Arc® X

Arc and FR Rated Rainwear

Download Certificate | Download Declaration of Conformity | TYPE 6 | EN 343 | EN 20471 | EN 11612 | EN 61482-1-1 | EN 61482-1-2 | EN 11611 | EN 1149-5

Breathable, hooded jacket and bib & brace pants for outdoor arc flash heat protection with inherent FR properties, high ATPV and multiple hazard protection.

- 98% Polyester/2% carbon fibre laminated to modacrylic cotton knit fabric - weight 373gsm.
- Certified to all relevant standards including hi-vis, flame and heat protection, arc flash (both standards) and anti-static requirements
- Fold-away hood with drawstring – oversized to accommodate a hard hart
- Hook & loop adjustable wrists and ankles
- Adjustable braces with quick-release clasps
- Tough, front-zipper fastening with hook & loop secured storm flap
- Tested to the EN 17491-4 'Type 4' spray test to prove its effectiveness at keeping out rain showers

Available in: Yellow Orange

Product Codes			
Jacket – H-back design – Hi-vis orange	HVAJ01OR [Size]	Jacket – H-back design – Hi-vis yellow	HVAJ01Y [Size]
Jacket – X-back design – Hi-vis orange	HVAJ01ORX [Size]	Jacket – X-back design – Hi-vis yellow	HVAJ01YX [Size]
Bib & Brace Pants – Hi-vis orange	HVAP01OR [Size]	Bib & Brace Pants – Hi-vis yellow	HVAP01Y [Size]

Physical Properties		
Property	**EN Standard**	**CE Class**
Abrasion Resistance	EN 530	6
Tear Resistance	EN 9073-4	4
Tensile Strength	EN 13934-1	6
Puncture Resistance	EN 863	3

Penetration/Repellency EN 6529		
Chemical	**Penetration Class**	**Repellency Class**
Sulphuric Acid 30%	3	3
Sodium Hydroxide 10%	3	3
O-Xylene	2	3
1-Butanol	3	3

Assessment of Predicted Body Burn according to EN 13506:2008			
This test calculates predicted body burn according to an internationally recognised formula.			
Underwear	Worn over 100% cotton long sleeved t-shirt and long johns		
Preconditioning	1 wash/ dry cycle at 40 °C		
Mean Heat Flux	84 kW/M2 (+/- 2.5%)		
Test 1 3 Second Burn Data acquisition time: 120 seconds	Pain - 11 .4% 1st - 0.0% 2nd - 3.5% 3rd - 0.0% 2nd & 3rd - 3.5%	Test 2 4 Second Burn Data acquisition time: 120 seconds	Pain - 17.7% 1st - 2.7% 2nd - 4.4%% 3rd - 0.0% 2nd & 3rd - 4.4%%

Certification	
AS/NZS 4602.1.2011	Class D/N Day or Night use
AS/NZS 1906.4.2010	Reflectivity of materials
ENA NENS 09	Meets designs & performance levels for national PPE guidlelines for electrical arc hazards
EN ISO 13688:2013	Protective Clothing: General Requirements
EN ISO 20471:2013 + A1:2016	High Visibility Clothing (Jacket: Class 3 / Pants: Class 1)
RIS-3279-TOM:2016	High Visibility Requirements for High Visibility Clothing for UK railway use (orange only)
EN 61482-1-2:2007	Protection against the heat hazards of arc flash (Class 1 = 4 KA)
EN 61482-1-1:2009	Protection against the heat hazards of arc flash (ATPV = 16 cal/cm^2)
EN 11612:2015	Protection against Flames and heat (A1; A2; B1; C1; E3; F1)
EN 11611:2015	Clothing for welding and related applications (Class 2 – A1 + A2)
EN 14116:2015	Protection against heat and flame: Flammability (Index 3)
EN 13034:2005+A1:2009	Protective clothing against hazardous chemicals – Type 6 protection against light aerosol sprays (also tested to the EN 17491-4 test for Type 4 garments)
EN 343:2003 +A1:2007/AC:2009	Protection against Rain: (Water Penetration: Class 2 / Water vapour Resistance: Class 1)
EN 1149-5:2008	Anti-Static Clothing (Tested to EN 1149-3: Charge Decay)

070-UK-0720

Arc-X Rainwear Design & Features

Jacket - Design features

- Jacket length 79cm at front – 85cm at back
- Full length zipper front with hook & loop fastening storm flap
- Stand-up collar
- Wide hood with drawstring to fit easily over hard hat – can be neatly folded away in the collar
- Radio pocket on right breast with hook & loop fastening flap
- Front hanging clips left and right
- Side pockets with zipper closures and secured flap covers
- Hook & loop adjustable cuffs
- 2" silver reflective tape with 'H-Back' or 'X-Back' options

Pants - Design features

- Bib & brace style pants
- Attached braces with adjustable straps and quick-lock clips
- Two patch-pockets with flap covers and hook and loop fastenings
- Hook & loop front fastening for easy donning & doffing
- Adjustable hook & loop ankles

How do you select the correct Arc Flash garment?

There are three stages to selecting an arc flash garments

A. ASSESS	B. IDENTIFY	C. SELECT
Assess incident heat energy level	Identify appropriate Hazard Risk Category (HRC) or Arc Thermal Protective Value (ATPV) requirement	Select garment or garment combination with the correct minimum HRC or ATPV

A. ASSESS the incident heat energy level

The energy level released in an arc flash incident can be calculated according to the voltage in the circuit, the working distance from the terminal, the distance between the terminals and the related equipment class.

This should only be done by a qualified electrical engineer!

- Heat energy calculators are available on the internet
- US standard NFPA 70E identifies a method of calculating heat energy levels
- NFPA 70E also provides a list of standard tasks with associated heat energy levels and HRC

Heat energy levels are measured in Calories / cm^2

A 'Calorie' is a measurement of energy:
1 calorie is the energy required to
- raise the temperature of 1 gram of water
- through 1°C (defined as 4.1868 joules)

B. IDENTIFY the required ATPV or HRC

ATPV = Arc Thermal Protective Value

ATPV is the 'arc rating' - the identified heat energy level protection value of clothing designed for arc flash protection. Measured according to European test **EN 61482-1-1** OR **ASTM F1959.**

These tests measure the level of protection in cals/cm^2 based on 'the heat energy required to pass through the fabric resulting in 50% probability of a 2nd degree burn'

HRC = Hazard Risk Category

HRC is the identified classification of garments according to the ATPV measurement and defines four classes of garment:-

HRC 1	HRC 2	HRC 3	HRC 4
4	8	24	40
Hazard Risk Category (up to cals/cm^2)			

EN 61482-1-2 measures arc protection for low energy levels according to the 'arc-in-a-box' method. It identifies two classes of protection. This certification does NOT identify an ATPV and certified garments are suitable only for protection in low voltage situations.

EN 61482-1-2: Class 1 - Up to 4Ka

EN 61482-1-2: Class 2 - Up to 7Ka

C. SELECT Arc clothing with the minimum required HRC or APTV rating

Arc clothing should be labelled EITHER with an HRC classification or an ATPV rating.

EXAMPLE: If assessed Heat Energy Level in the incident is 23 cals/cm^2, the garments selected should be either:

HRC Class 3 (up to 24 cals/cm^2) OR An ATPV rating of AT LEAST 23 cals/cm^2

Layering of garments	Combinations of garments can be used to increase protection to the required level. Thus wearing 2 layers of clothing with an ATPV of 8 cals/cm^2 can be reasonably assumed to achieve an ATPV of at least 16 cals/cm^2.

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