TABLE 6 Arc Flash PPE Categories

Equipment	Category	Arc-Flash Boundary
Alternating Current (ac) Equipment		
Panelboards or other equipment rated 240 V and below Parameters: Maximum of 25 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in)	1	485 mm (19 in.)
Panelboards or other equipment rated > 240 V and up to 600 V Parameters: Maximum of 25 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in)	2	900 mm (3 ft)
600-V class motor control centers (MCCs) Parameters: Maximum of 65 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in)	2	1.5 m (5 ft)
600-V class motor control centers (MCCs) Parameters: Maximum of 42 kA short-circuit current available; maximum of 0.33 sec (20 cycles) fault clearing time; working distance 455 mm (18 in)	4	4.3 m (14 ft)
600-V class switchgear (with power circuit breakers or fused switches) and 600 V class switchboards Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.5 sec (30 cycles) fault clearing time; working distance 455 mm (18 in)	4	6 m (20 ft)
Other 600-V class (277 V through 600 V, nominal) equipment Parameters: Maximum of 65 kA short circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in)	2	1.5 m (5 ft)
NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 kV Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)	4	12 m (40 ft)
Metal-clad switchgear, 1 kV through 15 kV Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)	4	12 m (40 ft)
Arc-resistant switchgear Type 1 or 2 (for clearing times of < 0.5 sec (30 cycles) with an available fault current not to exceed the arc-resistant rating of the equipment), and metal-enclosed interrupter switchgear, fused or unfused of arc-resistant-type construction, 1 kV through 15 kV	N/A (doors closed)	N/A (doors closed)
Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.24 sec (15 cycle) fault clearing time; working distance 910 mm (36 in.)	4 (doors open)	12 m (40 ft)
Other equipment 1 kV through 15 kV Parameters: Maximum of 35 kA short-circuit current available; maximum of up to 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)	4	12 m (40 ft)

Equipment	Category	Arc-Flash Boundary
Note: For equipment rated 600 volts and below, and protected by upstream current limiting fuses or current-limiting circuit breakers sized at 200 amperes or less, the arc flash PPE category can be reduced by one number but not below arc flash PPE category 1.		
Direct Current (dc) Equipment		
Storage batteries, direct-current switchboards and other direct-current supply sources 100 V> Voltage <250 V Parameters: Voltage: 250 V Maximum arc duration and working distance: 2 sec @ 455 mm (18 in.)		
Available fault Current < 4 kA	1	900 mm (3 ft)
4kA ≤ Available fault Current < 7 kA	2	1.2 m (4 ft)
7 kA ≤ Available fault Current < 15 kA	3	1.8 m (6 ft.)
Storage batteries, direct-current switchboards and other direct-current supply sources 250 V ≤ Voltage ≤600 V Parameters: Voltage: 600 V Maximum arc duration and working distance: 2 sec @ 455 mm (18 in.)		
1.5 kA ≤ Available fault Current	1	900 mm (3 ft)
1.5 kA ≤ Available fault Current < 3 kA	2	1.2 m (4 ft)
3 kA ≤ Available fault Current < 7 kA	3	1.8 m (6 ft.)
7 kA ≤ Available fault Current < 10 kA	4	2.5 m (8 ft)

****PLEASE FORMAT THIS****

Notes:

1. Apparel that can be expected to be exposed to electrolyte must meet both of the following conditions:
   (a) Be evaluated for electrolyte protection in accordance with ASTM F1296 , *Standard Guide for Evaluating Chemical Protective Clothing*; and
   (b) Be arc-rated in accordance with ASTM F1891 , *Standard Specification for Arc Rated and Flame Resistant Rainwear*, or equivalent.

2. A two-second arc duration is assumed if there is no overcurrent protective device (OCPD) or if the fault clearing time is not known. If the fault clearing time is less than 2 seconds, an incident energy analysis could provide a more representative result.

TABLE 7 Protective Clothing and Personal Protective Equipment (PPE)

PPE Category	PPE Requirements	
1	**Arc-Rated Clothing, Minimum Arc Rating of 4 cal/cm² *(See Note 1)*** Arc-rated long-sleeve shirt and pants or arc-rated coverall Arc-rated face shield *(See Note 2)* or arc flash suit hood Arc-rated jacket, parka, rainwear, or hard hat liner (AN)	**Protective Equipment** Hard hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts)[a] Heavy-duty leather gloves (See Note 3) Leather footwear (AN)
2	**Arc-Rated Clothing, Minimum Arc-Rating of 8 cal/cm² *(See Note 1)*** Arc-rated long-sleeve shirt and pants or arc-rated coverall Arc-rated flash suit hood or arc-rated face shield *(See Note 2)* and arc-rated balaclava Arc-rated jacket, parka, rainwear, or hard hat liner (AN)	**Protective Equipment** Hard hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts)[a] Heavy-duty leather gloves (See Note 3) Leather footwear
3	**Arc-Rated Clothing Selected so that the System Arc-Rating Meets the Required Minimum Arc-Rating of 25 cal/cm2** *(See Note 1)* Arc-rated long-sleeve shirt (AR) Arc-rated pants (AR) Arc-rated coverall (AR) Arc-rated arc flash suit jacket (AR) Arc-rated arc flash suit pants (AR) Arc-rated arc flash suit hood Arc-rated gloves (See Note 3) Arc-rated jacket, parka, or rainwear, or hard hat liner (AN)	**Protective Equipment** Hard hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts)[a] Leather footwear
4	**Arc-Rated Clothing Selected so that the System Arc-Rating Meets the Required Minimum Arc-Rating of 40 cal/cm²** *(See Note 1).* Arc-rated long-sleeve shirt (AR) Arc-rated pants (AR) Arc-rated coverall (AR) Arc-rated arc flash suit jacket (AR) Arc-rated arc flash suit pants (AR) Arc-rated arc flash suit hood Arc-rated gloves *(See Note 3)* Arc-rated jacket, parka, or rainwear, or hard hat liner (AN)	**Protective Equipment** Hard hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts)[a] Leather footwear

Notes: AN: as needed (optional). AR: as required. SR: selection required.
(1) Arc rating is defined in NFPA 70E
(2) Face shields are to have wrap-around guarding to protect not only the face but also the forehead, ears, and neck, or, alternatively, an arc-rated arc flash suit hood is required to be worn.
(3) If rubber insulating gloves with leather protectors are used, additional leather or arc-rated gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.
[a)] Other types of hearing protection are permitted to be used in lieu of or in addition to ear canal inserts provided they are worn under an arc-rated arc flash suit hood.

TABLE 8 Rubber Insulating Equipment Voltage Requirements (CFR 1910.137, Table I-4)			
Class of Equipment	Maximum Use Voltage (1) A-C	Retest Voltage (1) A-C rms.	Retest Voltage (2) D-C avg.
00	500	2500	
0	1000	5000	20,000
1	7500	10,000	40,000
2	17,000	20,000	50,000
3	26,500	30,000	60,000
4	36,000	40,000	70,000
Footnote – The maximum use voltage is the a-c voltage (rms) classification of the protective equipment that designates the maximum nominal design voltage of the energized system that may be safely worked. The nominal design voltage is equal voltage is equal to the phase-to-phase voltage on multiphase circuits. However, the phase-to-ground potential is considered to be the nominal design voltage.			

TABLE 9 Minimum Clear Distance for Working Spaces			
Nominal voltage to ground	**Condition 1**	**Condition 2**	**Condition 3**
0-150V	3 ft (914 mm)	3 ft (914 mm)	3 ft (914 mm)
151-600V	3 ft (914 mm)	3 ft 6 in (1.07 m)	4 ft (1.22 m)
601–2500V	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)
2501–9000V	1.2 m (4 ft)	1.5 m (5 ft)	1.8 m (6 ft)
9001–25,000V	1.5 m (5 ft)	1.8 m (6 ft)	2.8 m (9 ft)
25,001–75 kV	1.8 m (6 ft)	2.5 m (8 ft)	3.0 m (10 ft)
Above 75 kV	2.5 m (8 ft)	3.0 m (10 ft)	3.7 m (12 ft)
Condition 1: Exposed live parts on one side of the working space and no live or grounded parts on the other side of the working space, or exposed live parts on both sides of the working space that are effectively guarded by insulating materials.			
Condition 2: Exposed live parts on one side of the working space and grounded parts or surfaces on the other side of the working space. Concrete, brick, or tile walls shall be considered as grounded.			
Condition 3: Exposed live parts on both sides of the working space (not guarded as provided in Condition 1) with the operator or worker in between.			

Table 10 – our old table 9 (following page) to be replaced by 130.7(c)(14)
******Edit Note**** Please convert to table from jpg.**

Table 130.7(C)(14) , Informational Note: Standards For Personal Protective Equipment

Subject	Document Title	Document Number
Apparel — Arc Rated	Standard Performance Specification for Flame Resistant and Arc Rated Textile Materials for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards	ASTM F1506
	Standard Guide for Industrial Laundering of Flame, Thermal, and Arc Resistant Clothing	ASTM F1449
	Standard Guide for Home Laundering Care and Maintenance of Flame, Thermal and Arc Resistant Clothing	ASTM F2757
Aprons — Insulating	Standard Specification for Electrically Insulating Aprons	ASTM F2677
Eye and Face Protection — General	Eye and Face Protection — General Occupational and Educational Professional Eye and Face Protection Devices	ANSI/ISEA Z87.1
Face — Arc Rated	Standard Test Method for Determining the Arc Rating and Standard Specification for Personal Eye or Face Protective Products	ASTM F2178
Fall Protection	Standard Specification for Personal Climbing Equipment	ASTM F887
Footwear — Dielectric Specification	Standard Specification for Dielectric Footwear	ASTM F1117
Footwear — Dielectric Test Method	Standard Test Method for Determining Dielectric Strength of Dielectric Footwear	ASTM F1116
Footwear — Standard Performance Specification	Standard Specification for Performance Requirements for Protective (Safety) Toe Cap Footwear	ASTM F2413
Footwear — Standard Test Method	Standard Test Methods for Foot Protections	ASTM F2412
Gloves — Arc Rated	Standard Test Method for Determining Arc Ratings of Hand Protective Products Developed and Used for Electrical Arc Flash Protection	ASTM F2675/F2675M
Gloves — Leather Protectors	Standard Specification for Leather Protectors for Rubber Insulating Gloves and Mittens	ASTM F696
Gloves — Rubber Insulating	Standard Specification for Rubber Insulating Gloves	ASTM D120
Gloves and Sleeves — In-Service Care	Standard Specification for In-Service Care of Insulating Gloves and Sleeves	ASTM F496
Head Protection — Hard Hats	Industrial Head Protection	ANSI/ISEA Z89.1
Rainwear — Arc Rated	Standard Specification for Arc and Flame Resistant Rainwear	ASTM F1891
Rubber Protective Products — Visual Inspection	Standard Guide for Visual Inspection of Electrical Protective Rubber Products	ASTM F1236
Sleeves — Insulating	Standard Specification for Rubber Insulating Sleeves	ASTM D1051

TABLE 11– Equipment Labeling Example

WARNING

Qualified Persons Only

Arc Flash and Shock Hazard

18 inch Flash Protection Boundary	.7 cal/cm^2	Flash Hazard At 18 inches

480 VAC	Shock Hazard	PPE Required
0	Glove Class	Non-melting or untreated natural fibers, long sleeve shirt and long pants, > 4.5 oz. / sq. yd., voltage rated gloves and leather protectors, EH Leather footwear, Safety glasses, hearing protection, Class E electrically rated hard hat
42 inch	Limited Approach	
12 inch	Restricted Approach	
(Bus name & feed information)		