

Arc Flash Label Requirements

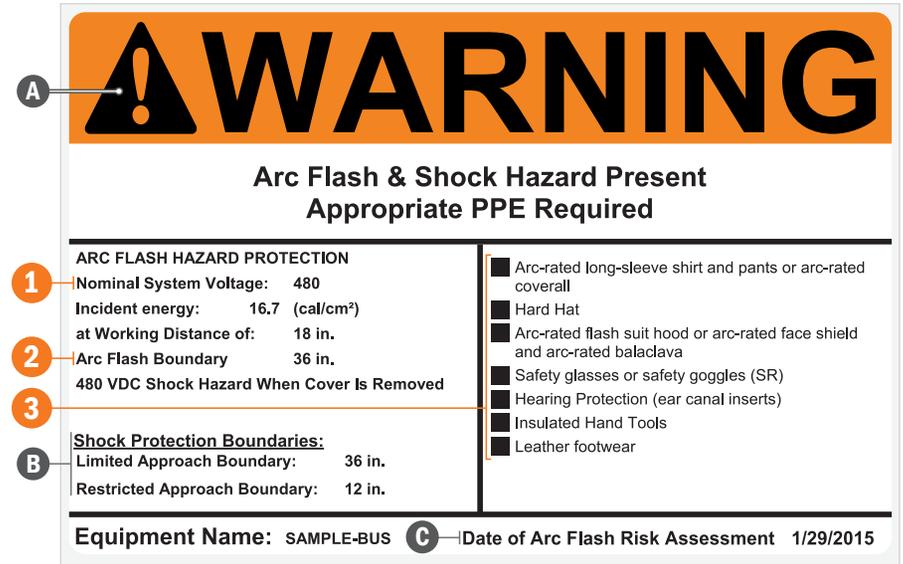
from NFPA 70E-2015

NFPA 70E is the accepted industry standard for electrical safety in the workplace. Created by the National Fire Protection Association, it specifies hazard identification practices and warning systems, including labels for arc flash hazards. The most recent edition of the standard is NFPA 70E-2015.

Arc flash labels are described in section 130.5(C), which states that workplace electrical equipment that is likely to be examined, adjusted, or serviced while energized should be labeled with all three of the following:

- 1. Nominal System Voltage** - The first label requirement, the nominal system voltage, offers a quick way to assess the potential shock hazard and general degree of danger represented by a system. It can be measured in VAC (volts, alternating current) or VDC (volts, direct current). Common values are 120, 208, 220, and 480, but high-powered systems can use much higher values.
- 2. Arc Flash Boundary** - The second label requirement, the arc flash boundary, is the distance from the equipment at which an unprotected person would receive second-degree burns in the event of an arc flash. Specifically, the energy at that point would be 1.2 calories (5 Joules) of heat energy per square centimeter of exposed area, or 1.2 cal/cm². This distance is calculated in a variety of ways, and the calculation method must be documented, although it does not need to appear on the label.
- 3. Protective Equipment** - The third label requirement provides workers with information about the personal protective equipment (PPE) needed to work on the labeled equipment safely. There are four different choices for this requirement:
 - **Available Incident Energy at a Working Distance*** provides the most detailed technical information. With this option, a label displays the amount of thermal energy (usually in cal/cm²) to be expected at a given working distance from an arc fault. With this information, the worker can identify the type of protection needed.
 - **Arc Flash PPE Category*** is a “shortcut” for determining PPE requirements. Engineers can look up common equipment and tasks on a table to identify the category, instead of performing detailed calculations. Categories are numbered from 1 to 4, with higher numbers for greater danger, and each category is associated with a prescribed set of PPE. The Arc Flash PPE Categories replace the Hazard/Risk Category (HRC) system from the 2012 edition of NFPA 70E.
 - **Minimum Arc Rating of Clothing** details the amount of protection needed to work on the equipment safely, using an Arc Rating (AR) number. These rating numbers, provided by the PPE manufacturer, represent the amount of energy in cal/cm² that can be blocked or absorbed by the clothing.
 - **Site-Specific Level of PPE** is a listing of the required PPE using a facility-specific system, such as “ACME Gray-Level Suit” or even a piece-by-piece list of equipment. If this approach is used, it is critical that the listing system in use is documented, and workers are thoroughly trained.

*Because the calculated Incident Energy/Working Distance information may conflict with the generalized Arc Flash PPE Categories, the NFPA does not permit both of those approaches to be used on the same equipment. Otherwise, multiple details are permitted.



Other Label Elements

- A. Warning/Danger Header** - These labels warn of a hazard that could result in serious injury or death, so they should use an ANSI Z535-compliant header: either an orange band with the word “WARNING” in black, or a red band with the word “DANGER” in white. “Danger” should be used for more serious threats, but the NFPA does not designate an energy level to use as a cut-off point between the two headers. Many facilities use “Warning” where energized work is permitted with appropriate precautions, and “Danger” where sufficient PPE is not available. Whatever the choice, it should be documented and consistent.
- B. Shock Boundaries** - Most electrical equipment that poses an arc flash hazard also presents a shock hazard, so many arc flash labels also include these boundaries to protect workers from this second concern. The Limited Approach Boundary is a distance from the equipment that should only be crossed by “qualified” (properly trained and equipped) workers, or other workers when they are properly equipped and accompanied by a qualified worker. The Restricted Approach Boundary, which is closer to the equipment, should only be crossed by qualified workers, and only when they have a written and approved plan of action.
- C. Date of Analysis** - In addition to the specific elements required by NFPA 70E Article 130.5(C), all arc flash labels should include a Date of Analysis. NFPA 70E requires the analysis to be reviewed at least once every five years, or whenever the circuit is altered, and labels must be updated whenever the relevant information has changed. CSA Z462 (the Canadian “sister standard” to NFPA 70E) specifically requires this date to appear on the label.

This guide is for informational purposes only. It is not a substitution for review of applicable standards.

Graphic Products®, DuraLabel®, PathFinder®, Toro® and Lobo® are Registered Trademarks of Graphic Products, Inc. ©2005, 2015 Graphic Products, Inc. All rights reserved.

Create Arc Flash Labels with

DuraLabel®

Industrial Label & Sign Printers

DuraLabel thermal transfer printers produce long-lasting custom arc flash labels on demand — for a fraction of what you'd pay at a sign shop.



CUSTOM LABEL STOCK

All labels shown are compliant with NEC and ANSI standards and can easily be customized.

DuraLabel PRO 300 comes with free DuraSuite software for loading onto your PC.



Die-Cut Warning and Danger Labels

DuraLabel die-cut labels come with pre-printed headers. Use the DuraSuite software included to customize label messages.

The headers of die-cut Warning and Danger labels come in your choice of English, Spanish or French.



Continuous Vinyl with Orange Header

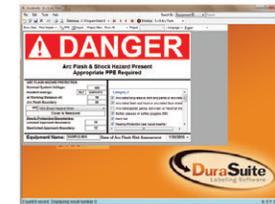
For flexibility in label customization, DuraLabel Continuous Vinyl is available with a pre-printed orange header. Print WARNING and symbol on the orange header, and your custom message in the white section, at the same time.



DURASUITE LABELING SOFTWARE

DuraSuite™ Labeling Software comes loaded onto the standalone Toro integrated printer and as a downloadable package for the DuraLabel PRO 300.

DuraSuite includes templates for arc flash as well as pipe marking, GHS, right-to-know, and custom labels. A database for more than 1,700 common chemicals and more than 1,800 symbols is included.



Need Greater Visibility? Call to learn about *SUPER-SIZED* arc flash labels up to 8.8" x 12.8". **877.534.5157**



CALL TODAY! 877.534.5157 | DuraLabel.com



Scan & Save
with DuraLabel
Arc Flash Kits

