NFPA 70E COMPLIANCE GUIDE

This guide shall only be used in conjunction with performing the necessary calculations contained in a flash hazard analysis to determine the proper cal/cm². If the results of the calculations exceed the cal/cm² that correspond to the HRC found on this guide, you must use clothing that complies with the calculation.

Panelboards Rated 240 V and Below							
- Notes 1 and 3							
TASK (equipment is energized & work is	V-Rated	V-Rated	HRC				
done within the flash protection boundary)	ion boundary) Gloves Tools						
Circuit Breaker (CB) or fused switch			0				
operation with covers on			0				
CB or fused switch operation with covers			0				
off			0				
Opening hinged covers (to expose bare,			0				
energized parts)			0				
Removal of bolted covers (to expose			4				
bare, energized parts)			1				
Remove or Install CB's or fused switches	V	V	4				
Remove or instan CB's of fused switches	ľ	ř					
Work on energized parts, including	V	V	4				
voltage testing	ľ	Ý	1				

Panelboards / Switchboards Rated 240 V to 600 V (with molded case or insulated case CB's) - Notes 1 & 3 TASK (equipment is energized & work is V-Rated V-Rated HRC done within the flash protection boundary) Gloves Tools CB or fused switch operation with covers 0 on CB or fused switch operation with covers 1 off Work on energized parts, including

voltage testing 600 V Class Motor Control Centers (MCC's)

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Minimum Clothing Requirements

- Notes 2 (except as indicated) and 3						
TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC			
CB or fused switch or starter operation with enclosure doors closed			0			
Reading a panel meter while operating a meter switch			0			
Work on control circuits with energized parts 120 V or below, exposed	Y	Y	0			
CB or fused switch or starter operation with enclosure doors open			1			
Opening hinged covers (to expose bare, energized parts)			1			
Removal of bolted covers (to expose bare, energized parts)			2 *			
Application of safety grounds, after voltage test	Y		2 *			
Work on energized parts, including voltage testing	Y	Y	2 *			
Work on control circuits with energized parts >120 V exposed	Y	Y	2 *			
Insertion or removal of individual starter "buckets" from MCC - Note 4	Y		3			

600 V Class Switchgear (with power circuit breakers or fused switches) - Notes 5 and 6						
TASK (equipment is energized & work is V-Rated V-Rated						
done within the flash protection boundary)	Gloves	Tools				
CB or fused switch operation with			0			
enclosure doors closed			U			
Reading a panel meter while operating			0			
a meter switch			U			
Work on control circuits with energized			-			
parts 120 V or below, exposed	Y	Y	0			
CB or fused switch operation with						
enclosure doors open			1			
Insertion or removal (racking) of CB's			0			
from cubicles, doors closed			2			
Opening hinged covers (to expose bare,			2			
energized parts)			2			
Application of safety grounds, after	Y		2*			
voltage test	I		2			
Work on energized parts, including	Y	Y	2*			
voltage testing	1	1	2			
Work on control circuits with energized	Y	Y	2*			
parts >120 V exposed	1	1	2			
Insertion or removal (racking) of CB's			3			
from cubicles, doors open			3			
Removal of bolted covers (to expose			3			
bare, energized parts)			9			

Other 600 V Class (277 V to 600 V, nominal) Equipment - Lighting or small power transformers (600V Max) - Note 3							
TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC				
Opening hinged covers (to expose bare, energized parts)			1				
Removal of bolted covers (to expose bare, energized parts)			2 *				
Application of safety grounds, after voltage test	Y		2 *				
Work on energized parts, including voltage testing	Y	Y	2 *				
Other 600 V Class (277 V to 600 V Nom.) Equip - Revenue							
	• •••••••	Equip - i	vevenue				
meters (kWH at primary volta							
	ge & cur						
meters (kWH at primary volta TASK (equipment is energized & work is	ge & cur V-Rated	rent) - N V-Rated	ote 3				
meters (kWH at primary volta TASK (equipment is energized & work is done within the flash protection boundary) Cable trough or tray cover removal or	ge & cur V-Rated	rent) - N V-Rated	ote 3				
meters (kWH at primary volta TASK (equipment is energized & work is done within the flash protection boundary) Cable trough or tray cover removal or installation Miscellaneous equipment cover removal	ge & cur V-Rated	rent) - N V-Rated	ote 3 HRC 1				
meters (kWH at primary volta TASK (equipment is energized & work is done within the flash protection boundary) Cable trough or tray cover removal or installation Miscellaneous equipment cover removal or installation Application of safety grounds, after	ge & cur V-Rated Gloves	rent) - N V-Rated	ote 3 HRC 1 1				

NEMA E2 (fused contactor) Motor Starters,						
2.3 kV through 7.2 kV TASK (equipment is energized & work is done within the flash protection boundary) Gloves Tools						
Contactor operation with enclosure doors closed			0			
Reading a panel meter while operating a meter switch			0			
Work on control circuits with energized parts 120 V or below, exposed	Y	Y	0			
Insertion or removal (racking) of starters from cubicles, doors closed			2			
Contactor operation with enclosure doors open			2 *			
Insertion or removal (racking) of starters from cubicles, doors open			3			
Opening hinged covers (to expose bare, energized parts)	Y		3			
Application of safety grounds, after voltage test	Y	Y	3			
Work on control circuits with energized parts >120 V exposed	Y	Y	3			
Work on energized parts, including voltage testing	Y	Y	3			
Removal of bolted covers (to expose bare, energized parts)			4			

Metal Clad Switchgear, 1 kV and Above

TASK (equipment is energized & work is done within the flash protection boundary)	V-Rated Gloves	V-Rated Tools	HRC
Reading a panel meter while operating a meter switch			0
CB or fused switch operation with enclosure doors closed			2
Work on control circuits with energized parts 120 V or below, exposed	Y	Y	2
Opening hinged covers (to expose bare, energized parts)			3
CB or fused switch operation with enclosure doors open			4
Insertion or removal (racking) of CB's from cubicles, doors open			4
Removal of bolted covers (to expose bare, energized parts)			4
Opening voltage transformer or control power transformer compartments			4
Application of safety grounds, after voltage test	Y		4
Work on energized parts, including voltage testing	Y	Y	4
Work on control circuits with energized parts >120 V exposed	Y	Y	4
	done within the flash protection boundary) Reading a panel meter while operating a meter switch CB or fused switch operation with enclosure doors closed Work on control circuits with energized parts 120 V or below, exposed Opening hinged covers (to expose bare, energized parts) CB or fused switch operation with enclosure doors open Insertion or removal (racking) of CB's from cubicles, doors open Removal of bolted covers (to expose bare, energized parts) Opening voltage transformer or control power transformer compartments Application of safety grounds, after voltage test Work on energized parts, including voltage testing Work on control circuits with energized	Gloves Gloves Gloves Reading a panel meter while operating a meter switch CB or fused switch operation with enclosure doors closed Y Work on control circuits with energized parts 120 V or below, exposed Y Opening hinged covers (to expose bare, energized parts) Y CB or fused switch operation with enclosure doors open Insertion or removal (racking) of CB's from cubicles, doors open Insertion or removal (racking) of CB's from cubicles, doors open Opening voltage transformer or control power transformer compartments Application of safety grounds, after voltage testing Y Work on control circuits with energized Y	Construction to the flash protection boundary) Gloves Tools Reading a panel meter while operating a meter switch Gloves Tools CB or fused switch operation with enclosure doors closed Y Y Work on control circuits with energized parts 120 V or below, exposed Y Y Opening hinged covers (to expose bare, energized parts) P Y CB or fused switch operation with enclosure doors open Insertion or removal (racking) of CB's from cubicles, doors open P Insertion or removal (racking) of CB's from cubicles, doors open Opening voltage transformer or control power transformer compartments Opening voltage transformer or control power transformer compartments Application of safety grounds, after voltage testing Y Y Work on energized parts, including voltage testing Y Y

Other Equipment 1 kV and Above - Metal clad load interrupter switches, fused or unfused

		Minimum	•				louu
HRC	Protective Clothing	Minimum Cal/cm ²	PPE (Safety glasses, leather safety shoes required for all)	interrupter switches, fu			
-1	Natural fiber short-sleeved shirt and long pants	N/A	Hard Hat	TASK (equipment is energized & work is	1	V-Rated	HRC
0	Natural fiber long-sleeved shirt and pants	N/A	Hard hat	done within the flash protection boundary)	Gloves	es Tools	
1	Denim jeans and FR long-sleeved shirt OR	4	Hard Hat, Arc-Rated Face Shield*	Switch operation, doors closed			2
	FR long-sleeved shirt and pants OR FR coveralls			Outdoor disconnect switch operation			2
2	FR long-sleeved shirt and pants OR FR coveralls	8	Hard Hat, Arc-Rated Face Shield	(gang-operated, from grade)			2
2*	FR long-sleeved shirt and pants OR FR coveralls	8	Hard Hat, Hearing Protection, Arc-Rated Face Shield and	Insulated cable exam, in open area	Y		2
			8 cal/cm ² + Stocking Hood* OR Multi-Layer Switching Hood	Opening hinged covers (to expose bare,			З
3	Multi-Layer flash suit over FR long-sleeved shirt and	25	Hard Hat, Multi-Layer Switching Hood, Hearing Protection,	energized parts)			5
	pants over natural fiber short-sleeved T-shirt and		OR Arc-rated Goggle and Stocking Hood*	Outdoor disconnect switch operation	Y	Y	3
	pants OR Multi-Layer flash suit over FR coveralls			(hookstick operated)			Ŭ
	over natural fiber short-sleeved T-shirt and pants			Removal of bolted covers (to expose			1
4	Multi-Layer flash suit over FR long-sleeved shirt and	40	Hard Hat, Multi-Layer Switching Hood, Hearing Protection,	bare, energized parts)			-
	pants over natural fiber short-sleeved T-shirt and		OR Arc-rated Goggle and Stocking Hood*	Insulated cable examination, in manhole	V		1
	pants OR Multi-Layer flash suit over FR coveralls			or other confined space	1		-
	over natural fiber short-sleeved T-shirt and pants			Work on energized parts, including	Y	Y	4
Note 7	ASTM Recommendations are noted with the *			voltage testing			
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* If the notes cannot be satisfied, work must be performed de-energized.	Definitions: Y=Yes (Required)
Note 1 Maximum of 25 kA short circuit current available, 0.03 second (2 cycle) fault clearing time.	V-Rated Gloves : gloves rated and tested for the maximum line-to-line
Note 2 Maximum of 65 kA short circuit current available, 0.03 second (2 cycle) fault clearing time.	voltage upon which work will be done. Leather protectors must be worn
Note 3 For < 10 kA short circuit current available, the HRC required may be reduced by one category.	externally if v-rated rubber gloves could be damaged.
Note 4 Maximum of 42 kA short circuit current available, 0.33 second (20 cycle) fault clearing time.	
Note 5 Maximum of 35 kA short circuit current available, ≤ 0.5 second (30 cycle) fault clearing time.	V-Rated Tools : tools rated and tested for the maximum line-to-line
Note 6 For < 25 kA short circuit current available, the HRC required may be reduced by one category.	voltage upon which work will be done.
*Circuits over 40cal/cm ² should only be worked de-energized.	
Revised 8-05	HRC : Hazard Risk Category FR : Flame Resistant