



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

Products provided by
Skellerup Industries Ltd.
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Christchurch 8140 New Zealand
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BOOT EVALUATION
Dielectric Safety Rubber Boot, Style 202210 - Quatro Dielectric

OBSERVATION OF WORK PRODUCTS EXPOSED
TO AN ELECTRIC ARC

Kinectrics Inc. Report No.: K-418921-1601T01-R03

Item Received: January 22, 2016

Test Date: January 22, 2016

Client representative: Hugh Hoagland
ArcWear

Prepared by: Andrew Haines
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Approved by: Stephen Cress, P. Eng
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Electric Arc Exposure Test Report

PRIVATE INFORMATION

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Test Description

The purpose of this test was to observe the response characteristics of a dielectric rubber safety boots when exposed to an open-air electric arc flash. The Quatro Dielectric Safety Rubber Boot was not manufactured with FR materials and does not have an arc rating. At the request of the Client, the goal was to evaluate the response of the rubber boot to 40 cal/cm² arc exposures. The test was designed to observe the material response and identify if the rubber boot would melt, drip or ignite.

In order to complete testing, the test laboratory used the test fixture described in *ASTM F2621-12 Standard Practice for Determining Response Characteristics and Design Integrity of Arc Rated Finished Products in an Electric Arc Exposure (alternatively, the IEC equivalent of IEC 61482-1-1 Method B)*. Although the products being evaluated do not strictly fall within the scope of this standard, the apparatus and procedure was adopted to suit the Client's requirements. The test procedure involves installing the finished product onto a secure platform with instrumented calorimeters on each side in order to evaluate the material response characteristics to an arc flash exposure.

- Test Parameters: Arc Gap= 12 inches (30.5 cm), Distance to the arc = 12 inches (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 product by qualified observer (see attached observation form)
- Photographs of garment before and after arc exposure
- Video recording of arc exposure

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

Before test



After test



Skellerup Industries Ltd.
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Date Received: January 22, 2016
Date Tested: January 22, 2016

Kinectrics w/o: K-418921-1601T01
Kinectrics Test Station Operator: Andrew Haines

Test Standard	N/A
Style, Model, Ref #	Style 202210 - Quatro Dielectric
Description	Dielectric Safety Rubber Boot
Manufacturer	Skellerup Industries Ltd.
Laundered	N/A
Reflective trim	None
Other trim/accessories	No
Any non-FR components	No component was certified to be flame resistant. NFPA 70E-205 requires DI shoes, EH shoes and recommends leather work shoes.
Product description	Skellerup Industries Ltd., Dielectric Safety Rubber Boot, Style 202210 - Quatro Dielectric, ArcWear# 1601T01

Observations

General product	Shot # 16-265A Front Exposure	Shot # 16-265B Side Exposure	Shot # 16-266A Front Exposure	Shot # 16-266B Side Exposure
		43.0 cal/cm ²	40.8 cal/cm ²	45.2 cal/cm ²
Break-open through the product (Y/N, area & size)	N	N	N	N
Number layers with ablation (multi-layer only)	N/A	N/A	N/A	N/A
Afterflame (seconds and location)	0	0	0	0
Ignition of any component (Y/N)	N	N	N	N
Melting and dripping (Y/N and area)	N	N	N	N
Shrinkage (none, slight, moderate, major)	None	None	None	None
Indicator Fabric				
Used in evaluation (Y/N)	Y	Y	Y	Y
Indicator Fabric Type	AR Fabric	AR Fabric	AR Fabric	AR FABRIC
Scorching (Y/N)	N	N	N	N
General				
Comment				

Summary of Observations:

Based on the results and observations of the shoe at the exposed level, the boot exhibited good overall performance and did not exhibit afterflame, melting, dripping or ignition during testing. Indicator clothing placed inside the boot showed no sign of energy transfer inside the boot.

NFPA 70E-2012 Section 130.7 (12) Exception No. 2 requires the employer to address multiple hazards while also addressing the arc flash hazard. These shoes are primarily shock protection, but based on this testing the shoes should not contribute to injury from an arc flash of up to 40 cal/cm² due to ignition, melting, dripping or energy transfer through the shoe rubber.