



## Changes to 2005 National Electrical Code – Are you in compliance?

Article 110.16 “Flash Protection” requires labels like this. →

|  |  |
|--|--|
|  <b>WARNING</b>                       |  |
| <b>Arc Flash and Shock Hazard<br/>Appropriate PPE Required</b>   |  |
| 3' - 4"<br>4.9<br>#2   | Flash Hazard Boundary<br>cal/cm2 Flash Hazard at 18 Inches<br>PPE Level<br>Cotton underwear plus FR shirt and FR pants                                     |
| 0.48<br>3' - 6"<br>1' - 0"<br>0' - 1"  | kV Shock Hazard when cover is removed<br>Limited Approach<br>Restricted Approach - Class 00 Voltage Gloves<br>Prohibited Approach - Class 00 VoltageGloves |
| Equipment Name SWG-2A  |  |
| IEEE 1584 Hazards; Project 1289A – Safety Procedure #A6D24 –<br>EasyPower File: "Plant-A6.dez" – Date: September 9, 2003 |  |

**NFPA 70-2005 “National Electrical Code” (NEC) in Article 110.16 “Flash Protection”** states that electrical panels in industrial facilities that are likely to be worked on while energized “shall be field marked with a label indicating the incident energy available, or the rating of needed protective clothing in calories per square centimeter (cal/cm2), to warn qualified persons of potential electric arc flash hazards and to aid in the selection of flame resistant clothing and other personal protective equipment. The label shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.”

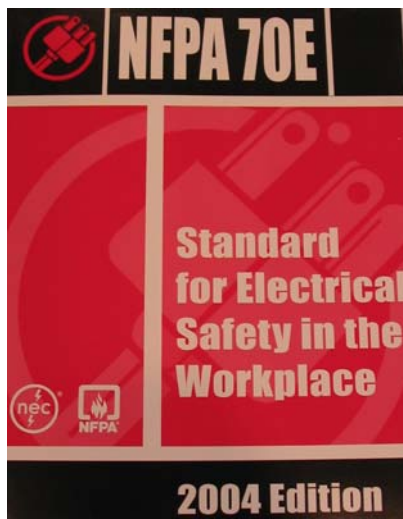


### What is an Arc Flash?

An arc flash is a dangerous explosion caused by a short circuit. An arc flash can generate over 5,000 °F in under a second.

### What causes an Arc Flash?

Anything that causes a short circuit such as: dropped tools, accidental contact with live parts, deteriorating electrical system, build-up of conductive dust (i.e. Flour/grain dust, metal dust).



### Typical Injuries caused by an Arc Flash:

- Burns
- Loss of Life
- Hearing Loss
- Broken Bones
- Concussion
- Shrapnel Injury

### Additional Code Requirements:

**OSHA (29 CFR 1910)** Requires that the employer assess the hazards in the workplace and identify personal protective equipment (PPE) to be worn by employees to protect themselves from the hazard. OSHA states that employees working around live electrical circuits shall be provided with PPE.

**NFPA 70E-2004 “Standard for Electrical Safety in the Workplace”** provides guidelines for conducting an Arc Flash Hazard Analysis to determine where potential arc flash hazards exist throughout the electrical system and what kinds of PPE are required for the task.

### Our Services:

THOR Engineering, LLC has a licensed professional engineer who can conduct an Arc Flash Hazard Analysis of your electrical system. We use software that will perform the highly complex calculations per NFPA 70E and IEE 1584 to determine levels of PPE required. We can even provide computer generated high quality vinyl labels for field marking of devices. Our services typically include:

1. Field Walk-down / Data Collection
2. Update existing electrical drawings
3. Breaker/Fuse Coordination Study

4. Short Circuit & Arc Flash Analysis
5. Summary Report of Findings
6. Print Warning Labels



**THOR Engineering, LLC**

Contact: Michael Goslak, P.E. (615) 500-4242 [mgoslak@thorengineer.com](mailto:mgoslak@thorengineer.com)