



Electrical Safety Outline

The three hazards of electricity are: *Shock, Arc, and Blast*
OSHA Regulations

2-3.7 Insulated Tools and Equipment

Employees shall use insulated tools and/or handling equipment when working inside the limited approach boundary of live parts where tools or handling equipment might make accidental contact. Insulated tools shall be protected from damage to the insulating material.

2-3.8 Protective Shields

Protective shields, protective barriers, or insulating materials shall be used to protect each employee from shock, burns, or other electrically related injuries while that employee is working near live parts which might be accidentally contacted or where dangerous electric heating or arcing might occur. When normally enclosed live parts are exposed for maintenance or repair, they shall be guarded to protect unqualified persons from contact with the live parts.

3-1 General

Employees working in areas where there are electrical hazards shall be provided with, and shall use, protective equipment that is designed and constructed for the specific part of the body to be protected and for the work to be performed.

1926.416 29 CFR Ch. XVII (7-1-94 Edition):

(g) Use of Equipment. (1) Work on energized equipment. Only qualified persons may work on electrical circuit parts or equipment that have not been de-energized under the procedures or paragraph (b) of this section. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools. (OSHA Standard)

1910.335 Safeguards for personal protection:

(a) Use of protective equipment. (1) Personal protective equipment. (i) Employees working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed.

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Notes

1. 25 kA short circuit current available, 0.03 second (2 cycle) fault clearing time.
2. 65 kA short circuit current available, 0.03 second (2 cycle) fault clearing time.
3. For <10 kA short circuit current available, the Hazard/Risk Category required may be reduced by one Number.
4. 65 kA short circuit current available, 0.33 second (20 cycle) fault clearing time.
5. 65 kA short circuit current available, up to 1.0 second (60 cycle) fault clearing time.
6. For <25 kA short circuit current available, the Hazard/Risk Category required may be reduced by one Number.

Protective Clothing Characteristics

Hazard Risk Category	Clothing Description (Number of clothing is given in parentheses)	Total Weight oz/yd ²	Minimum Arc Thermal Performance Exposure Value (ATPV)* or Breakopen Threshold Energy (EBT)* Rating of PPE cal/cm ²
0	Untreated cotton (1)	4.5 - 7	N/A
1	FR shirt and FR pants (1)	4.5 - 8	5
2	Cotton underwear plus FR shirt and FR pants (2)	9 - 12	8
3	Cotton underwear plus FR shirt and FR pants plus FR coverall (3)	16 - 20	25
4	Cotton underwear plus FR shirt and FR pants plus double layer switching coat and pants	24 - 30	40

Panelboard Rated 240 V and Below

Circuit breaker (CB) or fused switch operation with covers on

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)
<ul style="list-style-type: none"> - Long Sleeve Shirt (NM) - Long Pants (NM) - Safety Glasses

Notes
NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

CB or fused switch operation with covers off

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)
<ul style="list-style-type: none"> - Long Sleeve Shirt (NM) - Long Pants (NM) - Safety Glasses

Notes
NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

Panelboard Rated 240 V and Below

Work on energized parts, including voltage testing

Hazard Level 1



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (2, AN)
- Leather Work Shoes (AN)
- Insulated Gloves
- Insulated Tools



Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Remove/install CB's or fused switches

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)

Hazard Level 1



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (2, AN)
- Leather Work Shoes (AN)
- Insulated Gloves
- Insulated Tools



Notes

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- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Panelboard Rated 240 V and Below

Removal of bolted covers (to expose bare, energized parts)

Hazard Level 1

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (AN)
- Leather Work Shoes (AN)

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

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AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Opening hinged covers (to expose bare, energized parts)

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

Panelboards or Switchboards >240 V and up to 600 V

CB or fused switch operation with covers on

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

Panelboards or Switchboards >240 V and up to 600 V

CB or fused switch operation with covers off

Hazard Level 1

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (AN)
- Leather Work Shoes (AN)

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Work on energized parts, including voltage testing *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-Shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Insulated Tools
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

600 V Class Motor Control Centers (MCC's)

CB or fused switch or starter operation with enclosure doors closed **Hazard Level 0**



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting
(according to ASTM F 1506-00) OR Untreated Natural Fiber

Reading a panel meter while operating a meter switch

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting
(according to ASTM F 1506-00) OR Untreated Natural Fiber

CB or fused switch or starter operation with enclosure doors open **Hazard Level 1**

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (AN)
- Leather Work Shoes (AN)

Notes

NM = Non-melting
(according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

600 V Class Motor Control Centers (MCC's)

Work on energized parts, including voltage testing *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-Shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Insulated Tools
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Work on control circuits with energized parts 120 V or below, exposed Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses
- Insulated Gloves
- Insulated Tools

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

WARNING!

Although NFPA 70E does not list leather gloves, a leather protective glove should always be worn over rubber insulating gloves to provide the needed mechanical protection against cuts, abrasions, and punctures.

600 V Class Motor Control Centers (MCC's)

Work on control circuits with energized parts >120 V, exposed

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



**Double-Layer Switching Hood Required
Hearing Protection Required**



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-Shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Insulated Tools
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Intersection or removal of individual starter "buckets" from MCC

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1, 9)
- FR Pants (1, 9)
- FR Coverall (1, 9)
- FR Jacket, Parka, or Rainwear (1, AN)
- Hard Hat
- FR Hard Hat Liner (AR)
- Safety Glasses/Goggles (AL)
- FR Flash Suit Hood
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes
- Insulated Gloves

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coverall with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

600 V Class Motor Control Centers (MCC's)

Application of safety grounds, after voltage test *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

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AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Removal of bolted covers (to expose bare, energized parts)

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Double-Layer Switching Hood
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

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AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

600 V Class Motor Control Centers (MCC's)

Opening hinged covers (to expose bare, energized parts)

Hazard Level 1

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (AN)
- Leather Work Shoes (AN)

Notes

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AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

600 V Class Switchgear

CB or fused switch operation with enclosure doors closed

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

Reading a panel meter while operating a meter switch

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

600 V Class Switchgear

CB or fused switch operation with enclosure doors open

Hazard Level 1

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (AN)
- Leather Work Shoes (AN)

Notes

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- 1 - Arc rating for a garment is expressed in cal/cm².
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Work on energized parts, including voltage testing *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-Shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Insulated Tools
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

600 V Class Switchgear

Work on control circuits with energized parts 120V or below, exposed **Hazard Level 0**



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses
- Insulated Gloves
- Insulated Tools

Notes

NM = Non-melting
(according to ASTM F 1506-00) OR Untreated Natural Fiber



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

WARNING!

Although NFPA 70E does not list leather gloves, a leather protective glove should always be worn over rubber insulating gloves to provide the needed mechanical protection against cuts, abrasions, and punctures.

Work on control circuits with energized parts > 120 V exposed **Hazard Level 2***

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-Shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Insulated Tools
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

NM = Non-melting
(according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

600 V Class Switchgear

Intersection or removal (racking) of CBs from cubicles, doors open **Hazard Level 3**

Minimum Arc Rating of PPE 104.6 J/cm² (25cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1, 9)
- FR Pants (1, 9)
- FR Coverall (1, 9)
- FR Jacket, Parka, or Rainwear (1, AN)
- Hard Hat
- FR Hard Hat Liner (AR)
- Safety Glasses/Goggles (AL)
- FR Flash Suit Hood
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required
- 1 - Arc rating for a garment is expressed in cal/cm².
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coverall with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.

Intersection or removal (racking) of CBs from cubicles, doors closed **Hazard Level 2**

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required
- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

600 V Class Switchgear

Application of safety grounds, after voltage test *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Removal of bolted covers (to expose bare, energized parts)

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1, 9)
- FR Pants (1, 9)
- FR Coverall (1, 9)
- FR Jacket, Parka, or Rainwear (1, AN)
- Hard Hat
- FR Hard Hat Liner (AR)
- Safety Glasses/Goggles (AL)
- FR Flash Suit Hood
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coverall with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.

600 V Class Switchgear

Opening hinged covers (to expose bare, energized parts)

Hazard Level 2

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Other 600 V Class Equipment

Lighting or small power transformers (600 V maximum)

Removal of bolted covers (to expose bare, energized parts)

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Double-Layer Switching Hood
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Other 600 V Class Equipment

Lighting or small power transformers (600 V maximum)

Opening hinged covers (to expose bare, energized parts)

Hazard Level 1

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (AN)
- Leather Work Shoes (AN)

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Work on energized parts, including voltage testing *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-Shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Insulated Tools
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Other 600 V Class Equipment

Lighting or small power transformers (600 V maximum)

Application of safety grounds, after voltage test *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required
- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Revenue meters (kW-hour at primary voltage and current)

Insertion or removal *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required
- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Other 600 V Class Equipment

Revenue meters (kW-hour at primary voltage and current)

Cable through to tray cover removal or installation

Hazard Level 1

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (AN)
- Leather Work Shoes (AN)

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Miscellaneous equipment cover removal or installation

Hazard Level 1

Minimum Arc Rating of PPE 16.74 J/cm² (4cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Long Pants (NM, 4)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 4)
- FR Coverall (1, 5)
- FR Jacket, Parka or Rainwear (1, AN)
- Hard Hat
- Safety Glasses
- Leather Gloves (AN)
- Leather Work Shoes (AN)

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 4 - Regular Weight (minimum 12oz/yd² fabric weight) untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum Arc rating of 4.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Other 600 V Class Equipment

Revenue meters (kW-hour at primary voltage and current)

Work on energized parts, including voltage testing *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-Shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Insulated Tools
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required
- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Application of safety grounds, after voltage test *

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Double-Layer Switching Hood
- Insulated Gloves
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required
- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

NEMA E2 Motor Starters (2.3kV - 7.2kV)

Contractor operation with enclosure doors closed

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting
(according to ASTM F 1506-00) OR Untreated Natural Fiber

Reading a panel meter while operating a meter switch

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting
(according to ASTM F 1506-00) OR Untreated Natural Fiber

Contractor operation with enclosure doors open

Hazard Level 2*

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Double-Layer Switching Hood Required
Hearing Protection Required

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Double-Layer Switching Hood
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

NM = Non-melting
(according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

NEMA E2 Motor Starters (2.3 kV - 7.2kV)

Work on energized parts, including voltage testing

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1, 9)
- FR Pants (1, 9)
- FR Coverall (1, 9)
- FR Jacket, Parka, or Rainwear (1, AN)
- Hard Hat
- FR Hard Hat Liner (AR)
- Safety Glasses/Goggles (AL)
- FR Flash Suit Hood
- Hearing Protection
- Leather Gloves (2)
- Leather Work Shoes
- Insulated Gloves
- Insulated Tools

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coveralls with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Work on control circuits with energized parts 120 V or below, exposed

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses
- Insulated Gloves
- Insulated Tools

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

WARNING!

Although NFPA 70E does not list leather gloves, a leather protective glove should always be worn over rubber insulating gloves to provide the needed mechanical protection against cuts, abrasions, and punctures.

NEMA E2 Motor Starters (2.3kV - 7.2kV)

Work on control circuits with energized parts >120 V exposed

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | | |
|---|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | · | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · | - Safety Glasses/Goggles (AL) |
| - FR Long Sleeve Shirt (1, 9) | · | - FR Flash Suit Hood |
| - FR Pants (1, 9) | · | - Hearing Protection |
| - FR Coverall (1, 9) | · | - Leather Gloves (2) |
| - FR Jacket, Parka, or Rainwear (1, AN) | · | - Leather Work Shoes |
| - Hard Hat | · | - Insulated Gloves |
| | | - Insulated Tools |

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coveralls with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Insertion or removal (racking) of starters from cubicles, doors open

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | | |
|---|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | · | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · | - Safety Glasses/Goggles (AL) |
| - FR Long Sleeve Shirt (1, 9) | · | - FR Flash Suit Hood |
| - FR Pants (1, 9) | · | - Hearing Protection (8) |
| - FR Coverall (1, 9) | · | - Leather Gloves |
| - FR Jacket, Parka, or Rainwear (1, AN) | · | - Leather Work Shoes |
| - Hard Hat | · | |

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coverall with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.

NEMA E2 Motor Starters (2.3 kV - 7.2kV)

Insertion or removal (racking) of starters from cubicles, doors closed **Hazard Level 2**

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Application of safety grounds, after voltage test

Minimum Arc Rating of PPE 104.6 J/cm² (25cal/cm²)

Hazard Level 3



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1, 9)
- FR Pants (1, 9)
- FR Coverall (1, 9)
- FR Jacket, Parka, or Rainwear (1, AN)
- Hard Hat
- FR Hard Hat Liner (AR)
- Safety Glasses/Goggles (AL)
- FR Flash Suit Hood
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes
- Insulated Gloves

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coverall with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

NEMA E2 Motor Starters (2.3kV - 7.2kV)

Removal of bolted covers to expose bare energized parts

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | |
|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | - Hard Hat |
| - FR Long Sleeve Shirt (1) | - Flash Suit Hood |
| - FR Long Pants (1) | - Safety Glasses/Goggles (AL) |
| - FR Coverall (1, 5) | - Hearing Protection |
| - FR Jacket, Parka, or Rainwear (1, AN) | - Leather Gloves |
| - FR Flash Suit Jacket (multilayer) | - Leather Work Shoes |
| - FR Flash Suit Pants (multilayer) | |

Notes

- | | |
|---|--------------------------|
| NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber | AN = As Needed |
| | AL = Select One in Group |
| | AR = As Required |

- 1 - Arc rating for a garment is expressed in cal/cm².
 5 - Alternate is to us FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Opening hinged covers to expose bare, energized parts

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | |
|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | - Safety Glasses/Goggles (AL) |
| - FR Long Sleeve Shirt (1, 9) | - FR Flash Suit Hood |
| - FR Pants (1, 9) | - Hearing Protection (8) |
| - FR Coverall (1, 9) | - Leather Gloves |
| - FR Jacket, Parka, or Rainwear (1, AN) | - Leather Work Shoes |
| - Hard Hat | |

Notes

- | | |
|---|--------------------------|
| NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber | AN = As Needed |
| | AL = Select One in Group |
| | AR = As Required |

- 1 - Arc rating for a garment is expressed in cal/cm².
 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.
 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coverall with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.

Metal Clad Switchgear, 1 kV and Above

CB or fuse switch operation with enclosure doors closed

Hazard Level 2

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Reading a panel meter while operating a meter switch

Hazard Level 0



Personal Protective Equipment (Minimum Requirements)

- Long Sleeve Shirt (NM)
- Long Pants (NM)
- Safety Glasses

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

Metal Clad Switchgear, 1 kV and Above

CB or fuse switch operation with enclosure doors open

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | |
|---|---------------------------------|
| - Short Sleeve T-shirt (NM) | · - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · - Hard Hat |
| - FR Long Sleeve Shirt (1) | · - Flash Suit Hood |
| - FR Long Pants (1) | · - Safety Glasses/Goggles (AL) |
| - FR Coverall (1, 5) | · - Hearing Protection |
| - FR Jacket, Parka, or Rainwear (1, AN) | · - Leather Gloves |
| - FR Flash Suit Jacket (multilayer) | · - Leather Work Shoes |
| - FR Flash Suit Pants (multilayer) | |

Notes

- | | |
|----------------------------------|----------------------------|
| NM = Non-melting | · AN = As Needed |
| (according to ASTM F 1506-00) OR | · AL = Select One in Group |
| Untreated Natural Fiber | · AR = As Required |

- 1 - Arc rating for a garment is expressed in cal/cm².
 5 - Alternate is to us FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Work on energized parts, including voltage testing

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | |
|---|---------------------------------|
| - Short Sleeve T-shirt (NM) | · - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · - Hard Hat |
| - FR Long Sleeve Shirt (1) | · - Flash Suit Hood |
| - FR Long Pants (1) | · - Safety Glasses/Goggles (AL) |
| - FR Coverall (1, 5) | · - Hearing Protection |
| - FR Jacket, Parka, or Rainwear (1, AN) | · - Leather Gloves (2) |
| - FR Flash Suit Jacket (multilayer) | · - Leather Work Shoes |
| - FR Flash Suit Pants (multilayer) | · - Insulated Gloves |
| | · - Insulated Tools |

Notes

- | | |
|----------------------------------|----------------------------|
| NM = Non-melting | · AN = As Needed |
| (according to ASTM F 1506-00) OR | · AL = Select One in Group |
| Untreated Natural Fiber | · AR = As Required |

- 1 - Arc rating for a garment is expressed in cal/cm².
 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
 5 - Alternate is to us FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Metal Clad Switchgear, 1 kV and Above

Work on control circuits with energized parts 120 V or below, exposed **Hazard Level 2**

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves (2)
- Leather Work Shoes
- Insulated Gloves
- Insulated Tools



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required
- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Work on control circuits with energized parts >120 V exposed

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1)
- FR Long Pants (1)
- FR Coverall (1, 5)
- FR Jacket, Parka, or Rainwear (1, AN)
- FR Flash Suit Jacket (multilayer)
- FR Flash Suit Pants (multilayer)
- FR Hard Hat Liner (AR)
- Hard Hat
- Flash Suit Hood
- Safety Glasses/Goggles (AL)
- Hearing Protection
- Leather Gloves (2)
- Leather Work Shoes
- Insulated Gloves
- Insulated Tools

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required
- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Metal Clad Switchgear, 1 kV and Above

Insertion or removal (racking) of CB's from cubicles, doors open

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1)
- FR Long Pants (1)
- FR Coverall (1, 5)
- FR Jacket, Parka, or Rainwear (1, AN)
- FR Flash Suit Jacket (multilayer)
- FR Flash Suit Pants (multilayer)
- FR Hard Hat Liner (AR)
- Hard Hat
- Flash Suit Hood
- Safety Glasses/Goggles (AL)
- Hearing Protection
- Leather Gloves
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required

1 - Arc rating for a garment is expressed in cal/cm².

5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Insertion or removal (racking) of CB's from cubicles, doors closed

Hazard Level 2

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

- NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber
- AN = As Needed
- AL = Select One in Group
- AR = As Required

1 - Arc rating for a garment is expressed in cal/cm².

6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.

7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.

8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Metal Clad Switchgear, 1 kV and Above

Application of safety grounds, after voltage test

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | | |
|---|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | · | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · | - Hard Hat |
| - FR Long Sleeve Shirt (1) | · | - Flash Suit Hood |
| - FR Long Pants (1) | · | - Safety Glasses/Goggles (AL) |
| - FR Coverall (1, 5) | · | - Hearing Protection |
| - FR Jacket, Parka, or Rainwear (1, AN) | · | - Leather Gloves |
| - FR Flash Suit Jacket (multilayer) | · | - Leather Work Shoes |
| - FR Flash Suit Pants (multilayer) | · | - Insulated Gloves |



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 5 - Alternate is to us FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Removal of bolted covers (to expose bare, energized parts)

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | | |
|---|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | · | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · | - Hard Hat |
| - FR Long Sleeve Shirt (1) | · | - Flash Suit Hood |
| - FR Long Pants (1) | · | - Safety Glasses/Goggles (AL) |
| - FR Coverall (1, 5) | · | - Hearing Protection |
| - FR Jacket, Parka, or Rainwear (1, AN) | · | - Leather Gloves |
| - FR Flash Suit Jacket (multilayer) | · | - Leather Work Shoes |
| - FR Flash Suit Pants (multilayer) | · | |

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 5 - Alternate is to us FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Metal Clad Switchgear, 1 kV and Above

Opening hinged covers (to expose bare, energized parts)

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | | |
|---|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | · | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · | - Safety Glasses/Goggles (AL) |
| - FR Long Sleeve Shirt (1, 9) | · | - FR Flash Suit Hood |
| - FR Pants (1, 9) | · | - Hearing Protection (8) |
| - FR Coverall (1, 9) | · | - Leather Gloves |
| - FR Jacket, Parka, or Rainwear (1, AN) | · | - Leather Work Shoes |
| - Hard Hat | · | |

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coverall with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.

Opening voltage transformer or control power transformer compartments

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | | |
|---|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | · | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · | - Hard Hat |
| - FR Long Sleeve Shirt (1) | · | - Flash Suit Hood |
| - FR Long Pants (1) | · | - Safety Glasses/Goggles (AL) |
| - FR Coverall (1, 5) | · | - Hearing Protection |
| - FR Jacket, Parka, or Rainwear (1, AN) | · | - Leather Gloves |
| - FR Flash Suit Jacket (multilayer) | · | - Leather Work Shoes |
| - FR Flash Suit Pants (multilayer) | · | |

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Other Equipment 1 kV and Above

Metal Clad Load Interrupter Switches, Fused or Unfused

Switch operation, doors closed

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)

Hazard Level 2



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)
- Leather Gloves
- Leather Work Shoes

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Work on energized parts, including voltage testing

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)

Hazard Level 4



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1)
- FR Long Pants (1)
- FR Coverall (1, 5)
- FR Jacket, Parka, or Rainwear (1, AN)
- FR Flash Suit Jacket (multilayer)
- FR Flash Suit Pants (multilayer)
- FR Hard Hat Liner (AR)
- Hard Hat
- Flash Suit Hood
- Safety Glasses/Goggles (AL)
- Hearing Protection
- Leather Gloves (2)
- Leather Work Shoes
- Insulated Gloves
- Insulated Tools

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants.

Other Equipment 1 kV and Above

Metal Clad Load Interrupter Switches, Fused or Unfused

Removal of bolted covers (to expose bare, energized parts)

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | | |
|---|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | · | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · | - Hard Hat |
| - FR Long Sleeve Shirt (1) | · | - Flash Suit Hood |
| - FR Long Pants (1) | · | - Safety Glasses/Goggles (AL) |
| - FR Coverall (1, 5) | · | - Hearing Protection |
| - FR Jacket, Parka, or Rainwear (1, AN) | · | - Leather Gloves |
| - FR Flash Suit Jacket (multilayer) | · | - Leather Work Shoes |
| - FR Flash Suit Pants (multilayer) | · | |

Notes

- | | | |
|----------------------------------|---|--------------------------|
| NM = Non-melting | · | AN = As Needed |
| (according to ASTM F 1506-00) OR | · | AL = Select One in Group |
| Untreated Natural Fiber | · | AR = As Required |

- 1 - Arc rating for a garment is expressed in cal/cm².
 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Opening hinged covers (to expose bare, energized parts)

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- | | | |
|---|---|-------------------------------|
| - Short Sleeve T-shirt (NM) | · | - FR Hard Hat Liner (AR) |
| - Long Pants (NM) | · | - Safety Glasses/Goggles (AL) |
| - FR Long Sleeve Shirt (1, 9) | · | - FR Flash Suit Hood |
| - FR Pants (1, 9) | · | - Hearing Protection (8) |
| - FR Coverall (1, 9) | · | - Leather Gloves |
| - FR Jacket, Parka, or Rainwear (1, AN) | · | - Leather Work Shoes |
| - Hard Hat | · | |

Notes

- | | | |
|----------------------------------|---|--------------------------|
| NM = Non-melting | · | AN = As Needed |
| (according to ASTM F 1506-00) OR | · | AL = Select One in Group |
| Untreated Natural Fiber | · | AR = As Required |

- 1 - Arc rating for a garment is expressed in cal/cm².
 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.
 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coverall with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.

Other Equipment 1 kV and Above

Metal Clad Load Interrupter Switches, Fused or Unfused

Outdoor disconnect switch operation (hookstick operated)

Hazard Level 3

Minimum Arc Rating of PPE 104.6 J/cm² (25 cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1, 9)
- FR Pants (1, 9)
- FR Coverall (1, 9)
- FR Jacket, Parka, or Rainwear (1, AN)
- Hard Hat
- FR Hard Hat Liner (AR)
- Safety Glasses/Goggles (AL)
- FR Flash Suit Hood
- Hearing Protection
- Leather Gloves (2)
- Leather Work Shoes
- Insulated Gloves
- Insulated Tools

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 9 - Alternate is to use 2 sets of FR coveralls (the inner with a minimum of Arc rating of 4 and outer coveralls with a minimum Arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.



V-Rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

Outdoor disconnect switch operation (gang-operated, from grade)

Hazard Level 2

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, or Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing Protection (8)

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed
AL = Select One in Group
AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.

Other Equipment 1 kV and Above

Metal Clad Load Interrupter Switches, Fused or Unfused

Insulated cable examination, in manhole or other confined space

Hazard Level 4

Minimum Arc Rating of PPE 167.36 J/cm² (40 cal/cm²)



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM)
- FR Long Sleeve Shirt (1)
- FR Long Pants (1)
- FR Coverall (1, 5)
- FR Jacket, Parka, or Rainwear (1, AN)
- FR Flash Suit Jacket (multilayer)
- FR Flash Suit Pants (multilayer)
- FR Hard Hat Liner (AR)
- Hard Hat
- Flash Suit Hood
- Safety Glasses/Goggles (AL)
- Hearing Protection
- Leather Gloves
- Leather Work Shoes
- Insulated Gloves

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed

AL = Select One in Group

AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 5 - Alternate is to use FR Coveralls (minimum Arc rating of 4) instead of FR shirt and FR pants

Insulated cable examination, in open area

Hazard Level 2

Minimum Arc Rating of PPE 33.47 J/cm² (8cal/cm²)



V-Rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

Personal Protective Equipment (Minimum Requirements)

- Short Sleeve T-shirt (NM)
- Long Pants (NM, 6)
- FR Long Sleeve Shirt (1)
- FR Pants (1, 6)
- FR Coverall (1, 7)
- FR Jacket, Parka, Rainwear (1, AN)
- Arc Rated Face Shield OR Flash Suit Hood (8)
- Hard Hat
- Safety Glasses/Goggles (AL)
- Hearing protection (8)
- Leather Gloves (2)
- Leather Work Shoes
- Insulated Gloves

Notes

NM = Non-melting (according to ASTM F 1506-00) OR Untreated Natural Fiber

AN = As Needed

AL = Select One in Group

AR = As Required

- 1 - Arc rating for a garment is expressed in cal/cm².
- 2 - If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
- 6 - If the FR pants have a minimum Arc rating of 8, long pants of non-melting or untreated natural fiber are not required beneath the FR pants.
- 7 - Alternate is to use FR Coveralls (minimum Arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
- 8 - A face shield with a minimum Arc rating of 8, with wrap-around guarding to protect not only the face, but the forehead, ears and neck (or, alternatively, a flash suit hood), is required.



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