

ENERGIZER BATTERY MANUFACTURING ST. ALBANS, VERMONT

HOUSE RULES FOR OUTSIDE CONTRACTORS

Safety Equipment

Safety equipment required for all Contractor's employees, including also all sub-contractor's employees, will be provided by either the Contractor or Contractor's employees, not Energizer Battery Manufacturing.

The minimum equipment required in all cases includes:

- a. OSHA approved safety glasses with side shields.
- b. OSHA approved hearing protection.

Other safety equipment may be required depending on job requirements. In all cases the minimum required safety equipment will at all times be worn inside Energizer Battery Manufacturing plant buildings, except the office area. Appropriate safety equipment must also be worn outside the plant buildings when required for a specific job.

Hearing Conservation

In the event a Contractor and/or sub-contractor performs work that generates a noise level of 85 dBA, or higher, hearing protection will be required no matter where the location of the work.

Parking

Contractors and Subcontractors may park in the employee parking lot on the north side of the plant. Vehicles are not be parked along access roads or on grassy areas other than for the loading or unloading of equipment. Only Contractor and Subcontractor vehicles necessary to perform the Work will be allowed on the plant site.

Location of all office and tool trailers, construction equipment and supplies, etc. must be approved by the Owner's designated representative.

Ladders

No portable metal, conductive ladders are allowed on the Owner's plant site. Fiberglass ladders, which may have metal rungs, or wooden ladders may be used when properly equipped, and in safe working condition. Any extension or straight ladders must be equipped with rubber tipped safety feet, and must also be tied off, or held by a second person at floor level when in use.

Ladders shall be properly stored at the end of each working day, or when not in use. Barricades or safety warning tapes will be used where needed to protect the person or persons using the ladder, or the Owner's employees.

Power

Contractors and/or sub-contractors may use 480 volt-3 phase-60 Hz, or 110-volt-1 phase-60 Hz electrical power furnished by the Owner. All other electrical power requirements and connections are the sole responsibility of the Contractor, and/or sub-contractor, subject to approval by the Owner prior to use.

Contractors and/or sub-contractors shall not locate extension cords, hoses, pipes, or ducts across aisles or walkways at the walking surface. All such items shall be routed overhead, at least seven feet above the walking surface, to eliminate tripping hazards and blocking aisles or equipment access. If there is no alternative to locating such items

on the walking surface, then a ramp or step-over will be provided by the Contractor and/or sub-contractor.

All extension cords, welding cables, and hoses must be in good condition. Insulation on extension cords and welding cables must be in good condition with no cuts, or bare wires exposed. Make-shift repairs will not be allowed. All cable and cord ends must be in good condition. Three prong grounded plugs must have the grounding prong in place. Extension cords require a GFI (Ground Fault Interrupter) integral to the cord set, or on a separate 6' maximum length cord set in all cases where grounded outlets are utilized.

Electrical Hazards

Electrical contractors must refer to page 4 section "Electrical Hazards" for detailed safe working practices information.

Dry Room

Only properly trained employees are authorized to enter the dry rooms or handle lithium. Personnel who may need to enter the dry room or handle lithium need to be trained in dry room and lithium safety before they are authorized to perform their assignments. Basic safety training will involve a review of the following items as covered in the St. Albans Lithium Safety Manual:

- Material Safety Data Sheets for lithium and lithium/aluminum alloy
- Product Safety Data Sheet for the L91 and L92 batteries
- General handling procedures for lithium in the warehouse and dry room
- Dry Room layout, limits, evacuation routes, and approved materials
- Alarms

Personnel who require the basic safety training include outside contractors or temporary employees performing work in the dry rooms.

Hazardous Work Permits

Hazardous Work Permits, Electrical Hot Work Permits, and Confined Space Entry permits must be obtained and approved prior to starting such Work. All such permits, are only valid for the production shift they are initiated. If it is necessary to continue such Work into another production shift, then a new permit must be obtained prior to continuing such Work into that shift, except as previously noted for Temporary Platforms.

A Hazardous Work Permit is required for the following specific procedures:

- Use of ignition sources in restricted areas
- Open flame
- Entry into confined space
- Breaking or cutting of lines
- Electrical hot work
- Excavation
- Hot tapping
- Moving of radioactive sources
- Elevated work
- Oxygen enriched, oxygen deficient, or other hazardous environments

The following specific jobs require hazardous work permits at the St. Albans facility:

- Any maintenance work performed in or near the lacquer spray booth
- Cleaning the aluminizer
- Use of water in the dry room (signed by the plant manager)

Welding, soldering, or brazing outside of the designated areas in the shop
Grinding or any spark producing operation outside of the designated areas
in the shop

Any job is not typical of normal operating procedures and that may be
considered hazardous.

Fire protection is required when any welding, cutting, grinding, or open flames are
used. The fire watch will extend at least 30 minutes after the welding, cutting, grinding
has been completed, or open flames extinguished.

The person assigned as the fire watch shall be an Energizer employee for all work
inside the Owner's buildings or on the roof of those buildings. At the Owner's sole
discretion, a Contractor employee may be designated as the fire watch in a case by case
basis. The person assigned as the fire watch for all work that takes place exterior to the
Owner's plant buildings may be a Contractor employee.

Energy Control

Lockout/Tagout procedures must be followed by all Contractors and/or sub-
contractors. Each employee must use a separate, labeled padlock for each piece of
equipment. An Energizer lock must be placed over a Contractor's lock whenever work is
performed on production equipment.

Emergency Response

The Contractor will be responsible for the necessary training of all the Contractor's
and/or subcontractor's employees including the recognition, actuation, and proper
response to Owner's plant alarms. The Contractor will also be responsible for CPR and
First Aid training, and certification of the standby person(s) required for Confined Space
Entry, Electrical Hot Work, or other Hazardous Work as specified by the Owner.

Tools

The Contractors and/or sub-contractors, and their employees will provide all tools and
equipment to perform the Work. The Owner's equipment and tools shall not be used
without express permission of the Owner's designated representative, and completion of
the Owner's written Release Waiver.

Housekeeping

Contractors and/or sub-contractors will maintain the job site in a neat and workman-
like manner, remove all debris on a daily basis, and upon completion of the Work
thoroughly clean the job site.

Working Hours

Working hours for Contractors and/or sub-contractors shall be agreed upon prior to
the start of the Work. Due to Owner's contractual obligations, any work that is
considered as overtime work or is outside the normal facility shift hours of the Owner's
employees must be submitted for approval to, and agreed upon, by the Owner at least
two hours prior to the end of the Owner's normal shift.

Food

All eating on the Owner's premises shall be confined to areas designated by the Owner's representative. In no case will food, beverages, or their consumption be allowed inside the Owner's plant, nor will the consumption of food and beverages be allowed in the Owner's plant offices, or the Owner's employee cafeteria.

Substance Abuse

Consumption or possession of alcoholic beverages or illegal drugs will not be tolerated nor permitted on the Owner's premises. Persons under the influence of alcoholic beverages or illegal drugs will not be permitted on the Owner's premises.

Smoking

No smoking is allowed inside the Owner's plant or on the roof areas of the Owner's plant. Any smoking materials must be properly disposed of in the approved containers provided by either the Owner, or the Contractor--and not anywhere else.

Miscellaneous

Contractors and/or sub-contractors will provide barricades or covers approved by the Owner for all open pits, trenches, or excavations. This includes substantial barricades or covers if any vehicles have access to the work area.

No firearms are allowed on the Owner's premises.

No running or horseplay will be tolerated on the Owner's premises.

All the Contractor's and/or sub-contractor's employees will sign in using the Sign-in Book located inside the West entrance to the Owner's building.

In addition to Owner's rules the Contractor and/or sub-contractors must comply with all local, state, and federal laws including, but not limited to OSHA, OEPA, and OBBC.

Electrical Hazards

1. GENERAL PERSONAL REQUIREMENTS:

Alertness:

Employees shall be instructed to be alert at all times when they are working near live parts within the Limited Approach Boundary of energized electrical conductors or circuit parts or where other electrical hazards exist. Employees are not permitted to work within the Limited Approach Boundary on energized electrical conductors or circuit parts or where other electrical hazards exist while their alertness is recognizably impaired due to illness, fatigue, or other reasons.

Conductive Articles Being Worn:

Conductive articles of jewelry and clothing (such as watchbands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, metal

headgear, or unrestrained metal frame glasses) shall not be worn where they present an electrical contact hazard with energized electrical conductors and circuit parts, unless such articles are rendered nonconductive by covering, wrapping, or other insulating means.

Clothing Not Permitted:

Clothing made from flammable synthetic materials that melt at temperatures below 315°C (690°F) such as acetate, acrylic, nylon, polyester, polyethylene, polypropylene, and spandex, either alone or in blends shall not be used.

Eye Protection:

Employees shall wear protective equipment for the eyes to prevent injury from electric arcs, flashes, or from flying objects resulting from an electrical explosion.

Face Protection:

Employees shall always wear eye protection under face shields or hoods.

Foot Protection:

Employees shall wear electrical hazard or EH rated shoes. They shall maintain this footwear clean and free of any known defects.

Housekeeping:

Employees shall maintain all tools and clothing in a clean and dirt free manner.

2. GENERAL WORK REQUIREMENTS:

Attendants:

If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant shall be stationed to warn and protect employees. An attendant shall remain in the area as long as there is a potential for employees to be exposed to the electrical hazards.

Barricades:

Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas containing energized conductors or circuit parts or potential energized conductors or circuit parts. Conductive barricades shall not be used where it might cause an electrical hazard. The barricades shall be placed no closer than the Limited Approach Boundary.

Blind Reaching:

Employees shall be instructed not to reach blindly into areas that might contain exposed electrical conductors and circuit parts or potential energized electrical conductors or circuit parts where an electrical hazard exists.

Conductive Cleaning Materials: Employees shall not use steel wool, metalized cloth, silicon carbide, water, aerosol cleaning fluids, or other electrically conductive cleaning materials inside the Limited Approach Boundary.

Conductive Materials: Conductive materials, tools, and equipment that are in contact with any part of an employee's body shall be handled in a manner that prevents accidental contact with energized electrical conductors or circuit parts. Such materials and equipment include, but are not limited to; long conductive objects such as ducts, pipes, tubes, conductive hose and rope, metal-lined rules and scales, steel tapes, pulling lines, metal scaffold parts, structural members and chains.

Electrical Clearances: Always assure that proper depth of working space is maintained and present when conducting voltage or amperage measurements on energized conductors or circuit parts.

Hazardous Classified Locations: Electrical maintenance conducted in Hazardous or Classified Locations must always ensure that the form of construction, installation, and other maintenance activities being conducted on the equipment uses materials that are suitable for the Hazardous or Classified Location and that the classification is not compromised. All electrical troubleshooting conducted in Hazardous or Classified locations must always adhere to the pertinent JSHA and the procedures required for the area to ensure that the electrical activity does not introduce any additional hazards in itself.

3. GENERAL WORK REQUIREMENTS:

Illumination: Employees shall not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Where there is a lack of illumination or an obstruction precludes observation of the work to be performed, employees shall not perform any tasks within the Limited Approach Boundary of energized conductors or circuit parts where an electrical hazard exists.

Qualified Person: One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

Portable Ladders: Portable ladders shall have nonconductive side rails if they are used where the employee or the ladder could contact exposed energized electrical

conductors or circuit parts where an electrical hazard exists. Metal or aluminum ladders are not permitted in EBM facilities.

Reclosing Circuits After Protective Device Operation:

After a circuit is de-energized by a circuit protective device, the circuit shall not be manually energized until it has been determined that the equipment and circuit can be safely energized. The repetitive manual reclosing of circuit breakers or re-energizing circuits through replaced fuses is prohibited.

Routine Opening and Closing of Circuits:

Load rated switches, circuit breakers, or other devices specifically designed as disconnecting means shall be used for the opening, reversing, or closing of circuits under load conditions.

The routine operation for opening and closing circuits shall adhere to the following:

1. Always properly interrupt the load.
2. Always assume a safe position when energizing or de -energizing an electrical enclosure.
3. Always, keep head and torso turned away from the disconnect when energizing or de-energizing.
4. Maintain solid balance and footing.
5. Position your body such that you are not in front of any part of the enclosure or disconnect.
6. Energize or de-energize by moving away from the enclosure and the disconnect.
7. Stay clear of the electric Arc Blast Zone.

Safety Signs or Tags:

Safety signs, safety symbols or accident prevention tags shall be used where necessary to warn employees about electrical hazards that might endanger them.

4. ENERGIZED ELECTRICAL WORK REQUIREMENTS:

There are three types of electrical work that are permitted to be performed on energized electrical conductors and circuit parts by qualified personnel.

This work includes:

1. **Troubleshooting:** Work performed on energized electrical conductors and circuit parts to determine the cause and location of a problem. Work done under this heading must be performed only with suitable test instruments.
2. **Calibration:** Adjustments performed on electronic components with energized electrical conductors and circuit parts to cause a particular parameter to have a specified value or state.
3. **Repair Work:** Removing, installing modifying or repairing electrical components or wiring on energized electrical conductors or circuit parts. Conducting repair work of any type in an electrical enclosure with energized electrical conductors and circuit parts requires a Hazardous Work Permit.

The following electrical work procedures are to be followed when electrical work is performed on energized electrical conductors and circuit parts or in the immediate vicinity of energized electrical conductors and circuit parts:

1. Electrical troubleshooting work may be performed on energized electrical conductors and circuit parts provided that only approved test instruments are used to perform the task and the proper procedures and personal PPE are applied in the troubleshooting process.
2. Calibration work may be performed on energized electrical conductors and circuit parts provided that only approved test instruments are used to perform the task, there are documented procedures for the calibration, and personal PPE are applied in the calibration process.
3. **Repair work on energized electrical conductors or circuit parts of any kind is prohibited.**
 - a. Conducting repair work of any type in an electrical enclosure with energized electrical conductors and circuit parts requires a Hazardous Work Permit.

Energized Electrical Conductors and Circuit Parts Work = Electrical Hot (Energized) Work:

By definition, electrical “hot” or energized work is repair work on or in the immediate vicinity of energized electrical conductors or circuit parts. The immediate vicinity is defined as any energized electrical conductor or circuit part that is within the reach of the electrical worker when the work task is being performed. An electrical enclosure is considered “energized” if there are any energized electrical conductors or circuit parts inside the immediate enclosure. This includes the line-side of conductors if the enclosure has a main disconnect integral to the enclosure.

5. GENERAL TEST INSTRUMENTS AND EQUIPMENT:

Test Instruments:

1. Test instruments, equipment, and their accessories shall be rated for circuits and equipment to which they will be connected.
2. All voltage and current instruments shall have a minimum rating of CAT III.
3. Test instruments, equipment, and their accessories shall be designed for the environment to which they will be exposed and the manner in which they will be used.
4. Only qualified persons shall perform testing work on or near live parts operating at 50 volts up to 600 volts AC.
5. Test instruments and equipment and all associated test leads, cables, power cords, probes, and connectors shall be visually inspected for external defects and damage before each use. If there is a defect or evidence of damaged that might expose an employee to injury, the defective or damaged item shall be removed from service, and no employee shall use it until repairs and tests necessary to render the equipment safe have been made.

Solenoid Type Voltage Testers: Use of solenoid type voltage testers that activate a spring-loaded solenoid plunger is prohibited. These testers will draw a small arc when contact is made with the measured surface.

Probe Exposure: Only the minimum amount of test lead should be exposed on contact type instruments. This minimizes the chance of accidentally causing a short circuit if the test lead contacts more than one conductor at a time.

Proximity Voltage Testers: The use of proximity type voltage testers are permitted for general diagnostics. Proximity type voltage testers are **not** permitted for establishing an electrically safe condition.

6. GENERAL ELECTRICAL PPE:

Employees working in areas where there are electrical hazards shall use protective equipment that is designed and constructed for the specific part of the body to be protected and for the work to be performed. When an employee is working within the flash protection boundary he/she shall wear protective clothing and other personal protective equipment in accordance with the Flash Hazard Analysis or the listed Hazard Risk Category Classifications.

Body Protection:

Employees shall wear clothing resistant to flash flame wherever there is a possible exposure to an electric arc flash.

Coverage:

All parts of the body inside the Arc-Flash Protection Boundary shall be protected. Shirt sleeves shall be fastened at the wrists and shirts shall be closed at the neck.

Fit:

Tight-fitting clothing shall be avoided. Loose fitting clothing provides additional thermal insulation due to air spaces. FR apparel shall fit properly such that it does not interfere with the work task.

Hand Protection:

Employees shall wear rubber insulating gloves with leather protectors where there is a danger of hand and arm injury from electric shock and burns due to contact with live parts. Gloves made from layers of flame resistant material provide the highest level of hand protection. Heavy-duty leather gloves also provide good protection. Where voltage-rated gloves are used, leather protectors shall be worn over the rubber gloves. The leather protectors also provide good arc-flash protection for the hands.

- Rubber gloves with leather protectors **are** required to be worn for all voltage measurements and current measurements where the voltage is greater than 50 volts
- Leather protectors shall be worn where required for arc flash protection and anytime the hands are inside the Arc Flash Protection Boundary.

7. MINIMUM REQUIRED ELECTRICAL PPE:

The minimum electrical PPE that is required for voltage testing, troubleshooting and calibration on energized electrical systems shall be identified as the EBM Minimum Risk Classification:

Footwear:

Electrical Hazard rated work shoes meeting ANSI Z41 PT91 EH

Insulated Gloves:

Class 00 Rubber Gloves rated at 500 VAC. (Canada: Class 0 Rubber Gloves rated at 600 VAC)

Leather Protectors:	Leather gloves for wearing over the rubber insulated gloves
Eye Protection:	Safety Glasses with side shields meeting ANSI Z87.1
Shirt:	Arc-rated long sleeve with a minimum arc rating of 4
Pants:	Arc-rated long pants with a minimum arc rating of 4
Underwear:	100% cotton
Glove Bag:	Storage bag for protection of rubber gloves and leather protectors
Volt Meter:	Electrically rated for CAT III
Hearing Protection:	Ear canal inserts

NOTES:

1. Clothing made from flammable synthetic materials that melt at temperatures below 315°C (690°F) such as acetate, acrylic, nylon, polyester, polyethylene, polypropylene, and spandex, either alone or in blends shall not be used or worn.
2. Conductive articles of jewelry and clothing (such as watchbands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, metal headgear, or unrestrained metal frame glasses) shall not be worn where they present an electrical contact hazard with energized electrical conductors and circuit parts, unless such articles are rendered nonconductive by covering, wrapping, or other insulating means.
3. Coveralls with a minimum arc-rating of 4 can be worn in lieu of arc-rated pants and shirt provided all other clothing is 100% cotton.

**EBM MINIMUM RISK CLASSIFICATION
ARC-FLASH WARNING LABEL**



NOTES:

1. Denotes EBM Minimum Risk Classification electrical PPE is required
2. Denotes calculated incident energy is less than 1.2 cal/cm²
3. Equates to a Hazard Risk Category 0 in NFPA 70E

EBM Risk Category 1 Classification

EXAMPLE EBM RISK CATEGORY 1



ARC-FLASH WARNING LABEL

NOTES:

1. Denotes calculated incident energy is greater than 1.2 cal/cm² but less than 4 cal/cm².

PPE Required:

1. Arc-rated shirt and pants with a minimum arc rating of 4 required.
2. Coverall with a minimum arc-rating of 4 can be worn in lieu of arc-rated pants and shirt provided all other clothing is 100% cotton.
3. Underwear of 100% cotton is required.
4. Ear canal inserts hearing protection is required.
5. Safety glasses with side shields eye protection per ANSI Z87 is required.
6. A hard hat per ANSI standard Z89.1 class B with a face shield at a minimum arc rating of 4 is required.
7. Class 00 Rubber gloves with leather protectors is required.
8. Electrical hazard rated shoes per ANSI standard ANSI Z41 PT91 EH is required.

The EBM Risk Category 1 Classification equates to the Hazard Risk Category 1 Classification listed in NFPA 70E. The following potential work conducted on facility premises wiring systems is considered an EBM Category 1 classification as follows:

Panelboards rated 240 V and below:

- Work on energized electrical conductors and circuit parts, including voltage testing
- Removal of bolted covers to expose bare energized electrical conductors and parts

It is **PROHIBITED** to conduct the following tasks unless an Electrically Safe Work Condition is established:

- Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard
- Remove/install circuit breakers or fused switches

Panelboards or Switchboards rated >240 V and up to 600 V with molded case or insulated case circuit breakers:

- Perform infrared thermography and other non-contact inspections outside the Restricted Approach Boundary
- Circuit breaker or fused switch operation with covers off

600V Class Motor Control Centers (MCCs):

- Perform infrared thermography and other non-contact inspections outside the Restricted Approach Boundary
- Circuit breaker or fused switch or starter operation with enclosure doors open
- Opening hinged covers (to expose bare energized electrical conductors or circuit parts)

600V Class Switchgear with power circuit breakers or fused switches:

- Circuit breaker or fused switch operation with enclosure doors open

Other 600V Class (277 V through 600 V) Equipment:

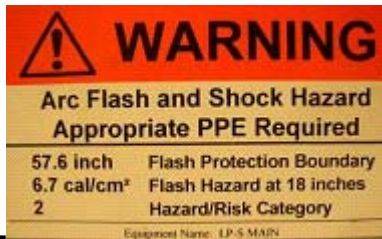
Lighting or small power transformers (600 V, maximum)

- Opening hinged covers (to expose bare, energized electrical conductors or circuit parts)
- Cable trough or tray cover removal or installation
- Miscellaneous equipment cover removal or installation

NOTE: Other than electrical troubleshooting, mechanical work on circuits with energized electrical conductors and circuit parts is prohibited.

EBM Risk Category 2 Classification

**EXAMPLE
EBM RISK CATEGORY 2**



ARC-FLASH WARNING LABEL

NOTES:

1. Denotes calculated incident energy is greater than 4 cal/cm² but less than 8 cal/cm².

PPE Required:

1. Arc-rated shirt and pants with a minimum arc rating of 8 required.
2. Coverall with a minimum arc-rating of 8 can be worn in lieu of arc-rated pants and shirt provided all other clothing is 100% cotton.
3. Underwear of 100% cotton is required.
4. Ear canal inserts hearing protection is required.
5. Safety glasses with side shields eye protection per ANSI Z87 is required.
6. A hard hat per ANSI standard Z89.1 class B with face shield at a minimum arc rating of 8, with wrap-around guarding to protect not only the face, but also the forehead, ears and neck along with a balaclava is required or an arc-flash hood is required.
7. Class 00 Rubber gloves with leather protectors is required.
8. Heavy-duty EH rated leather shoes are required.

The EBM Risk Category 2 Classification equates to the Hazard Risk Category 2 and 2* Classifications listed in NFPA 70E. The following potential work, conducted on facility premises wiring systems, is considered an EBM Risk Category 2 classification as follows:

Panelboards or Switchboards rated >240 V and up to 600 V with molded case or insulated case circuit breakers:

- Work on energized electrical conductors and circuit parts, including voltage testing
- Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard or switchboard

600V Class Motor Control Centers (MCCs):

- Work on energized electrical conductors and circuit parts, including voltage testing
- Work on control circuits with energized electrical conductors and circuit parts >120 V exposed
- Application of safety grounds after voltage test
- Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard or switchboard

600V Class Switchgear with power circuit breakers or fused switches:

- Perform infrared thermography and other non-contact inspections outside the Restricted Approach Boundary
- Work on energized electrical conductors and parts, including voltage testing
- Work on control circuits with energized electrical conductors and circuit parts >120 V exposed
- Application of safety grounds after voltage test
- Opening of hinged covers (to expose bare, energized electrical conductors and circuit parts)

Other 600V Class (277 V through 600V) Equipment:

Lighting or small power transformers (600 V, maximum)

- Removal of bolted covers (to expose bare, energized electrical conductors or circuit parts)
- Work on energized electrical conductors and circuit parts including voltage testing
- Application of safety grounds after voltage test*
- Work on energized electrical conductors and circuit parts, including voltage testing*

It is **PROHIBITED** to conduct the following tasks unless an Electrically Safe Work Condition is

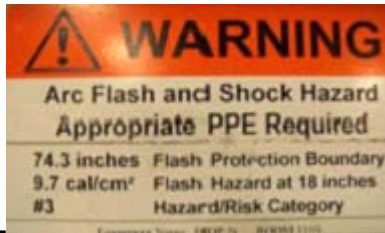
established:

- Revenue meters (kW-hour, at primary voltage and current) insertion or removal
- Insertion or removal of plug-in devices into or from busways

NOTE: Other than electrical troubleshooting, mechanical work on circuits with energized electrical conductors and circuit parts is prohibited.

EBM Risk Category 3 Classification

**EXAMPLE
EBM RISK CATEGORY 3**



ARC-FLASH WARNING LABEL

NOTES:

1. Denotes calculated incident energy is greater than 8 cal/cm² but less than 25 cal/cm².

PPE Required:

1. Arc-rated pants and shirt or coverall provided all undergarment clothing is 100% cotton and an arc flash suit selected so that the total PPE has a minimum arc-rating of 25 is required.
2. Underwear of 100% cotton is required.
3. Ear canal inserts hearing protection is required.
4. Safety glasses with side shields eye protection per ANSI Z87 is required.
5. A hard hat per ANSI standard Z89.1 class B as required dependent of arc-flash hood.
6. An arc-flash hood with a minimum arc-rating of 25 is required.
7. Class 00 Rubber gloves with leather protectors is required.
8. Heavy-duty EH rated leather shoes are required.

The EBM Risk Category 3 Classification equates to the Hazard Risk Category 3 Classification listed in NFPA 70E.

Presently, there are no Hazard Risk Category 3 classifications listed in NFPA 70E that are pertinent to facility premises wiring systems at EBM.

However, there are EBM Risk Category 3 Classifications throughout facilities and they are marked accordingly with their incident energy based on the arc-flash hazard analysis.

NOTE: Other than electrical troubleshooting, mechanical work on circuits with energized electrical conductors and circuit parts is prohibited.

EBM Risk Category 4 Classification

EXAMPLE EBM RISK CATEGORY 4



ARC-FLASH WARNING LABEL

NOTES:

1. Denotes calculated incident energy is greater than 25 cal/cm² but less than 40 cal/cm².

PPE Required:

1. Arc- rated pants and shirt or coverall provided all undergarment clothing is 100% cotton and an arc flash suit selected so that the total PPE has a minimum arc-rating of 40 is required.
2. Underwear of 100% cotton is required.
3. Ear canal inserts hearing protection is required.
4. Safety glasses with side shields eye protection per ANSI Z87 is required.
5. A hard hat per ANSI standard Z89.1 class B as required dependent on arc-flash hood.
6. An arc-flash suit hood with balaclava or double-layered switching hood is required with a minimum arc-rating of 40 is required.
7. Class 00 Rubber gloves with leather protectors is required.
8. Heavy-duty leather shoes are required.

The EBM Risk Category 4 Classification equates to the Hazard Risk Category 4 Classification listed in NFPA 70E. The following potential work, conducted on facility premises wiring systems, is considered an EBM Risk Category 4 classification as follows:

600V Class Motor Control Centers (MCCs):

- Removal of bolted covers (to expose bare, energized conductors and circuit parts)

It is **PROHIBITED** to conduct the following tasks unless an Electrically Safe Work Condition is established:

- Insertion or removal individual starter “buckets from MCC

600V Class Switchgear with power circuit breakers or fused switches:

- Insertion or removal (racking) of circuit breakers from cubicles, doors open or closed
- Removal of bolted covers (to expose bare, energized electrical conductors or circuit parts)

NOTE: Other than electrical troubleshooting, mechanical work on circuits with energized electrical conductors and circuit parts is prohibited.

8. REFERENCE MATERIALS:

OSHA	Occupational Safety and Health Administration CFR 1910.331 - .335
NFPA 70	The National Electric Code 2008 Edition
NFPA 70E	The Standard for Electrical Safety Requirements for Employee Workplaces 2009 Edition
NFPA 79	The Electrical Standard for Industrial Machinery 2007 Edition
NFPA 70B	Recommended Practice for Electrical Equipment Maintenance 2006 Edition
ANSI Z87.1	Practice for Occupational and Educational Eye and Face Protection, 2003
ANSI Z89.1	Requirements for Protective Headwear for Industrial Workers, 2003
ASTM D 120,	Standard Specifications for Rubber Insulating Gloves, 2002a (2006)
ASTM F 479	Standard Specification for In-Service Care of Insulating Blankets 2006
ASTM F 496,	Standard Specifications for In-Service Care of Insulating Gloves and Sleeves, 2006
ASTM F 696,	Standard Specifications for In-Service Care of Insulating Gloves and Sleeves, 2006
ASTM F 819-08	Standard Terminology Relating to Electrical Protective Equipment for Workers
ASTM F 1236	Standard Guide for Visual Inspection of Electrical Protective Rubber Products, 2007
ASTM F 2178	Standard Test Method for Determining the Arc Rating and Standard Specifications for Face Protective Products 2006
ASTM F 2412	Standard Test Methods for Foot Protection, 2005
ASTM F 2413	Standard Specification for Performance Requirements for Foot Protection, 2005
ASTM F 1506	Standard Specifications for Protective Wearing Apparel for Use by Electrical Workers When Exposed to Momentary Electric Arc and Related Thermal Hazards, 2002a
IEEE	The Other Electrical Hazard: Electric Arc Blast Burns by Ralph H. Lee
IEEE	Predicting Incident Energy to Better Manage the Electric Arc Hazard on 600 V Power Distribution Systems Paper No. PCIC-98-36

NFPA

Electrical Safety in the Workplace by Ray a. Jones, P.E. and
Jane G. Jones

McGraw Hill Electrical Safety Handbook – Second Edition by John Cadick, P.E. Mary
Capelli-ScgellPfeffer, M.D., M.P.A., and
Dennis Neitzel, CPE