


# INTER-OFFICE CORRESPONDENCE

## LOS ANGELES UNIFIED SCHOOL DISTRICT

**TO:** Roger Finstad, Deputy Director Maintenance  
And Operations, M&O Area Facilities Services  
Directors, Central Facilities Manager, Kirk Encinas,  
CPM South Satellite, HVAC Technical Supervisors

**Date:** December 29, 2009

**FROM:**  Robert Laughton, Area Facilities Services Director  
Leonard A. Fenech, Electrical Technical Supervisor  
Maintenance & Operations Technical Services Unit

**SUBJECT:** Required Personal Protective Equipment and Other Items for use While Working  
on Energized Electrical Equipment

This memo is being published to further clarify when protective equipment is required and what type of protective equipment must be used.

The requirements related to safety while working on or around energized electrical equipment are specified in the California Code of Regulations Title 24 which basically refers to the NFPA 70E Handbook for Electrical Safety in the Workplace that every M&O location should have purchased. Below please find a summary of what work conditions prompts the need to use protective equipment while working on or around energized electrical systems or equipment.

### Tasks Performed on Energized Equipment:

NFPA 70E in Article 130 Table 130.7(C)(9) describes the various Hazard/Risk Category Classifications and the requirements for the use of PPE, insulating gloves and insulated or insulating hand tools. This table is broken down into sections describing the type of equipment that is to be worked on and the voltage range that it operates at. Within each section, there are various tasks listed that would typically be performed on this equipment. You should note that Maintenance and Operations Procedure No. G-E-29 specifically prohibits the performance of certain tasks on **energized** electrical equipment or systems that are listed in this table. Also it should be noted that the table includes sections that describes equipment operating in excess of 600 volts which District employees are not allowed to work on.

Of the permitted sections that describes equipment or systems that operate at a voltage of 600 volts or less, the qualified workman would be required to use PPE rated for a level of no higher than H/R Category 2 except when a bolted on cover is removed from energized equipment thus requiring PPE for an H/R Category of 4. When the operating voltage is 240 volts or less, the removal of a bolted on cover requires the use of PPE rated for an H/R Category of 1. Detailed information regarding the required PPE for each hazard/risk category is available in NFPA 70E.

Again, be aware that Procedure G-E-29 prohibits the performance of certain tasks such as adding or deleting components such as circuit breakers, motor starter buckets, etc while the equipment is **energized**.

### Description of Personal Protective Equipment:

The different hazard risk categories that refers to **energized** electrical equipment or systems require different levels of PPE when working on **energized** electrical equipment. **If** the equipment is **de-energized**, and made safe with lock-out tag-out procedures and if required circuit grounding, then PPE is not required from that point on.

Depending on the applicable H/R Category, protective clothing and or personal protective equipment along with insulated and insulating hand tools may be required to perform the needed work.

As we understand, protective clothing does not need to be provided by the employer. Protective Clothing consists of non-melting, flammable materials (i.e. untreated natural fibers 100% cotton, wool, rayon, silk or blends of these materials) with a fabric weight at least 4.5oz/yd<sup>2</sup> that conforms to ASTM 1506-00 and includes the following: shirts, pants, coveralls, jackets, parkas, and appropriate leather shoes worn routinely by workers who, under normal working conditions, are exposed to momentary electrical arc and related thermal hazards. Following is a recommended list of clothing that appears to meet these guidelines.

- Denim jeans (Levi's or equivalent)
- Khakis long pants (Dockers or equivalent)
- Long sleeve t-shirts (Hanes or equivalent)

Personal protective equipment (PPE) according to an OSHA ruling must be provided by the employer. PPE consists of flame resistant clothing with an appropriate arc rating for the H/R Category that they are working on, flame resistant protective equipment such as face shields, FR hard hats, etc , and insulated or insulating equipment such as rubber gloves, blankets, covers, etc. PPE must conform to the appropriate standard as described in NFPA 70E Table 130.7(C)(8).

As an example, referring to Table 130.7(C)(9) to determine the hazard/risk category and the requirements for rubber insulating gloves and or insulated and insulating hand tools, and also referring to Table 130.7(C)(10), and the limitations as spelled out in M&O Procedure G-E-29, If you were working on equipment rated at 240 volts and below, and testing for voltage or current, you would be working in an H/R category of 1. If the voltage rating of the equipment was greater than 240 volts but less than 600 volts and you were testing for voltage or current, you would be working in an H/R category of 2,

Below, are suggested lists of the minimum PPE that should be supplied by the District that is required for the various H/R categories. It should be noted that the use of rubber insulating gloves and/or insulated and insulating hand tools may or may not be required.

Hazard Risk Category 0 through 2: (To be issued to all qualified Electrical and HVAC field personnel and optionally craft Seniors and Supervisors. Checking out this equipment on an as needed basis would be very time consuming/non-productive and create hygienic issues.)

- Rubber insulating gloves rated an a minimum of 1000 volts
- Leather protector gloves to be used with the above gloves.
- Safety glasses or safety goggles.

- Hearing protection (ear canal inserts)
- Arc-rated coveralls with a minimum arc rating of 8. *Note; as an option separate pants or bib overalls and jacket can be purchased.*
- Arc-rated hard hat/face shield and a balaclava (sock hood) with a minimum arc rating of 8

Substitutions may be made as allowed in Table 130.7(C)(10) and its notes. The above list of equipment will allow the workman to perform all of the work as allowed by M&O Procedure G-E-29 except the removal of bolted on covers from certain classes of **energized** equipment. The removal of bolted on covers from certain classes of **energized** equipment will require the use of PPE rated for an H/R Category of 4.

Hazard Risk Category 4: (Each M&O location should have a limited supply of the following equipment that can be used in lieu of its issued duplicate, rated for a higher hazard/risk category such as when bolted on covers must be removed from certain classes of **energized** equipment.

- Arc rated flash suit pants or bib overalls with a minimum arc rating of 40.
- Arc rated flash suit jacket with a minimum arc rating of 40.
- Arc rated flash suit hood with a minimum arc rating of 40. (for hygienic reasons, the above sock hood should be used with the flash suit hood)

For whatever is purchased, the optional storage bag, backpack, etc should also be purchased to prevent damage to the PPE when not in use.

For your convenience, we have attached a copy of selected pages out of the Salisbury Arc Flash Protection and Personal Electrical Safety Protective Equipment catalog to assist you with your PPE purchases. Available kits may include several required items. This catalog also contains information on insulating blankets, etc, and insulated tools. The complete catalog can be viewed by visiting this web site. [www.whsalisbury.com/images/Arc\\_Flash.pdf](http://www.whsalisbury.com/images/Arc_Flash.pdf)

Please contact the Electrical Technical Supervisor at (213) 763-3053 if you have any questions.

references:

NFPA 70E, Handbook for Electrical Safety in the Workplace, 2009 Edition  
Maintenance and Operations Procedure G-E-29

attachment:

Salisbury catalog selected pages

cc: file

# INSULATING GLOVES AND PROTECTORS KITS

## SHOCK PROTECTION

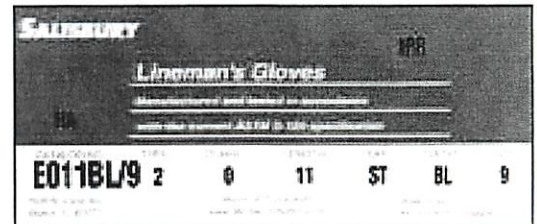


### ◀ GLOVE KITS

Salisbury's insulating rubber gloves are necessary for every electrical worker's complete safety. And to insure your safety, Salisbury's leather protectors provide needed protection from cuts, abrasions, and punctures. To keep these safety items in top condition, proper storage is very important.

Proper storage extends the service life of gloves. Folds and creases strain natural rubber and cause it to cut from ozone prematurely. By storing rubber gloves in the right size bag and never forcing more than one pair into each bag, equipment will lie flat and last longer.

**EXCLUSIVELY AVAILABLE  
FROM SALISBURY.**



Note: If you require test date stamping, please specify when ordering.

### PRODUCT NUMBERING CHART FOR GLOVE KITS

	Class	Length (inches)	Color	Size of Gloves (choose one below)
GK	00	11 or 14	R, B, BL	7, 8, 9, 10, 11, 12
GK	0	11 or 14	R, BL, B, Y	7, 8, 9, 10, 11, 12
GK	2	14, 16, or 18	B, RB	7, 8, 9, 10, 11, 12
Example:				
GK	0	11	BL	9

GK011BL9 is a glove kit with a Blue Class 0 glove 11" long size 9. The appropriate glove bag and leather protectors will be included.

Type I Natural Rubber available in: R=Red, Y=Yellow, B=Black, RB=Red in, Black out  
Type II Salcor® Rubber available in: BL=Blue



## PROTECTIVE NETS, GOGGLES & SAFETY GLASSES



BN-1

◀ **SALISBURY'S FIRE RESISTANT HAIRNET AND BEARDNET** give added protection in any industry that requires the worker to wear a hairnet or beardnet. The hairnet and beardnet are available in gray and made of a washable 1.7 oz/yd<sup>2</sup> (58 g/m<sup>2</sup>) Woven Nomex® fabric.

Cat. No.	Description
HN-1	FR protective hairnet, 1.7 oz/yd <sup>2</sup> (58 g/m <sup>2</sup> ) woven Nomex®
BN-1	FR protective beardnet, 1.7 oz/yd <sup>2</sup> (58 g/m <sup>2</sup> ) woven Nomex®



◀ **SAFETY GLASSES** are anti-fogging, anti-scratch and anti-static with 99.9% UV protection. These glasses meet current ANSI Z87.1, 2003 and CSA Z94.3\* standards.

\*The CSA Z94.3 standard applies to eye and face protectors used in all occupational and educational operations or processes involving hazards to the eyes or face.

Cat. No.	Description
TS56505GRY	Clear lens, gray frame
TS56505GRYA	Amber lens, gray frame
TS56505GRYS	Smoke lens, gray frame



◀ **SALISBURY'S NEW PRO-GOGGLES** protect the eye area from the hazards of an arc flash. The attached adjustable band allows for a very comfortable and secure fit. The goggles can be easily moved out of the way, onto a hard hat or around the neck, when not needed. These goggles have a very durable construction and are highly flexible for your comfort.

PRO-GOGGLES have UV protection, slight green tint and are anti-scratch and anti-fogging.

**NOTE:** Salisbury PRO-GOGGLES are intended for EYE PROTECTION ONLY. This product does not provide face protection.

**CAUTION:** If working where there is a threat of injury to the eyes and face from electrical arc flash, these goggles should be used with a Salisbury Arc Flash Hood (AFHOOD), hard hat, and arc rated face shield with chin cup.



Cat. No.	Description
AFGOGGLE	Orange rimmed goggles with adjustable strap and green tint

# PRO-WEAR™ ARC FLASH PROTECTION PREMIUM COVERALLS

8 - 20 CAL/CM<sup>2</sup>



**NEW**



## ◀ ARC FLASH PROTECTION COVERALLS

8 cal/cm<sup>2</sup> to 20 cal/cm<sup>2</sup> ATPV ratings

Made from arc flash resistant, Indura Ultra Soft®

Sewn with Nomex® thread

Full cut with set in sleeves

FR hook and pile front closure

30" inseam

Expansion back

2-ply Nomex® wristlets

Hook and pile cuff opening

Meet current ASTM F1506 and NFPA 70E standards.

All are CE 0120 certified.

Sizes S, M, L, XL, 2XL, and 3XL available from stock

Other sizes and orange color available by special order

Cat. No.	Description
ACCA8BL	8 cal/cm <sup>2</sup> , navy blue
ACCA8OR	8 cal/cm <sup>2</sup> , orange
ACCA11BL	12 cal/cm <sup>2</sup> , navy blue*
ACCA20BL	20 cal/cm <sup>2</sup> , navy blue*

NOTE: Add suffix for desired size: S, M, L, XL, 2XL, or 3XL

NOTE: Available in orange upon request. Contact your local Salisbury Representative.

If You Need it, Request it.

Call customer service if you need something not seen here.

# PRO-WEAR™ ARC FLASH PROTECTION JACKETS AND OVERPANTS

8 - 20 CAL/CM<sup>2</sup>



JSHV1132BL



SK111109L Jacket Kit



Elastic waistband for maximum comfort.

**NEW**

ACP830BL

## ◀ ARC FLASH PROTECTION JACKETS & OVERPANTS

8 cal/cm<sup>2</sup> to 20 cal/cm<sup>2</sup> ATPV ratings

Made from arc flash resistant, Indura Ultra Soft®

Sewn with Nomex® thread

Jackets and overpants meet current ASTM F1506 and NFPA 70E standards.

All are CE 0120 certified.

Sizes S, M, L, XL, 2XL, and 3XL available from stock

Other sizes and orange color available by special order

## ◀ ARC FLASH PROTECTION JACKETS

Jackets are 32" long and have Nomex® wristlets.

Jackets have hook & pile front closure

Jackets are intended to be used with Salisbury PRO-SHIELD™

Cat. No.	Description
JSHV832BL	8 cal/cm <sup>2</sup> , jacket, navy blue, Indura Ultra Soft
JSHV1132BL	12 cal/cm <sup>2</sup> , jacket, navy blue, Indura Ultra Soft
JSHV2032BL	20 cal/cm <sup>2</sup> , jacket, navy blue, Indura Ultra Soft

NOTE: Add suffix for desired size: S, M, L, XL, 2XL, or 3XL

NOTE: Available in orange upon request. Contact your local Salisbury Representative.

## ◀ ARC FLASH PROTECTION OVERPANTS

Overpants have full elastic waistband with FR hook and pile front closure  
30" inseam

Overpants have hook and pile cuff adjustment

Salisbury Exclusive

The Salisbury overpants provide a quick and cost-effective way to maximize protection

Loose design and flared legs make it easy to put on and take off over existing work clothing.

Cat. No.	Description
ACP830BL	8 cal/cm <sup>2</sup> , overpants, navy blue
ACP830OR	8 cal/cm <sup>2</sup> , overpants, orange
ACP1130BL	12 cal/cm <sup>2</sup> , overpants, navy blue*
ACP2030BL	20 cal/cm <sup>2</sup> , overpants, navy blue*

NOTE: Add suffix for desired size: S, M, L, XL, 2XL, or 3XL

NOTE: Available in orange upon request. Contact your local Salisbury Representative.

# PRO-WEAR™ FLASH PROTECTION BIB OVERALLS

8 - 100 CAL/CM<sup>2</sup>



## ARC FLASH PROTECTION BIB OVERALLS ►

8 cal/cm<sup>2</sup> to 100 cal/cm<sup>2</sup>\* ATPV ratings

8 cal/cm<sup>2</sup> to 75 cal/cm<sup>2</sup>\* bib overalls are made from arc flash resistant, Indura Ultra Soft®

100 cal/cm<sup>2</sup>\* bib overalls are made from TuffWeld® and Q/9® material layers

Sewn with Nomex® thread

Integrated heavy duty suspenders

Relaxed cut for greater mobility

30" inseam

Adjustable hook and pile waist straps

Bib front for added protection

Adjustable gussets on pant cuffs.

Meets current ASTM F1506 and NFPA 70E standards.

All are CE 0120 certified.

Sizes S, M, L, XL, 2XL, and 3XL available from stock

Other sizes and orange color available by special order



ACB2030BL



ACB3130RB



ACB10030TW

Cat. No.	Description
ACB830BL	8 cal/cm <sup>2</sup> , navy blue, Indura Ultra Soft®
ACB830OR	8 cal/cm <sup>2</sup> , orange, Indura Ultra Soft
ACB1130BL	12 cal/cm <sup>2</sup> , navy blue**, Indura Ultra Soft
ACB2030BL	20 cal/cm <sup>2</sup> , navy blue**, Indura Ultra Soft
ACB3130RB	31 cal/cm <sup>2</sup> , royal blue, Indura Ultra Soft
ACB4030GY	40 cal/cm <sup>2</sup> , gray, Indura Ultra Soft
ACB4030GYLT	40 cal/cm <sup>2</sup> , lighter weight, gray, Indura Ultra Soft
ACB5530GY*	55 cal/cm <sup>2</sup> , gray, Indura Ultra Soft
ACB7530GY*	75 cal/cm <sup>2</sup> , gray, Indura Ultra Soft
ACB10030TW*	100 cal/cm <sup>2</sup> , khaki, TuffWeld®

NOTE: Add suffix for desired size: S, M, L, XL, 2XL, or 3XL

NOTE: Available in orange upon request. Contact your local Salisbury Representative.

40 CAL/CM<sup>2</sup> & 100 CAL/CM<sup>2</sup>.  
LIGHTER MATERIAL THAN EVER.

NEW



If You Need it, Request it. Call customer service if you need something not seen here.

## ARC FLASH PROTECTION AS1000HAT & AFHOOD KIT



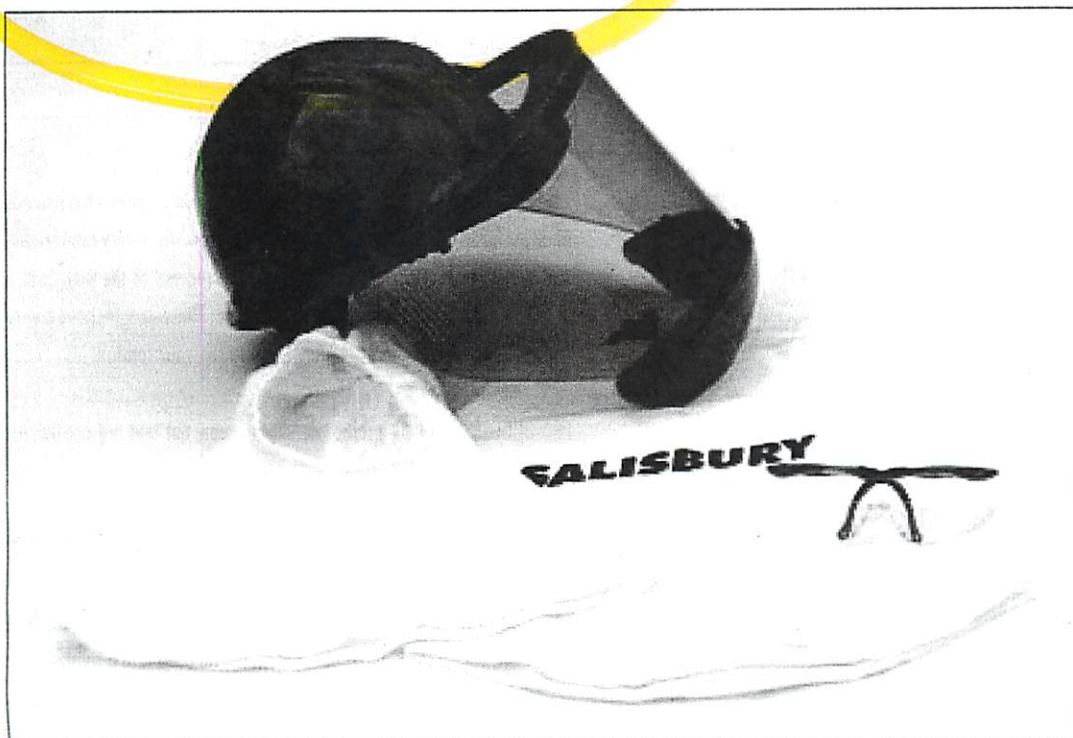
► **THE AS1000HAT KITS** make your Personal Protective Equipment purchasing even easier. These convenient kits contain an AS1000HAT, a 10 cal/cm<sup>2</sup>, 15 cal/cm<sup>2</sup>, or 20 cal/cm<sup>2</sup> ATPV rated AFHOOD, safety glasses and an ASBAG.

The AS1000HAT has an ATPV rating of 10 cal/cm<sup>2</sup>. The lens provides a 7.5" x 20" viewing area with an extra light tint.

The SKA kits are an ideal kit to use with uniform programs that exceed 8 cal/cm<sup>2</sup> or with 8 cal/cm<sup>2</sup> to 12 cal/cm<sup>2</sup> ATPV rated coveralls and jackets.

**NOTE:** Due to AS1000HAT ATPV rating of 10 cal/cm<sup>2</sup>, protection greater than 10 cal/cm<sup>2</sup> cannot be achieved.

Cat. No.	Description
SKA10	10 cal/cm <sup>2</sup> AFHOOD with AS1000HAT, ANSI rated safety glasses and ASBAG.
SKA15	15 cal/cm <sup>2</sup> AFHOOD with AS1000HAT, ANSI rated safety glasses and ASBAG.
SKA20	20 cal/cm <sup>2</sup> AFHOOD with AS1000HAT, ANSI rated safety glasses and ASBAG.



SKA10



**IMPORTANT:** THE MAXIMUM ARC FLASH PROTECTION OF A KIT IS EQUAL TO THE LOWEST CAL/CM<sup>2</sup> RATING OF ANY COMPONENT IN THE SELECTED SAFETY KIT.

# PRO-WEAR™ PERSONAL PROTECTION EQUIPMENT KITS

55 - 75 CAL/CM<sup>2</sup> HRC 4



◀ SALISBURY PRO-WEAR™ ARC FLASH PERSONAL PROTECTION EQUIPMENT KITS ARE AVAILABLE IN AN ATPV RATING OF 55 AND 75 CAL/CM<sup>2</sup>\*. These kits contains an arc flash coat, bib overalls, PRO-HOOD™, hard hat, SKBAG, and safety glasses.

Sizes S, M, L, XL, 2XL, and 3XL available from stock. Other sizes and orange color available by special order.

THESE KITS MEET NFPA 70E  
HAZARD RISK CATEGORY 4.



## PRODUCT NUMBERING CHART FOR 55 CAL/CM<sup>2</sup> & 75 CAL/CM<sup>2</sup> PPE KITS

Salisbury Cat. No.	Size of Garments (choose one below)	ATPV Rating cal/cm <sup>2</sup>	HRC
SK55*	S, M, L, XL, 2XL, 3XL	55	4
SK75*	S, M, L, XL, 2XL, 3XL	75	4
Example: SK55	2XL	55	4

SK552XL is an extra extra large clothing kit with a rating of 55 cal/cm<sup>2</sup> that contains a coat, bib overalls, PRO-HOOD, hard hat, safety glasses and storage bag.

NOTE: Available in orange upon request. Contact your local Salisbury Representative.  
OPTION: Add suffix "-BP" to replace the SKBAG Large Storage Bag with a SKBACKPACK Specialty Reinforced Back Pack.

If You Need it, Request it.  
Call customer service if you need something not seen here.



**PREFER A BACKPACK  
WITH YOUR KIT?**  
Make any kit a Back Pack kit,  
by adding suffix "-BP" to you part number  
or contacting your local Salisbury by  
Honeywell representative for more.



\*IMPORTANT: NFPA 70E does not have a Hazard Risk Category above 40 cal/cm<sup>2</sup>. Working on levels above 40 cal/cm<sup>2</sup> should be avoided because of the blast hazards caused by arc flash.