

Electrical Safety Compliance Chart for NFPA 70E 2009

Table 130.7(C)(9) Hazard/ Risk Category Classifications and Use of Rubber Insulating Gloves and Insulated and Insulating Hand Tools

Tasks Performed on Energized Equipment	Hazard/ Risk Category	Rubber Insulating Gloves	Insulated and Insulating Hand Tools
Panelboards or Other Equipment Rated 240 V and Below - Note 1			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	0	N	N
Circuit breaker (CB) or fused switch operation with covers on	0	N	N
Circuit breaker (CB) or fused switch operation with covers off	0	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	1	Y	Y
Remove/ Install CBs of fused switches	1	Y	Y
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	0	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	0	N	N
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard	1	Y	Y
Panelboards or Switchboards Rated >240 V and up to 600 V (with molded case or insulated case circuit breakers) - NOTE 1			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	1	N	N
Circuit breaker (CB) or fused switch operation with covers on	0	N	N
Circuit breaker (CB) or fused switch operation with covers off	1	Y	N
Work on energized electrical conductors and circuit parts, including voltage testing	2*	Y	Y
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard	2*	Y	Y
600 V Class Motor Control Center (MCCs) - Note 2 (except indicated)			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	1	N	N
CB or fused switch or starter operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch or starter operation with enclosure doors open	1	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	2*	Y	Y
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	0	Y	Y
Work on control circuits with energized electrical conductors and circuit parts >120 V or below, exposed	2*	Y	Y
Insertion or removal of individual starter "buckets" from MCC--- Note 3	4	Y	N
Application of safety grounds, after voltage test	2*	Y	N
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts) ---Note 3	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts) ---Note 3	1	N	N
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the motor control center	2*	Y	Y
600 V Class Switchgear (with power circuit breakers or fused switches) - Note 4			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	2	N	N
CB or fused switch operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch operation with enclosure doors open	1	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	2*	Y	Y
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	0	Y	Y
Work on control circuits with energized electrical conductors and circuit parts >120 V, exposed	2*	Y	Y
Insertion or removal (racking) of CBs from cubicles, doors open or closed	4	N	N
Application of safety grounds, after voltage test	2*	Y	N
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	2	N	N
Other 600 V Class (277 V through 600, nominal) Equipment - Note 2 (except as indicated) Lighting or small power transformers (600 V, maximum)			
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	2*	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	1	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	2*	Y	Y
Application of safety grounds, after voltage test	2*	Y	N
Revenue meters (kW-hour, at primary voltage and current) Insertion or removal	2*	Y	N
Cable trough or tray cover removal or installation	1	N	N
Miscellaneous equipment cover removal or installation	1	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	2*	Y	Y
Application of safety grounds, after voltage test	2*	Y	N
Insertion or removal of plug-in devices into or from busways	2*	Y	N
NEMA E2 (fused contactor) Motor Starters, 2.3 kV Through 7.2 kV			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	3	N	N
Contactors operation with enclosure	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
Contactors operation with enclosure doors open	2*	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	4	Y	Y
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	0	Y	Y
Work on control circuitswith energized electrical conductors and circuit parts >120 V, exposed	3	Y	Y
Insertion or removal (racking) of CBs from cubicles, doors open or closed	4	N	N
Application of safety grounds, after voltage test	3	Y	N
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	N	N
Insertion or removal (racking) of starters from cubicles of arc-resistant construction, tested in accordance with IEEE C37.20.7, doors closed only	0	N	N

Metal Clad Switchgear, 1 kV Through 38 kV			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	3	N	N
CB operation with enclosure doors closed	2	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB operation with enclosure doors open	4	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	4	Y	Y
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	2	Y	Y
Work on control circuits with energized electrical conductors and circuit parts >120 V, exposed	4	Y	Y
Insertion or removal (racking) of CBs from cubicles, doors open or closed	4	N	N
Application of safety grounds, after voltage test	4	Y	N
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	N	N
Opening voltage transformer or control power transformer compartments	4	N	N
Arc Resistant Switchgear Type 1 or 2 (for clearing times of <.05 with a perspective fault current not to exceed the arc resistant rating of the equipment)			
CB operation with enclosure door closed	0	N	N
Insertion or removal (racking) of CBs from cubicles, doors closed	0	N	N
Insertion or removal of CBs from cubicles with door open	4	N	N
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	2	Y	Y
Insertion or removal (racking) of ground and test device with door closed	0	N	N
Insertion or removal (racking) of voltage transformers on or off the bus door closed	0	N	N
Other Equipment 1 kV Through 38 kV Metal-enclosed Interrupter switchgear, fused or unfused			
Switch operation of arc-resistant-type construction, tested in accordance with IEEE C37.20.7, doors closed only	0	N	N
Switch operation, doors closed	2	N	N
Work on energized electrical conductors and circuit parts, including voltage testing	4	Y	Y
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	N	N
Outdoor disconnect switch operation (hookstick operated)	3	Y	Y
Outdoor disconnect switch operation (gang-operated, from grade)	2	Y	N
Insulated cable examination, in manhole or other confined space	4	Y	N
Insulated cable examination, in open area	2	Y	N

General Notes (applicable to the entire table):

- (a) Rubber insulating gloves rated for the maximum line-to-line voltage upon which work will be done.
- (b) Insulated and insulating hand tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done, and are manufactured and tested in accordance with ASTM z9 1505. *Standard Specification for Insulated Hand Tools.*
- (c) Y = yes (required), N = no (not required).
- (d) For systems rated less than 1000 volts , the fault currents and upstream protective device clearing times are based on an 18 in. working distance.
- (e) For systems rated 1 kV and greater, the Hazard/Risk Categories are based on a 36 in. working distance.
- (f) For equipment protected by upstream current limiting fuses with arcing fault current in their current limiting range (1/2 cycle fault clearing time or less), the hazard/risk category required may be reduced by one number.

Specific Notes (as referenced in the table):

1. Maximum of 25 kA short circuit current available ; maximum of 0.03 sec (2 cycle) fault clearing time.
2. Maximum of 65 kA short circuit current available ; maximum of 0.03 sec (2 cycle) fault clearing time.
3. Maximum of 42 kA short circuit current available ; maximum of 0.33 sec (20 cycle) fault clearing time.
4. Maximum of 35 kA short circuit current available ; maximum of up to 0.5 sec (30 cycle) fault clearing time.

The assumed short maximum short circuit current capacities and maximum fault clearing times for various tasks are listed in the notes to table (130.7(C)(9). For Tasks not listed, or For Power systems with greater than the assumed maximum short circuit current capacity or With longer than the assumed maximum fault clearing times -AN ARC FLASH ANALYSIS SHALL BE REQUIRED IN ACCORDANCE WITH 130.3.