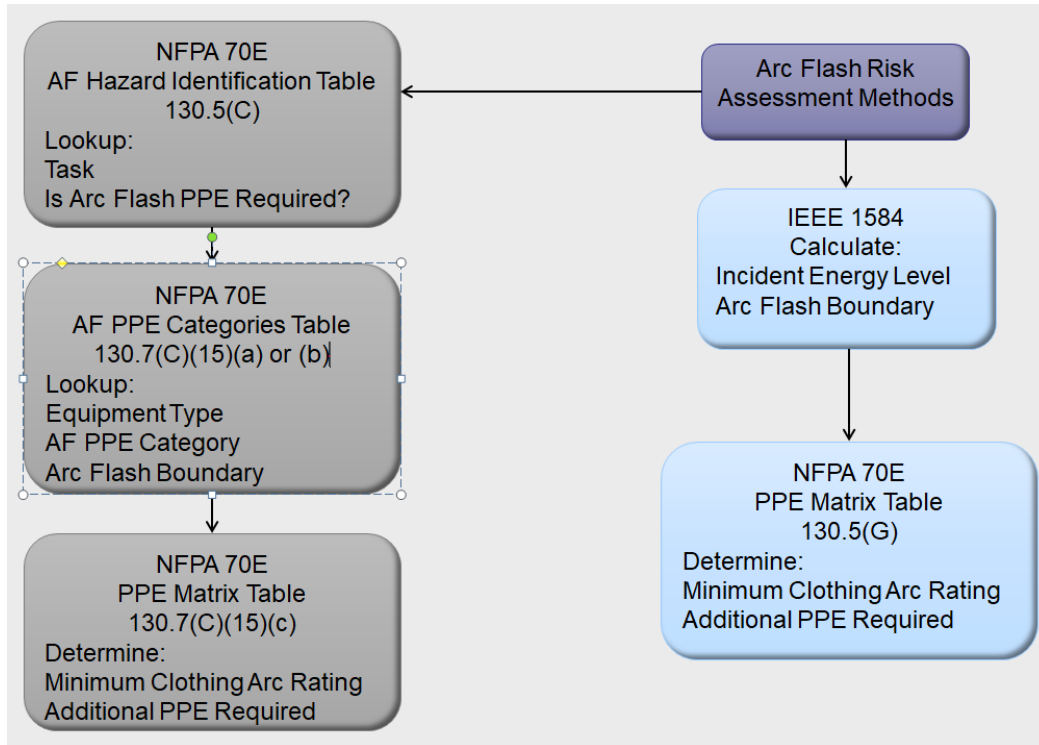


Figure 1 - Arc Flash Hazard Analysis Methods

The Standard Section 130.5 (F) for selecting Arc Flash PPE states the following:

One of the following methods shall be used for the selection of PPE. **Either, but not both**, methods shall be permitted to be used on the same piece of equipment. The results of an incident energy analysis to specify an arc flash PPE Category in Table 130.7(C)(15)(c) shall not be permitted.

(1) The incident energy analysis method in accordance with 130.5(G).

(2) The arc flash PPE category method in accordance with 130.7(C)(15).

The majority of facilities are electing to use the IEEE 1584 equations due to the short circuit and clearing time limits of Table 130.7(C)(15)(a) or (b). This method has proven to be more accurate and wider application range.

What you put on the label depends upon the method that you used. Other information is also required and is listed below. An example of best practices Arc Flash Label is shown below. Note the absence of the HRC number because the IEEE 1584 method has been used. The arc flash energy has been calculated.

Section 130.5 (H) lists the items that should be shown on the Arc Flash labels. **Equipment Labeling.** 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

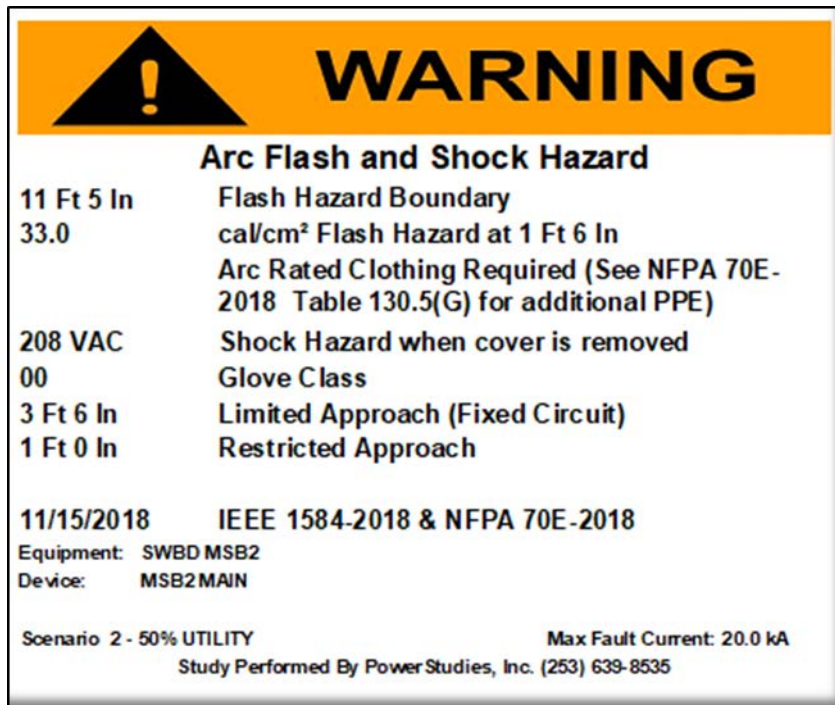


Figure 2 – NFPA 70E – 2018 Compliant Arc Flash Label