



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

Arc Protective Blanket Evaluation
Style B961-4x5 Single Layer Class E Fiber Glass

ASTM F2676 - 09 Standard Test Method for Determining the Protective
Performance of an Arc Protective Blanket for Electric Arc Hazards

Kinectrics Inc. Report No.: K-418710-1410B03-R00

Item received: September 12, 2014

Test Date: October 16, 2014

Client representative: Hugh Hoagland _____
ArcWear

Prepared by: Andrew Haines _____
Technologist, HCL
Kinectrics Inc.

Approved by: Claude Maurice _____
Laboratory Manager, HCL
Kinectrics Inc.

Kinectrics Inc. takes reasonable steps to ensure that all work performed shall meet the industry standards as set out in Kinectrics Inc.'s Quality Manual, and that all reports shall be reasonably free of errors, inaccuracies or omissions. KINETRICS INC. DOES NOT MAKE ANY WARRANTY OR REPRESENTATION WHATSOEVER, EXPRESS OR IMPLIED, WITH RESPECT TO THE MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY INFORMATION CONTAINED IN THIS REPORT OR THE RESPECTIVE WORKS OR SERVICES SUPPLIED OR PERFORMED BY KINETRICS INC. Kinectrics Inc. does not accept any liability for any damages, either directly, consequentially or otherwise, resulting from the use of this report.

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 characteristics or dye may have different protection level or material response.
- No test is done to validate the fiber content or composition of the test item.

Kinectrics Inc., 800 Kipling Avenue, Toronto, Ontario, Canada, M8Z 6C4
Tel: 416-207-6305, FAX: 416-207-5717

www.kinectrics.com

Electric Arc Exposure Test Report

Test Description

This test method is used to evaluate the ability of the arc protective blankets to withstand the effects of arc flash and arc blast in a configuration in which the blanket is hung or anchored near energized equipment. This test method is used to determine the performance of arc protective blankets in terms of maximum arc current level (kA) and breakopen threshold performance (kA*Cycles), BTP, the product of arc current level and arc duration.

Test Requirements

- The test standard requires that test specimens are exposed at three arc current levels to determine the test specimen's performance. A table summarizing arc current rating, test arc current levels and number of samples required is provided below:

Rated Arc Current I_{max} , kA	Test Arc Current Values, kA and No. of Samples		
15	15 (3)	10 (2)	5 (2)
25	25 (3)	15 (2)	5 (2)
40	40 (3)	25 (2)	5 (2)

- The arc protective blanket is considered arc rated if all seven test specimens withstand 10 cycles without breakopen at three different arc current levels.
- The attachment points shall hold the blanket specimen in place for duration of the arc.
- The attachment devices must remain functional.
- Melting and dripping is not permitted.
- Afterflame time for the blanket specimen or attachments exceeding 30 seconds shall cause the test specimen to fail.

Results and Observations

The following test data was recorded for each trial:

- Arc exposure electrical conditions: arc trial number, RMS arc current, arc voltage, arc duration, energy dissipated in arc, plots of arc current and arc voltage.
- Average incident energy from monitor sensors.
- Photographs of exposed samples before and after exposure.
- Video recording during and immediately after the exposure to record afterflame.
- Examination of the samples after the test for evidence of ignition, melting and dripping or any other material characteristic responses.

The test data and results required by the Standard are presented in the following pages. The observations are performed by a qualified observer that has knowledge of behavior of materials in an arc exposure and in-depth knowledge of arc testing specifications and requirements.

Test data is available for download from ArcWearOnline.com arc testing website. Test data is accessible only to and protected with (Company's) unique password.

Arc Protective Blanket Description:

Identification model or style:	Style B9612
Material Construction:	Class E Fiber Glass Two Layer, Plain Weave, Red
Number of Attachment Points:	18
Weight of Each Fabric Layer:	32 oz/yd ² over 40 oz/yd ²
Blanket Dimensions:	4 ft x 5 ft

Test Results and Observations:

**Maximum Arc Current, $I_{max} = 40 \text{ kA}$
Breakopen Threshold Performance, BTP = 509 kA*Cycles**

No variations to standard method noted.
Samples tested as received.

Trial Number	14-6767	14-6768	14-6769
Arc Current [kA]	38.50	40.27	40.18
Breakopen Threshold Performance, BTP [kA*cycles]	531	517	480
Blanket Remains Attached in Vertical Position	Yes	Yes	Yes
Afterflame [seconds]	16	0	14
Melting and Dripping	No	No	No
Average BTP for Arc Current Level [kA*cycles]	509		

Trial Number	14-6770	14-6771
Arc Current [kA]	26.65	25.78
Breakopen Threshold Performance, BTP [kA*cycles]	642	773
Blanket Remains Attached in Vertical Position	Yes	Yes
Afterflame [seconds]	0	26
Melting and Dripping	No	No
Average BTP for Arc Current Level [kA*cycles]	705	

Trial Number	14-6772	14-6773
Arc Current [kA]	5.32	5.33
Breakopen Threshold Performance, BTP [kA*cycles]	558	639
Blanket Remains Attached in Vertical Position	Yes	Yes
Afterflame [seconds]	9	20
Melting and Dripping	No	No
Average BTP for Arc Current Level [kA*cycles]	599	

Conclusions:

These Products Protective Blanket, Style Number B9612 has met the criteria of ASTM F2676-09. The test specimens were exposed to three different arc current levels and a total of seven test specimen withstood 10 cycles without breakopen. The samples exhibited afterflame duration of less than 30 seconds with no melting or dripping. As outlined by the standard, the highest of the three arc current levels withstood is assigned as Maximum Arc Current and the BTP Rating is the lowest of three average exposure values.

Photos of garments before and after arc exposure:

*Before Shot #14-6768 - 40 kA, 517 kA*Cycles*



*After Shot #14-6768 - 40 kA, 517 kA*Cycles*



*Before Shot #14-6771 - 25 kA, 773 kA*Cycles*



*After Shot #14-6771 - 25 kA, 773 kA*Cycles*



*Before Shot #14-6772 - 5 kA, 558 kA*Cycles*



*After Shot #14-6772 - 5 kA, 558 kA*Cycles*

