



Test Performed for
ArcWear.com
Louisville, KY 40223
www.ArcWear.com

Products provided by
Yates Gear Inc.
1608 Hartnell Ave #6
Redding, CA 96002
530-222-4606

FR Sunbrero, Part # 493505
Sun brim for Hardhat

OBSERVATION OF WORK PRODUCTS EXPOSED
TO AN ELECTRIC ARC

Kinectrics Inc. Report No.: K-418929-1609F01-R00

Item received: Sept 14, 2016

Test Date: Sept 14, 2016

Client representative: Hugh Hoagland _____
 ArcWear

Prepared by: Andrew Haines _____
 Technologist
 Kinectrics Inc

Approved by: Stephen Cress, P. Eng. _____
 Department Manager, DAM
 Transmission and Distribution Technologies
 Kinectrics Inc

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Electric Arc Exposure Test Report

Test Description

At the time of this test, there was no directly applicable test standard to cover arc testing of this item. It was decided after discussion between Kinectrics and ArcWear to adopt the general set-up used for ASTM F2621-12 to generate the arc. The purpose of this arc exposure test was to evaluate the FR Sunbrero for ignition when exposed to an electrical arc. The test items were installed on a head mannequin fixture and were exposed as in test set up ASTM F2178-12.

Results and Observations

The details of the product and observations are attached on the following product evaluation form. These were completed at the time of the test. The subjective evaluation of the product is to document product 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

Kinectrics' Quality Management System is registered to ISO 9001:2008 by QMI, a division of SAI Global and North America's leading QMS registrar. Adherence to this standard provides one of the strongest assurances of service quality available. As a minimum, all work at Kinectrics is performed to meet the requirements of ISO 9001:2008.

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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, other material or color may have a different response.
- It is assumed that the information supplied by the client was valid and complete at the time of testing.

Photograph(s) of product

Before test



After test



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Kinectrics w/o: K-418929-1609F01-R00
Kinectrics Test Station Operator: Andrew Haines

Test Setup	Setup per ASTM F2621-12 for ignition and melting only. No protective value.
Style, Model, Ref #	FR Sunbrero, Part # 493505
Description	Sun brim for hardhat
Manufacturer	Yates Gear Inc.
Fabric system rating	The materials are arc rated but not intended to be protective in this system.
Number fabric layers	2
Laundered	No
Reflective trim	N/A
Other trim/accessories	Label on brim
Pocket and location	None
Closure(s)	None
Any non-FR components	None
Product description	Yates Gear Inc., FR Sunbrero, Part # 493505, Adjustable BLK with TenCate Advance Fabric, Kevlar and Nomex, Ripstop Weave

Observations

General Observations	Shot # 16-4746-A	Shot # 16-4746-B	
Incident Energy, E_i :	25.0 cal/cm ²	21.7 cal/cm ²	
Break-open through the product (Y/N, area & size)	N	N	
Number layers with ablation (multi-layer only)	N	N	
Afterflame (seconds and location)	1	1	
Ignition of any component (Y/N)	N	N	
Melting and dripping (Y/N and area)	N	N	
Shrinkage (none, slight, moderate, major)	Slight	Slight	
Closure(s)			
Closure operable (Y/N)	N/A	N/A	
Failure of closure (Y/N)	N/A	N/A	
Indicator Fabric			
Used in evaluation (Y/N)	N	N	
Indicator Fabric Type	N/A	N/A	
Ignition (Y/N)	N/A	N/A	
General			
Comment	N/A	N/A	

Summary of Observations:

The product was constructed of arc rated material with flame resistant thread to provide shade from the sun on a worker's neck and face beyond the scope of a hard hat. As per the manufacturer's request, the aim of testing was to evaluate the material for arc flash ignition and to ensure there were no signs of other deleterious effects to the worker.

One test was completed on two separate FR Sunbreros. These items were exposed at 25.0 and 21.7 cal/cm² and showed no evidence of melting, dripping or ignition and exhibited afterflame times in the range of one second.