ARC FLASH PROTECTION





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INTRODUCTION

Protection from Electric Arc Exposure & NFPA 70E

The intense energy and very short duration of an electric arc flash represents a singularly unique exposure. Plasma temperatures can reach 10,000°F and fatal burns can occur at distances over 10 feet. Everyday work clothes made from regular cotton or poly / cotton fabrics, regardless of weight, can be readily ignited at some exposure level and will continue to burn, adding to the extent of injury sustained from the arc alone. NFPA 70E requires employees to wear flame resistant (FR) protective clothing that meets the requirements of ASTM F1506 wherever there is possible exposure to an electric arc flash. The standard requires employers to perform a flash hazard analysis to determine the flash protection boundary distance.

NFPA 70E is designed to protect employees working inside these flash protection boundaries by requiring protective clothing for the corresponding PPE Category that has an ATPV of at least the value listed in the "Protective Clothing Characteristics" section of the standard. OSHA has confirmed that garments which meet the requirements of ASTM F1506 are in compliance with OSHA 29 CFR 1910.269 Electrical Power Generation, Transmission and Distribution, with regard to garments not contributing to burn severity.

The vast majority of major companies in the U.S. have some employees who work on or near energized electrical conductors or circuit parts. In addition, the Department of Energy has required that federal and contractor employees comply with NFPA 70E and the 2002 National Electric Code (NEC) references the NFPA 70E standard. Finally, OSHA considers the NFPA 70E standard a "recognized industry practice."

Garment Sizing Information

The proper fit of PPE apparel is essential to worker safety, rather than about aesthetics. Here at CPA we understand that and want to make sure that you have the best fitting garment for your unique physique.

If you are unable to fit in a traditional size, you may need a tall size, a short size, or a big size. We can help you determine the right size for you. All we need is your height and the basic body measurements shown in the section below entitled "How to Measure for the Correct Size".

HOW TO GET CORRECT SIZE

SLEEVE	Measure arm from base of neck to wrist with arm extended outward
CHEST	Measure around the fullest part of chest, keeping tape up under arms
WAIST	Measure around waist, keep tape snug, not too tight
INSEAM	Measure from mid-crotch to floor Short: Subtract 1" from the torso and 1" from the sleeve Tall: Add 2" to the torso and 1.5" to the sleeve

COVERALLS & BIB OVERALLS			INSEAN			
Size	Inseam	Chest	Sleeve	Waist	Short	30
S	32	36/38	31	30-32	Regular	32
М	32	40/42	32	34-36	Tall	34
L	32	44/46	33	38-40		
XL	32	48/50	34	42-44		
2XL	32	52/54	35	46-48		
3XL	32	56/58	36	50-52		
4XL	32	60/62	37	54-56		
5XL	32	64/66	38	58-60		

JACKE	ETS, COATS	& SHIRTS		PANTS	
Size	Chest	Sleeve	Size	Inseam	Waist
S	36/38	31	S	32	30-32
М	40/42	32	Μ	32	34-36
L	44/46	33	L	32	38-40
XL	48/50	34	XL	32	42-44
2XL	52/54	35	2XL	32	46-48
3XL	56/58	36	3XL	32	50-52
4XL	60/62	37	4XL	32	54-56
5XL	64/66	38	5XL	32	58-60

PPE LEVELS & CLOTHING

PPE 1

 $M_{\text{INIMUM}} \text{ Arc Rating of 4 cal / cm}^2$

Arc-Rated Clothing

- Arc-rated long sleeve shirt and pants or arc-rated coverall
- Arc-rated face shield or arc flash suit hood
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

Protective Equipment

- E-rated hard hat
- Safety glasses or safety goggles (SR)
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves
- Leather footwear (AN)



PPE 2

MINIMUM ARC RATING OF 8 CAL / CM²

Arc-Rated Clothing

- Arc-rated long-sleeve shirt and pants or arc-rated coverall
- Arc-rated flash suit hood or arc-rated face shield and arc-rated balaclava
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

Protective Equipment

- E-rated hard hat
- Safety glasses or safety goggles (SR)
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves
- Leather footwear



AN: As Needed (optional) • AR: As Required • SR: Selection Required



MINIMUM ARC RATING OF 25 CAL / CM²

Arc-Rated Clothing Selected so that the System Arc Rating Meets the Required Minimum Arc Rating

- 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
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

Protective Equipment

- E-rated hard hat
- Safety glasses or safety goggles
 (SR)
- Hearing protection (ear canal inserts)
- Leather footwear



PPE 4

MINIMUM ARC RATING OF 40 CAL / \mbox{CM}^2

Arc-Rated Clothing Selected so that the System Arc Rating Meets the Required Minimum Arc Rating

- 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
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

Protective Equipment

- E-rated hard hat
- Safety glasses or safety goggles
 (SR)
- Hearing protection (ear canal inserts)
- Leather footwear



ARC FLASH PROTECTION KITS

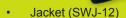
JACKET & BIB KIT



ARC PROTECTION

GEAR

Please Note: ALL 20 cal Kits come with an SWH-20 full hood in place of the face shield kit and balaclava



- Bib Overall (SWB-12)
- Hard Cap (HC-Color-SLT)
- Face Shield with Chin Cup (WV-ARC-12)
- Cap Bracket (HB-2-CAP)
- Knit Nomex Hood (KN-51)

- Rubber Gloves (LRIG-0-11)
- Leather Protector Gloves (PG-0-ADJS)
- 12" Glove Bag (GB-12)
- Gear Bag (909-ARC)
- Safety Glasses (SW-SG)
- Ear Plugs (SW-EAR)

KIT PART NUMBERS

 8 CAL
 AG8-(SIZE)

 12 CAL
 AG12-(SIZE)

 20 CAL
 AG20-(SIZE)



- Jacket (SWJ-12)
- Pant (SWP-12)
- Hard Cap (HC-Color-SLT)
- Face Shield with Chin Cup (WV-ARC-12)
- Cap Bracket (HB-2-CAP)
- Knit Nomex Hood (KN-51)

- Rubber Gloves (LRIG-0-11)
- Leather Protector Gloves (PG-0-ADJS)
- 12" Glove Bag (GB-12)
- Gear Bag (909-ARC)
- Safety Glasses (SW-SG)
- Ear Plugs (SW-EAR)

KIT PART NUMBERS

8 CAL	AG8-JP-(SIZE)
12 CAL	AG12-JP-(SIZE)
20 CAL	AG20-JP-(SIZE)

8 • 12 • 20 CAL PPE 2

COAT & LEGGING KIT



- Coat (SWC-12)
- Leggings (SW-401-12)
- Hard Cap (HC-Color-SLT)
- Face Shield with Chin Cup (WV-ARC-12)
- Cap Bracket (HB-2-CAP)
- Knit Nomex Hood (KN-51)

- Rubber Gloves (LRIG-0-11)
- Leather Protector Gloves (PG-0-ADJS)
- 12" Glove Bag (GB-12)
- Gear Bag (909-ARC)
- Safety Glasses (SW-SG)
- Ear Plugs (SW-EAR)

KIT PART NUMBERS

8 CAL AG8-CL-(SIZE) 12 CAL AG12-CL-(SIZE) 20 CAL AG20-CL-(SIZE)



- Coverall (SW-605-12)
- Hard Cap (HC-Color-SLT)
- Face Shield with Chin Cup (WV-ARC-12)
- Cap Bracket (HB-2-CAP)
- Knit Nomex Hood (KN-51)

- Rubber Gloves (LRIG-0-11)
- Leather Protector Gloves (PG-0-ADJS)
- 12" Glove Bag (GB-12)
- Gear Bag (909-ARC)
- Safety Glasses (SW-SG)
- Ear Plugs (SW-EAR)

KIT PART NUMBERS

8 CAL	AG8-CV-(SIZE)
12 CAL	AG12-CV-(SIZE)
20 CAL	AG20-CV-(SIZE)

ARC FLASH PROTECTION KITS



JACKET & BIB KIT



- Hood (SWH-43) •
- Hard Cap (HC-Color-SLT)
- Rubber Gloves (LRIG-2-14)
- 15" Glove Bag (GB-15)
- Gear Bag (909-ARC)
- Safety Glasses (SW-SG)
- Ear Plugs (SW-EAR)

32 CAL AG32-JP-(SIZE) 43 CAL AG43-JP-(SIZE)





- Rubber Gloves (LRIG-2-14)
- Ear Plugs (SW-EAR)

AG43-CL-(SIZE) 43 CAL



ARC FLASH PROTECTION KITS

MASTERS SERIES JACKET & PANT KIT





- Jacket (SWJ-MS44)
- Over Pant (SWP-MS44)
- Hood (SWH-44)
- Hard Cap (HC-Color-SLT)
- Rubber Gloves (LRIG-2-14)

- Leather Protector Gloves (LLPG-12)
- 15" Glove Bag (GB-15)
- Gear Bag (909-ARC)
- Safety Glasses (SW-SG)
- Ear Plugs (SW-EAR)

KIT PART NUMBERS

- 44 CAL AG44-JP-(SIZE)
- 74 CAL AG74-JP-(SIZE)

JACKET & BIB KIT



- Hard Cap (HC-Color-SLT)
- Rubber Gloves (LRIG-2-14)
- Leather Protector Gloves (LLPG-12)
- Ear Plugs (SW-EAR)

44 CAL	AG44-(SIZE)
74 CAL	AG74-(SIZE)





- Coat (SWC-44)
- Leggings (SW-401-44)
- Hood (SWH-44)
- Hard Cap (HC-Color-SLT)
- Rubber Gloves (LRIG-2-14)
- Leather Protector Gloves (LLPG-12)
- 15" Glove Bag (GB-15)
- Gear Bag (909-ARC)
- Safety Glasses (SW-SG)
- Ear Plugs (SW-EAR)

- **KIT PART NUMBERS**
- 44 CAL AG44-CL-(SIZE) 74 CAL AG74-CL-(SIZE)

CARE & MAINTENANCE OF ARC FLASH KITS

Garment Care

Garments in the kits should be inspected before each use. If they are contaminated or damaged to the extent that their protective qualities are diminished, discontinue use. Contaminants to watch for include, but are not restricted to, grease, oil, flammable liquids or combustible materials. Please store the garments properly when not in use to protect them from contaminants.

Repairs

When arc-rated clothing is repaired, the same arc-rated materials used to manufacture the arc-rated clothing should be used to provide repairs.

Laundering

When laundering, clean garment thoroughly. Dry clean or machine wash to 140°, and up to 165° on cotton blends. Tumble dry medium. No chlorine bleach or hydrogen peroxide either separately or in the detergents. No softeners or starch. Failure to launder properly could affect the flame resistance of the garments.

Insulating Glove Care

Voltage rated gloves must be tested as defined in ASTM F496 Specification for In-Service Care of Insulating Gloves and Sleeves.

Voltage rated gloves should always be kept in the storage container when not in use. Gloves, assembled with their leather protectors, should be kept in a storage container with the fingers pointing toward the opening of the container. The container should be kept in a clean and dry location when not in use.

Leather protector gloves must be inspected before each use. Surface areas should be inspected for cuts and abraded surfaces and should be replaced if there is any damage. Leather protectors should be inspected for excess dirt and lubricant. Gloves contaminated with petroleumbased lubricants should be discarded. All surfaces of the rubber-insulating gloves should be inspected for damage that could reduce their insulating capabilities.

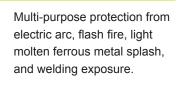
Examples of such damage include cuts, abrasions, tears, pitting, age cracks, chemical bloom, depressions, embedded foreign matter, mold marks, punctures, repair marks, soft spots, color splash, runs or ozone cracks. Damaged gloves should be discarded immediately.

Care and Maintenance of Arc-Rated Face Shields

Face shields should be inspected for physical integrity and should be free of cracks or excessive wear. Face shields should be kept clean for best vision. Clean with water and mild soap and dry with soft cloth. Make sure no contaminating residue is left on the shield. Store face shield in a shield stuff bag to protect it from dust and scratches.

DAILY WEAR

INDURA[®] COVERALL







- Indura® 100% cotton 9 oz. weight
- NFPA 2112 and NFPA 70E
- Guaranteed flame resistance for the life of the garment
- Concealed brass zipper, snap at top of zipper and at neck
- Two outside chest pockets (one with flap closure and pencil slot), two front hip pockets, two rear patch pockets and right hip tool pocket
- Side access from pockets
- Elasticized waistband and action back
- Adjustable snap at wrist cuff
- Reinforced bar tack at high stress areas
- Available in navy and orange
- Part #605-IND-N-[Size]
- Part #605-IND-O-[Size]

- UltraSoft[®] 88% cotton, 12% nylon
- NFPA 2112 and NFPA 70E
- · Guaranteed flame resistance for the life of the garment
- New softer feel
- Extended garment wear life
- · Excellent value
- Two outside front chest pockets, two front hip pockets, two rear patch pockets
- Side access from pockets
- Concealed brass zipper, snap at top of zipper and at neck
- Snap-free wrist
- 7 oz. Khaki: 8.7 ATPV PPE2
- 9 oz. Navy: 12.4 ATPV PPE2
- Part #605-USK-[Size]
- Part #605-USN-[Size]



FR COTTON COVERALL

Durable 100% cotton flame resistant fabric. Made for FR work wear geared towards the oil and gas, electric, and welding industries.

TRUECOMFORT® LONG SLEEVE T-SHIRT

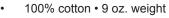


- 5.5 oz. 100% cotton
- 8.9 ATPV
- NFPA 2112 and NFPA 70E
- Guaranteed flame resistant for the life of the garment
- Part #610-FRC-LS-[Color]-[Size]

HENLEY LONG SLEEVE T-SHIRT



- 8.9 ATPV
- Left chest pocket
- Rib knit collar and cuffs
- Three-button front closure
- Part #610-FRC-HEN-[Color]-[Size]



- NFPA 2112 and NFPA 70E
- Passes ASTM F1506 Test
- Guaranteed FR for the life of the garment with proper laundering

8.6

- Protective stand-up collar with hook and loop closure, lays flat when worn open
- Two-way heavy duty brass zipper on meta aramid tape
- Storm guard over zipper with snap closures
- Side elasticized waist and action back for mobility
- · Gusset crotch for added mobility and strength
- Separate arm cuffs with two (2) position snap closures
- Pencil pocket left chest
- Available in red, navy, khaki and grey
- Part #605-FRC-[Color]-[Size]



DAILY WEAR





ULTRASOFT® WORK SHIRT

- 7 oz. UltraSoft®
- 8.7 ATPV
- Khaki Part #625-USK-[Size]
- Blue Part #625-USB-[Size]

INDURA® RELAXED FIT JEANS

- 14 oz. 100% cotton FR denim
- Relaxed fit, five-pocket style
- 18.3 ATPV
- NFPA 70E and NFPA 2112
- Part #606-IND-DNM-[Waist x Inseam]



ULTRASOFT® NAVY WORK PANT

- 9 oz. Navy UltraSoft[®]
- 2.4 ATPV
- Part #606-USN-[Waist x Inseam]



ULTRASOFT® FLEECE FULL ZIP Hooded sweatshirt

- UltraSoft® fleece
- Sewn with Nomex[®] thread
- Navy, 21.8 EBT
- Part #615-USFN-[Size]



ULTRASOFT® FLEECE Hooded sweatshirt

- UltraSoft[®] fleece
- Sewn with Nomex[®] thread
- Navy, 21.8 EBT
- Part #617-USFN-[Size]



ULTRASOFT® FLEECE CREW NECK SWEATSHIRT

- UltraSoft[®] fleece
- Sewn with Nomex[®] thread
- Navy, 21.8 EBT
- Part #620-USFN-[Size]

BASE LAYER GARMENTS

Flame-resistant (FR) undergarments play an essential role in protecting wearers against serious burn injuries and more common nuisance burns. In dangerous situations, having this layer of defense close to the skin may buy the wearer critical time to escape without severe or life-threatening burns and injuries.



CARBONX® ULTIMATE

The CarbonX[®] Ultimate[™] baselayer provides the highest level of protection for professionals working in extreme conditions where safety matters most. It is made from a double jersey interlock knit comprised of a proprietary blend of highperformance fibers. At only 8 oz. / sq. yd. it is very light, comfortable and wearable. **12.3 ATPV**

Part #CX-54: Long Sleeve Shirt Part #CX-55: Long Johns Part #CX-56-22: 22" Socks

CARBONX® ACTIVE

The CarbonX[®] Active baselayer is the ideal solution for wearers who want to keep comfortable even in warmer conditions. It is made from a light summer weight, 6 oz. / sq. yd. double jersey interlock knit comprised of a proprietary blend of highperformance fibers, including a hydrophilic fiber designed to absorb and wick away moisture. 8 ATPV

Part #CXA-54: Long Sleeve Shirt Part #CXA-55: Long Johns

FIRELUX

Firelux baselayers are made from FR fabric which features a proprietary blend of modacrylic, aramid, and rayon from bamboo cellulose. Inherently flame resistant. Eco-friendly. Super soft feel against skin. Crew neck and flatlock seams to prevent chafing, and for ultimate comfort. Superior moisture wicking properties compared to cotton. Meets ASTM F1506 performance specification. 6.5 oz. / sq. yd. weight. **8.2 ATPV**

Part #FX-54: Long Sleeve Shirt Part #FX-55: Long Johns

GLOVE	S
GLOVE KITS	ALWAYS WEAR
WE	VAYS EAR UR VESS VESS
CLASS 00 Glove Kit Kit Part #GK-00-11	Class 00 Rubber Glove: LRIG-00-11 Leather Protector: PG-0-ADJS Glove Bag: GB-12
CLASS 0 Glove Kit Kit Part #GK-0-11	Class 00 Rubber Glove: LRIG-0-11 Leather Protector: PG-0-ADJS Glove Bag: GB-12
Class 1 Glove Kit Kit Part #GK-1-14	Class 1 Rubber Glove: LRIG-1-14 Leather Protector: LLPG-12 Glove Bag: GB-15
Class 2 Glove Kit Kit Part #GK-2-14	Class 2 Rubber Glove: LRIG-2-14 Leather Protector: LLPG-12 Glove Bag: GB-15
Class 3 Glove Kit Kit Part #GK-3-16	Class 3 Rubber Glove: LRIG-3-16 Leather Protector: LLPG-12 Glove Bag: GB-19

INSULATED RUBBER GLOVES

CLASS OO	 Available in 11" or 14" length Max use volts 500 11" length: Part #LRIG-00-11-[Size] 14" length: Part #LRIG-00-14-[Size]
CLASS O	 Available in 11" or 14" length Max use volts 1000 11" length: Part #LRIG-0-11-[Size] 14" length: Part #LRIG-0-14-[Size]
CLASS 1	 Available in 14" or 16" length Max use volts 7500 14" length: Part #LRIG-1-14-[Size] 16" length: Part #LRIG-1-16-[Size]
CLASS 2	 Available in 14", 16" or 18" length Max use volts 17,000 14" length: Part #LRIG-2-14-[Size] 16" length: Part #LRIG-2-16-[Size] 18" length: Part #LRIG-2-18-[Size]
CLASS 3	 Available in 14", 16" or 18" length Max use volts 26,500 14" length: Part #LRIG-3-14-[Size] 16" length: Part #LRIG-3-16-[Size] 18" length: Part #LRIG-3-18-[Size]
CLASS 4	 Available in 16" or 18" length Max use volts 36,000 16" length: Part #LRIG-4-16-[Size] 18" length: Part #LRIG-4-18-[Size]

PROOF TEST • MAX USE VOLTAGE

CLASS	PROOF TEST A_C	MAX USE VOLTAGE A_C
00	2,500	500
0	5,000	1,000
1	10,000	7,500
2	20.000	17,000
3	30,000	26,500
4	40,000	36,000

14" SWITCHING GLOVES



GLOVE POWDER An accessory for gloves,

the 5 oz. squirt bottle powder helps absorb moisture and perspiration. Facilitates donning and doffing of gloves.

Part #POWDER-5-OZ

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LEATHER PROTECTOR GLOVES





MEASURING FOR RUBBER INSULATED GLOVES

In order to determine the proper size for Class 0 and 00 insulating gloves, use a tape measure to find the circumference of your hand around the palm.

For example, 9" means your Class 0 and 00 glove size is 9. For Class 2 gloves add 1/2 size to allow for dexterity. For example, 9" means your Class 2 glove size is 9 1/2.



HEAD & FACE PROTECTION

10 CAL FACE SHIELD UNIT

12 CAL CHIN FACE SHIELD UNIT

CARBONX® ULTIMATE HOOD



WV-ARC-XL Face Shield HB-2-SLT Slotted Cap Bracket HC-Color-SLT Hard Cap Kit Part #SW-WVK-Color



WV-ARC-12 Face Shield with Chin Cup HB-2-SLT Slotted Cap Bracket HC-Color-SLT | Hard Cap Kit Part #SW-WVCK-Color

FACE SHIELD WINDOWS

ARC-Shield is an injection molded window measuring 10"x 18.5"x.075". Anti-slip / anti-fog both sides. Molded polycarbonate. Sewn on hook to attach to hood. Extra light enhancing green for optimal light transmission and visibility, as opposed to dark lenses.

Up to ATPV 44 cal/cm² when used in our 44 cal arc hoods. NFPA 70E • ASTM F2178 74 cal arc hoods. Part #WV-ARC-1V

Dual pane faceshield. Up to ATPV 74 cal/cm² when used in our NFPA 70E • ASTM F2178

Part #WV-ARC-2V





Increase your comfort and productivity with CPA's Refresh[™] air flow system.

CPA's waist belt unit minimizes stagnant air in your hood by delivering a steady stream of ambient air flow.

Full Kit	RF-KIT
Rechargeable Battery	RF-BATT
Bag of 6 Filters	RF-FLTR

Refresh

Our Refresh[™] system can be used with any CPA Arc hood as well as with any of our PPE2 face shields.

Refresh[™] fans are not NIOSH approved and do not provide breathable air filtration. They are a means to provide ambient air flow only.

Refresh[™] full kit includes: Fan belt unit with FR cover, hose with FR cover, hard cap with diffuser, rechargeable battery, AC power charger and two filters.

The CarbonX® Ultimate flared style hood provides maximum coverage. Our hood features flat stitching and seamless chin area for better fit and comfort. 2-Ply: 32 ATPV. 3-ply: 53 ATPV.

Part #KCF-51 (2-Ply) • Part #KC3-51 (3-Ply)

KNIT NOMEX[®] BLEND HOOD



Made with two-ply 7 oz Nomex® / FR Lenzing blend, our long drape style Knit Nomex[®] Blend hoods meet the requirements of both the ASTM F1506 and NFPA 70E. 10.1 ATPV PPF 2.

Part # KN-51

STORAGE BAG



Fleece lined storage bag with drawstring. Sized to accommodate face shield with hard cap. Part #SW-SB

ACCESSORIES

HC-Color-SLT P2RW-Color SW-SG

Plastic Hard Cap Fiberglass Hard Cap Safety Glasses





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