

Report # K-419995-10-R00

Samples Received:
Sep-07-17

Samples Tested:
Sep-08-17

Test Report

Kinectrics Inc., 800 Kipling Avenue, Unit 2
Toronto, Ontario, Canada
Tel: 416-207-6000, www.kinectrics.com



Tested for

Oberon
22 Logan Street
New Bedford, MA, 02740-7324
USA

Contact information for item tested:

Oberon
Jack Hirschmann
JHirschmann@oberoncompany.com
508-789-8983

Test item description

Oberon Company, Hood, True Color Grey 65;
Lens: Polycarbonate G2 Window, Grey;
Hard Hat: Oberon HC6P-WHT ABS Hard Cap, Type 1, Class C, G & E;
Fabric: (L1) Style 1016; Blend: 60% Para-Aramid, 40% Meta-Aramid; Color: Black; Weave/Knit: Twill; Nominal Weight: 5.0 oz/yd²; Weight as Tested: 5.4 oz/yd²; (L2/L3) Style 992Q; Blend: 61% Para-Aramid, 39% Meta-Aramid, Weave/Knit: Non-Woven quilted to twill, Color: Yellow; Nominal Weight: 7.5 oz/yd²; Weight as Tested: 11.0 oz/yd²;

FABRIC ARC RATING: ATPV = 76 cal/cm² Kinectrics Report K-419995-02-R00 August 28, 2017

Reference Standard

ASTM F2178-17
Standard Test Method for Determining the Arc Rating and Standard Specification for Eye or Face Protective Products

Test Parameters:

| | |
|---------------------------|--|
| Test current: 8 kA | Number of samples analysed: 20 |
| Arc Gap: 30 cm | |
| Distance to Fabric: 30 cm | Incident Energy Range: 62 to 114 cal/cm ² |

Hood System Arc Rating, ATPV = 76 Cal/cm²

Heat Attenuation Factor, HAF = 97%

**During testing the hood system received an arc rating that far exceeded the arc rating assigned to the hood fabric.
As a result, the hood system arc rating was assigned the arc rating of the value of the base hood fabric.**

**No variations to standard method noted.
Samples tested as received, samples not laundered.**

Test Summary

The Arc Rating of this material is intended for use as part of a flame resistant garment or system for workers exposed to electric arcs. The test result is applicable only to the test item as described; other fiber blends, weaves, finishing or dye may have different protection level. The test articles are tested as received; no test is done to validate the fiber content or composition. The Arc Rating was calculated based on the data obtained and analysed in accordance with the latest version of the applicable standards. The individual test sheets, graphs, photographs of the samples and video of every test are provided in digital format to the Client for review.

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: The test performed does not apply to electrical contact or electrical shock hazard.

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Prepared by:

Approved by:

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HCL Lead Technologist
Kinectrics Inc.

Andrew Haines
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Kinectrics Inc.

Note: For verification about results in this report, please forward copy of the report or inquiry to hcl@kinectrics.com

Date:
Sep-08-17

Determination of ATPV by performing logistic regression on the panel burn response as indicated in Summary



Report #
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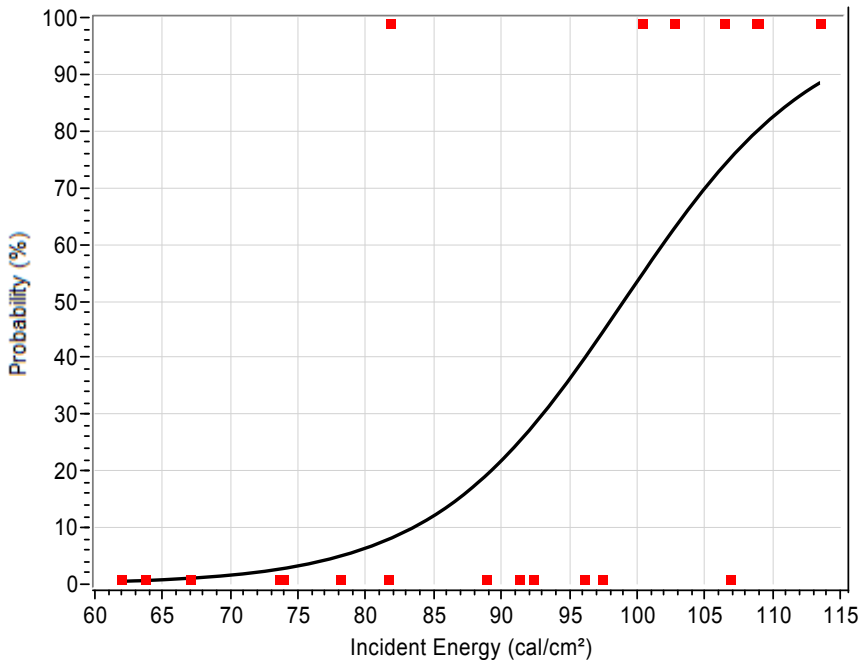
Table Test Performed in accordance with: ASTM F2178-17

Fabric Description:

Oberon Company, Hood, True Color Grey 65;
 Lens: Polycarbonate G2 Window, Grey;
 Hard Hat: Oberon HC6P-WHT ABS Hard Cap, Type 1, Class C, G & E;
 Fabric: (L1) Style 1016; Blend: 60% Para-Aramid, 40% Meta-Aramid; Color: Black; Weave/Knit: Twill; Nominal Weight: 5.0 oz/yd²; Weight as Tested: 5.4 oz/yd²; (L2/L3) Style 992Q; Blend: 61% Para-Aramid, 39% Meta-Aramid, Weave/Knit: Non-Woven quilted to twill, Color: Yellow; Nominal Weight: 7.5 oz/yd²; Weight as Tested: 11.0 oz/yd²;

Hood System Limited by Fabric Arc Rating, ATPV = 76 cal/cm²

Determination of ATPV



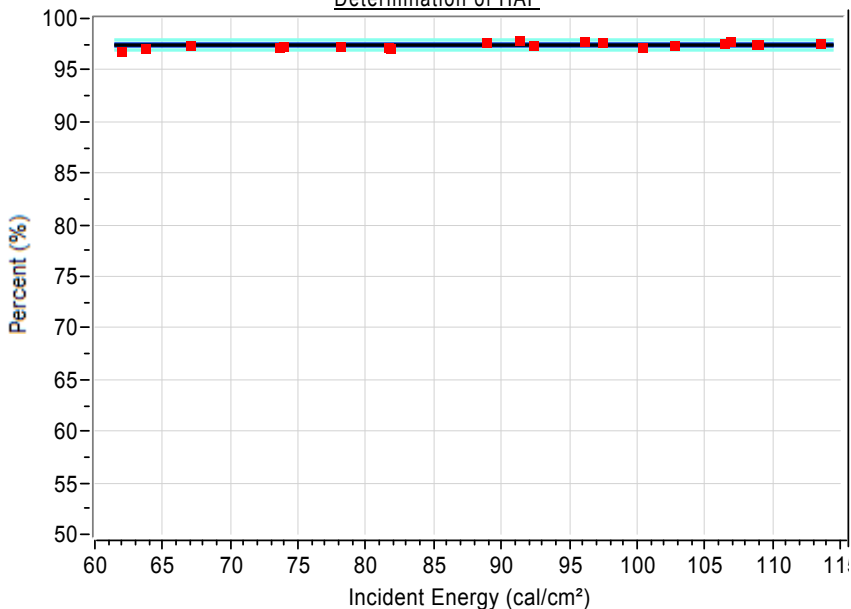
ATPV = 99 cal/cm²

| Probability | Ei |
|-------------|-------|
| 5% | 78.2 |
| 10% | 83.5 |
| 20% | 89.2 |
| 30% | 93.0 |
| 40% | 96.2 |
| 50% | 99.0 |
| 60% | 101.9 |
| 70% | 105.0 |
| 80% | 108.9 |
| 90% | 113.5 |

(Note: ATPV is reported to nearest integer for ratings above 10 cal/cm²)

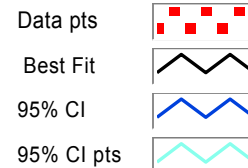
Total points analyzed = 20
Points above Stoll = 7
Points above mix zone = 3
Points below mix zone = 7
Pts within 20% = 14
Pts in mix zone = 10

Determination of HAF



HAF = 97 %

Confidence Intervals
 95% CI = 96.9 , 97.1



Date:
Sep-08-17

Summary of Measured Energy and Observations



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 FABRIC ARC RATING: ATPV = 76 cal/cm² Kinectrics Report K-419995-02-R00 August 28, 2017

| Test # | Panel | Test Current A | Cycles of 60Hz | Ei Cal/cm ² | SCD Cal/cm ² | HAF % | >Stoll Y/N | Break Open Y/N | Ablation Y/N | After Flame sec. | Omit Y/N | Comment | |
|--------|---------------|----------------|----------------|------------------------|-------------------------|-------|------------|----------------|--------------|------------------|----------|---------|---|
| 1 | K-419995-5198 | A | 8033 | 86.2 | 61.9 | -0.3 | 96.8 | No | - | - | 3.5 | No | |
| 2 | K-419995-5198 | B | 8033 | 86.2 | 63.7 | -0.2 | 97.1 | No | - | - | 3.5 | No | |
| 3 | K-419995-5199 | A | 7989 | 105.3 | 81.8 | 0.0 | 97.1 | Yes | - | - | 3.5 | No | Exceeded Stoll curve on RE sensor |
| 4 | K-419995-5199 | B | 7989 | 105.3 | 78.1 | -0.2 | 97.3 | No | - | - | 3.5 | No | |
| 5 | K-419995-5200 | A | 8002 | 115.3 | 92.3 | -0.1 | 97.4 | No | - | - | 4 | No | |
| 6 | K-419995-5200 | B | 8002 | 115.3 | 88.9 | -0.3 | 97.7 | No | - | - | 3 | No | |
| 7 | K-419995-5201 | A | 7991 | 135.4 | 108.9 | 0.5 | 97.5 | Yes | - | - | 3.5 | No | Exceeded Stoll curve on ALL sensors |
| 8 | K-419995-5201 | B | 7991 | 135.4 | 100.4 | 0.6 | 97.2 | Yes | - | - | 5 | No | Exceeded Stoll curve on MO sensor |
| 9 | K-419995-5202 | A | 7975 | 135.3 | 108.8 | 0.1 | 97.5 | Yes | - | - | 3.5 | No | Exceeded Stoll curve on RE sensor |
| 10 | K-419995-5202 | B | 7975 | 135.3 | 106.9 | -0.2 | 97.8 | No | - | - | 4.5 | No | |
| 11 | K-419995-5203 | A | 7963 | 130.2 | 102.7 | 0.1 | 97.4 | Yes | - | - | 4.5 | No | Exceeded Stoll curve on RE and MO sensors |
| 12 | K-419995-5203 | B | 7963 | 130.2 | 97.4 | -0.2 | 97.7 | No | - | - | 4.5 | No | |
| 13 | K-419995-5204 | A | 7970 | 140.3 | 106.4 | 0.1 | 97.6 | Yes | - | - | 5 | No | Exceeded Stoll curve on CH sensors |
| 14 | K-419995-5204 | B | 7970 | 140.3 | 113.5 | 0.1 | 97.6 | Yes | - | - | 5.5 | No | Exceeded Stoll curve on RE and CH sensors |
| 15 | K-419995-5205 | A | 7973 | 120.2 | 91.3 | -0.2 | 97.9 | No | - | - | 3.5 | No | |
| 16 | K-419995-5205 | B | 7973 | 120.2 | 96.1 | -0.4 | 97.8 | No | - | - | 3.5 | No | |
| 17 | K-419995-5206 | A | 8014 | 100.2 | 73.6 | -0.2 | 97.2 | No | - | - | 2.5 | No | |
| 18 | K-419995-5206 | B | 8014 | 100.2 | 81.6 | -0.1 | 97.2 | No | - | - | 40 | No | |
| 19 | K-419995-5207 | A | 7999 | 95.2 | 67.0 | -0.4 | 97.4 | No | - | - | 3 | No | |
| 20 | K-419995-5207 | B | 7999 | 95.2 | 73.9 | -0.4 | 97.3 | No | - | - | 3.5 | No | |
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20 samples exhibited afterflame during testing with an average duration of 5.6 seconds. No evidence of breakopen, melting, dripping or ignition of any of the samples tested.