

KINECTRICS

Leader in Testing, ISO/IEC 17025:2005



Test Performed for:

Westex by Milliken
122 West 22nd Steet
Oak Brook, IL 60523
773-523-7000

Garments provided by:

IDEAL WORK UNIFORMES e EPI's Ltda
Av. Joao de Goes 2335 Jardim Alvorada – Jandira
SP - Brazil CEP 06612-000

Garment Evaluation

Style 131 UltraSoft 6.5oz Navy Blue Balaclava

OBSERVATION OF WORK GARMENTS EXPOSED TO AN ELECTRIC ARC

ASTM F2621 - 12 Standard Practice for Determining Response Characteristics and Design Integrity of Arc Rated
Finished Products in an Electric Arc Exposure

Kinectrics Inc. Report No.: K-418839-53-R00

Item received: September 14, 2015

Test Date: September 16, 2015

Witnessed by:

Josh Moody, Westex Inc., Vice President - Technical Services

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Electric Arc Exposure Test Report

Test Description

The test standard requires that the finished garment be exposed to a level at least equal to the arc rating (ATPV or E_{bt}) of the fabric or system. The garment is placed on a FR fiberglass mannequin. The mannequin is placed on the test fixture at suitable location and distance as indicated in the test standard. Following the arc exposure, the garment is examined. Areas of particular interest are seams, integrity of the closure (buttons, Velcro® fastener or zipper), overlap of important areas, reflective trim if applied and the embroidery or logos or other accessories. The front area is examined for evidence of arc energy that may enter and expose the under-layers. A lightweight undergarment may be used to provide a heat sensitive indicator which is used to help in the evaluation of thermal energy through the closures or interface.

- Test Parameters: Arc Gap= 30.5 cm, Distance to the arc = 30.5 cm
- Arc current = 8 kA RMS

The following test data was recorded for each trial:

- Arc exposure electrical conditions: arc trial number, arc current, arc voltage, arc duration, energy dissipated in arc, incident energy
- Review of garment by qualified observer (see attached observation form)
- Photographs of garment before and after arc exposure
- Video of arc exposure

Results and Observations

The details of the garment and observations are attached on the following garment evaluation form. These were completed at the time of the test. The subjective evaluation of the garment is to document garment design or material response concerns that may lower the protection level of the fabric in an arc flash incident. The test observations are performed by a qualified observer that has knowledge of behavior of textiles in an arc exposure and in depth knowledge of arc testing specifications and requirements.

Quality Management

The arc testing performed to the above mentioned Standard is accredited by the Standards Council of Canada (SCC) to conform to the requirements of CAN-P-4E (ISO/IEC 17025:2005). Accreditation by the Standards Council of Canada (SCC) is a mark of competence and reliability recognized throughout the world.

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Note about this report:

- The test performed does not apply to electrical contact or electrical shock hazard
- The test result is applicable only to the test item described, other fiber blends, weaves, finishing or dye may have different protection level or response
- No test is done to validate the fiber content or composition of the test item

Garment Description

Test Standard:	ASTM F2621-12
Identification, model or style:	Style 131 UltraSoft 6.5oz Navy Blue Balaclava
Description:	NAVY BLUE BALACLAVA, ULTRASOFT STYLE 131, NOMINAL WEIGHT 220 G/M ² (6,5 OZ/YD ²), 88% COTTON / 12% NYLON, RIB KNIT, 1 LAYER
Manufacturer:	Ideal Work
Arc Rating of fabric:	EBT = 9.0 Cal/cm ² Kinectrics Report K-418488-2-2
Arc rating to be assigned to garment:	EBT = 9.0 Cal/cm ² Kinectrics Report K-418488-2-2
Number of Fabric Layers:	1
Laundered:	Washed in accordance with AATCC Method 135
Laundered By:	Ideal Work
Reflective Trim:	None
Other Trim or Accessories:	None
Pocket and location:	None
Closure:	None
Any non-FR Components:	None
Fabric Description: Style: 131 UltraSoft; Blend: 88% Cotton, 12% Nylon; Weave/Knit Type: Rib Knit; Color: Navy Blue; Nominal Weight: 6.5 oz/yd ² ; Weight as Tested: 11.65 oz/yd ² ;	



Photographs of Garments

Observations

General Garment	Shot #: 15-6103B	Shot #:	Shot #:
	Cal/cm ² 12.2	Cal/cm ²	Cal/cm ²
Break-open through the garment: <i>y/n & area</i>	N		
Number layers with ablation: <i># of ablation layers for multi layer</i>	0		
Afterflame (sec) and location:	0		
Ignition of any component: (Y/N)	N		
Melting & dripping: <i>y/n & area</i>	N		
Shrinkage: <i>None, slight, moderate or major</i>	Slight		
Closure			
Closure operable : <i>y/n</i>	N/A		
Failure of closure : <i>y/n & area</i>	N/A		
Indicator fabric			
Used in evaluation: (<i>y/n</i>)	N		
Indicator fabric description: <i>(ex 4.5 oz/yd² white 100% cotton)</i>	N/A		
Ignition: (<i>y/n</i>)	N/A		
Condition of indicator fabric:	N/A		
Summary			
Any observation of inconsistencies with the response of the fabric or concerns with the assembly of the garment. <u>Note:</u> See below for any deficiencies or concerns that may require changes to the garment assembly or design.	None		

General comments about observations or conditions of the garment. See following page for photos.

Based on the results and observations, there are no apparent inconsistencies with the response of the fabric or concerns with the integrity of the garment.

Photos of Garments Before and After Arc Exposure:

Before Arc Exposure



After Arc Exposure

