

Arc-rated PPE

SWP-057

1.0 Purpose

- 1.1 To provide guidelines for the proper use and care of Arc-rated (flame resistant) PPE.

2.0 Description

- 2.1 Arc-rated (AR) PPE is clothing (including gloves, balaclava etc.) and other equipment (face shield, hearing protection) has been tested for exposure to an electrical arc and assigned a value according to its performance (See Appendix A – Arc-rated PPE examples).
- 2.2 Arc-rated PPE that is of adequate rating, and worn properly, is designed to protect an exposed worker from anything more than a second-degree burn.
- 2.3 Arc-rated PPE is part of the minimum required PPE to enter Yukon Energy Corp. (YEC) substations.

3.0 Guidelines

- 3.1 Arc-rated PPE is required when:
- Workers are exposed to electrical hazards;
 - Workers are working on/near energized electrical equipment;
 - Workers are inside a defined/posted arc flash boundary;
 - Entering Yukon Energy substations; and,
 - Identified on JSA/Tailboard as required PPE.
- 3.2 All arc-rated clothing is flame resistant (FR) but not all FR clothing is arc-rated.
- 3.3 Arc-rated PPE is required to have an arc thermal performance value (ATPV). Minimum recommended ATPV for everyday wear is 8 cal/cm². (See Appendix B – Arc-rated clothing ratings)
- 3.4 Arc-rated PPE must be equal to, or greater than the incident energy in arc flash labels posted on YEC electrical equipment. (See Appendix C – Typical arc flash label).
- 3.5 Arc-rated PPE must be in good, clean condition and provide the required protection for the work undertaken.
- 3.6 Arc-rated clothing must be worn as the outermost layer.
- 3.7 Arc-rated clothing can be in the form of a single garment with the required arc rating, or a system of clothing layers that can achieve the required minimum arc rating.
- 3.8 Arc-rated garments used for layering, must be tested in the combinations they will be worn.
- 3.9 Arc-rated clothing worn in layers beneath the arc-rated outerwear; and/or against the skin; must be arc-rated fabric or natural fabrics that **will not melt** when exposed to heat.
- 3.10 Melting fibers (synthetics) such as nylon, polyester, polypropylene, and spandex **must not be worn** beneath arc-rated clothing. Cotton blended with these fibers **must also not be worn**.
- 3.11 Untreated cotton and natural fiber garments **do not have an arc-rating** and cannot be used to determine total ATPV when layering.
- 3.12 Arc-rated PPE must meet the requirements outlined in CSA Z462; Workplace electrical safety.
- 3.13 Arc-rated PPE must be compatible with other required personal protective equipment.

4.0 Fit

- 4.1 Follow manufacturer's instructions.
- 4.2 In order for arc-rated clothing to be effective, it must be in good repair, loose fitting and worn as the outermost layer. Avoid tight-fitting arc-rated clothing. Loosely fitting clothing can provide additional thermal insulation because of air spaces.
- 4.3 Arc-rated should be fitted to the individual and be comfortable to wear.
- 4.4 Consider the bulk of clothing that might be worn underneath the arc-rated outer layer(s).
- 4.5 Arc-rated clothing must cover potentially exposed areas as completely as possible. Shirt sleeves must be fastened at the wrists; shirts, jackets, and coveralls must be done up completely; and, be closed at the neck.
- 4.6 Arc-rated PPE should fit properly such that it does not interfere with the work.

5.0 Care and cleaning

- 5.1 Follow manufacturer's instructions.
- 5.2 In order for arc-rated clothing to be effective it must be clean and in good repair.
- 5.3 Keep your arc-rated PPE clean and well-maintained. Garments contaminated with oil, chlorine bleach, fabric softener or other substances may not provide adequate protection.
- 5.4 Use only detergents recommended by the manufacturer when laundering.
- 5.5 **DO NOT** use fabric softeners (including dryer sheets) on arc-rated clothing. Fabric softeners will compromise the garment's protective characteristics.
- 5.6 **DO NOT** use bleach when laundering.
- 5.7 Repair arc-rated clothing with correct materials.
- 5.8 Replace arc-rated PPE that show signs of excessive wear and tear, excessive soiling, or cannot be repaired.
- 5.9 Store arc-rated PPE in a safe, clean, dry place when not in use.

6.0 Reference documents

- Tyndale USA; Arc Flash_What is arc-rated?
- Westex; Five facts about arc-rated fabrics

Appendix A – Arc-rated PPE examples
Clothing



Other arc-rated PPE



Appendix B – Arc-rated clothing ratings

Hazard Risk Category (HRC)	Clothing description/possible combinations	Minimum ATPV (cal/cm ²)
0	Natural/non-melting fabric/fibers; untreated cotton, wool, rayon, silk; or, blends of these materials.	0
1	Arc-rated shirt and pants; and/or, arc-rated coverall. Equal to, or greater than the incident energy on arc flash labels posted on YEC electrical equipment.	4
2	Arc-rated shirt and pants; and/or, arc-rated coverall. Equal to, or greater than the incident energy on arc flash labels posted on YEC electrical equipment.	8
3	Arc-rated shirt and pants, beneath ARFR coverall; and/or, Arc-rated suit equal to, or greater than the incident energy on arc flash labels posted on YEC electrical equipment.	25
4	Arc-rated shirt and pants; or, arc-rated coverall; and Arc-rated suit equal to, or greater than the incident energy on arc flash labels posted on YEC electrical equipment.	40

Adopted from CSA Z462-12; Workplace electrical safety

Appendix C – Typical arc flash label

