

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

Products provided by
EMD Chemicals Inc.
One International Plaza Suite 300
Philadelphia, PA 19113
888-367-3275

PRODUCT EVALUATION
10% IR3535 Insect Repellent Lotion , EPA Approved Formulation,
Number 70759-2, applied to Milliken Amplitude, 7.0 oz/yd² Twill,
88% Cotton 12% Nylon,
Navy, AAD 7.7 oz/yd²,

OBSERVATION OF WORK PRODUCTS EXPOSED
TO AN ELECTRIC ARC

Comparison of ASTM F1959-15 on Wet, Dry and Fabric with Material Tested

Kinectrics Inc. Report No.: K-418811-1508Ps20-R00

Item received: November 17, 2015

Test Date: November 17, 2015

Approved by: Hugh Hoagland
ArcWear



Electric Arc Exposure Test Report

Test Description

The standard was used to estimate the rating reduction and to evaluate the material on a fabric for contributing to injury and potential ignition.

PRIVATE INFORMATION

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

- 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 and transmitted energy to the panel sensors.
- Photographs of product before and after arc exposure.
- Video of arc exposure.

Quality Management

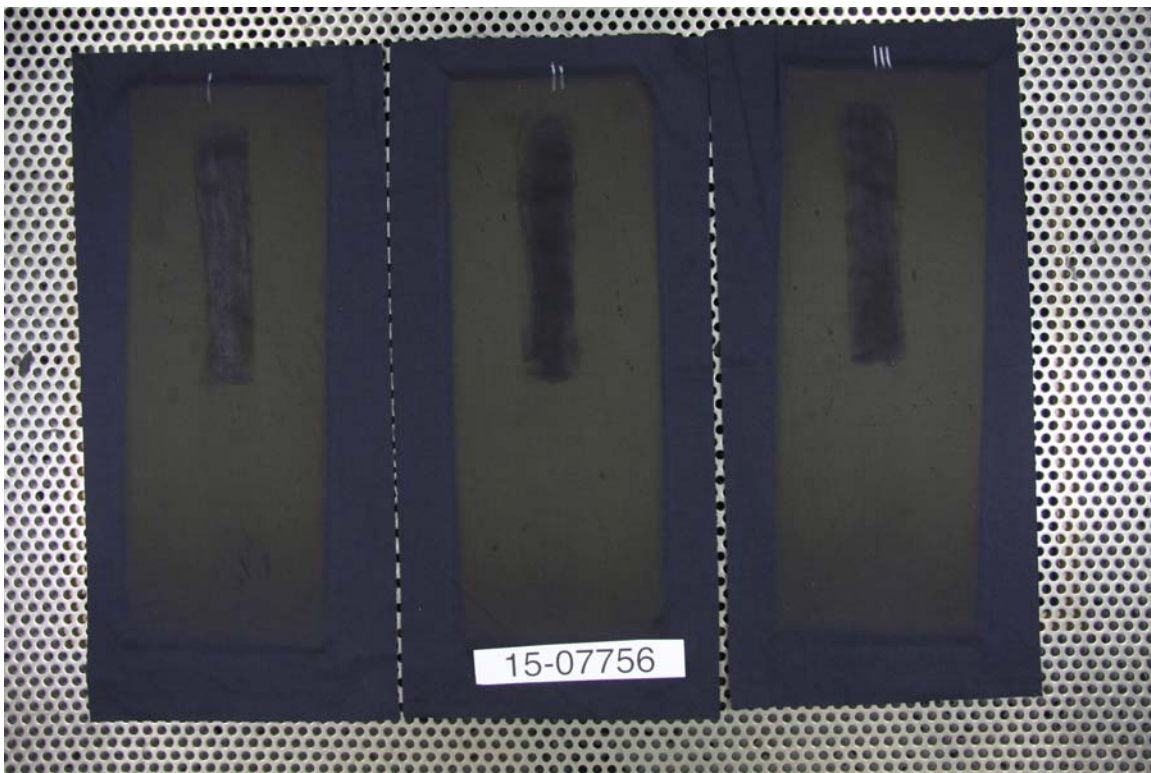
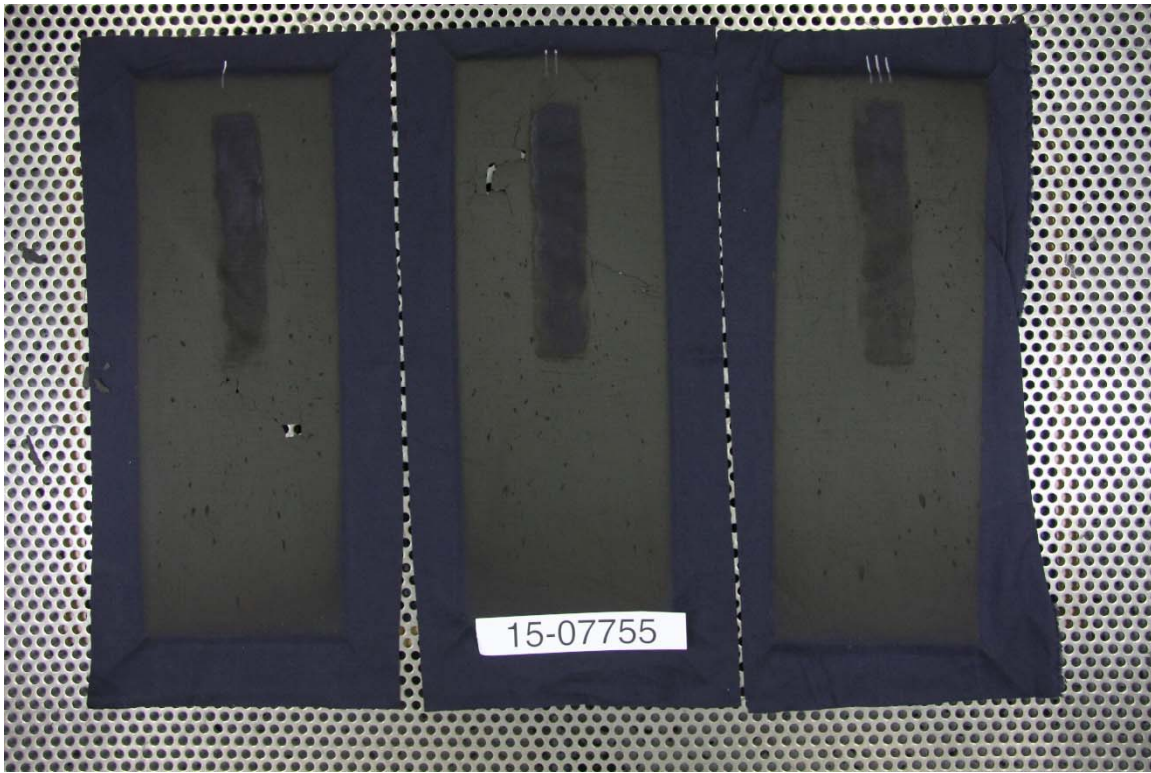
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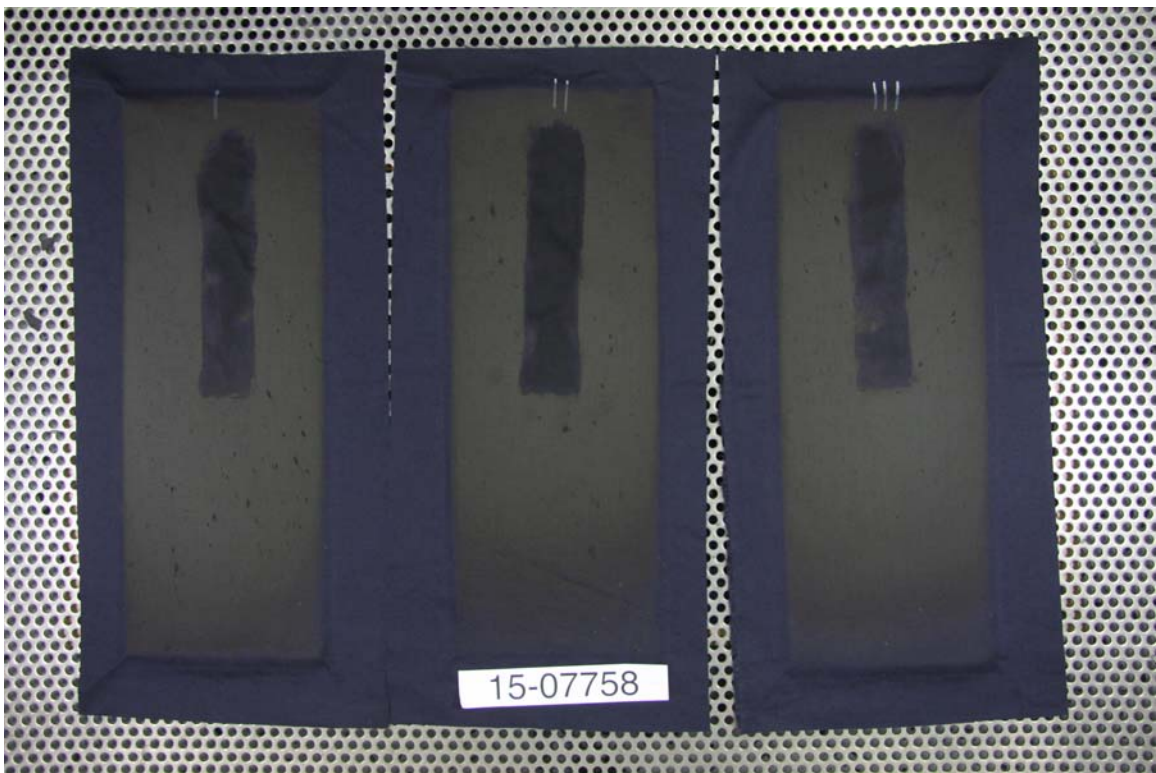
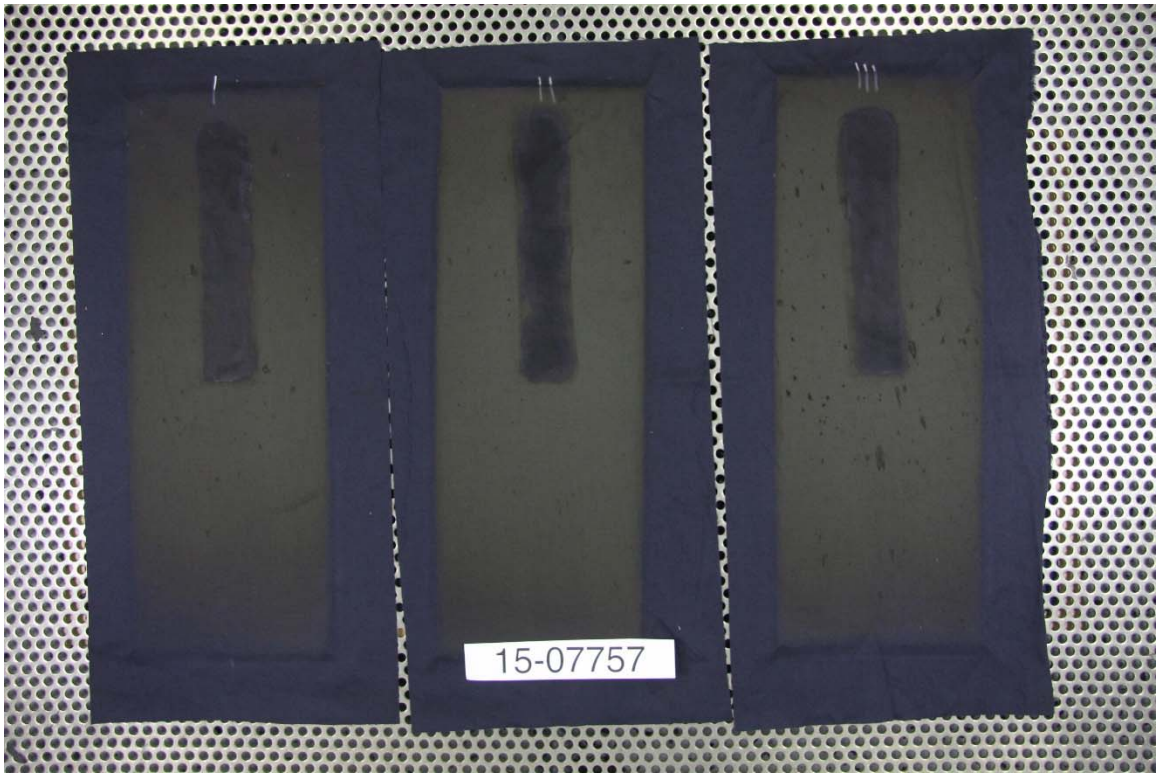
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Note about this report

- 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.
- The findings of this report are based on the current test method as described in the Reference Standard
- It is assumed that the information supplied by the client was valid and complete

Photograph(s) of product





EMD Chemicals Inc.
One International Plaza Suite 300
Philadelphia, PA 19113
888-367-3275

Date Received: November 17, 2015
Date Tested: November 17, 2015

Kinectrics w/o: K-418811-1508Ps20
Kinectrics Test Station Operator: Andrew Haines

Test Standard	F1959-2015
Product description	EMD Chemicals Inc., 10% IR3535 Insect Repellent Lotion , EPA Approved Formulation, Number 70759-2, applied to Milliken Amplitude, 7.0 oz/yd ² Twill, 88% Cotton 12% Nylon, Navy, AAD 7.7 oz/yd ² , ArcWear# 1508P20
Tested on Fabric	
Description	Tested on Milliken Amplitude, 7.0 oz/yd ² Twill, 88% Cotton 12% Nylon, Navy, AAD 7.7 oz/yd ²
Fabric system rating (Dry)	Arc Rating (ATPV) = 9.3 cal/cm ²
Fabric system rating (Wet)	Arc Rating (ATPV) = 12 cal/cm ²
Fabric system rating (with Insect Repellent Listed)	Arc Rating (ATPV) ~ 8.0 cal/cm ²

Results:

EMD Chemicals Inc., 10% IR3535 Insect Repellent Lotion, EPA Approved Formulation, Number 70759-2, applied to Milliken Amplitude, 7.0 oz/yd² Twill, 88% Cotton 12% Nylon, Navy, AAD 7.7 oz/yd², ArcWear# 1508P20 and tested did not affect the rating of the fabric below the rating of Arc Category 2 there was also no ignition of the material in any test shot and no afterflame time was recorded from the material.


The lotion should be no more deleterious than other common liquids on an Arc Rated fabric.

Date:
Nov-18-15

Report #
K-418811-1511P01-R00

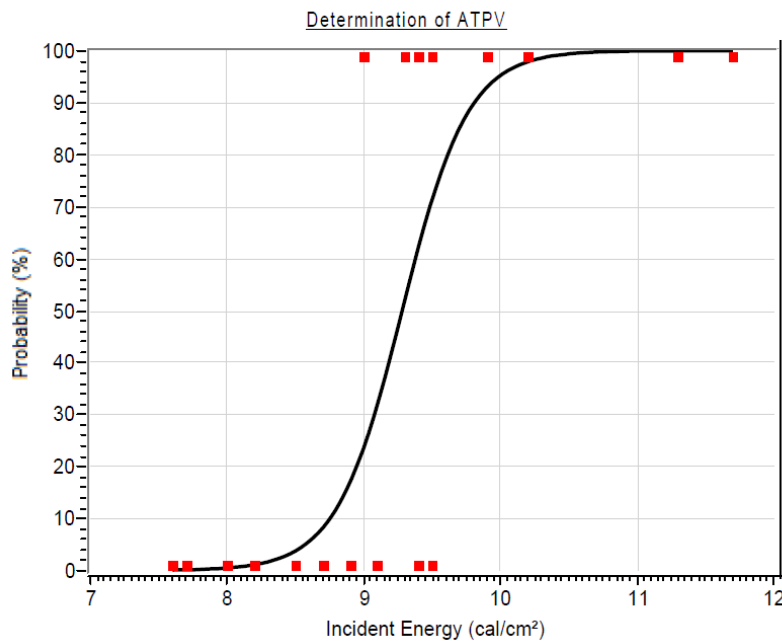
Determination of ATPV by performing logistic regression on the panel burn response as indicated in Summary Table

Test Performed in accordance with: ASTM F1959/F1959M-14



Fabric Description:

ArcWear, Mfg. Milliken,
Style Amplitude, 7.0 oz/yd² 237 g/m² Twill (AATCC 3 wash),
88% Cotton 12% Nylon, Navy,
AAD 7.7 oz/yd² 261 g/m²,
ArcWear# 1511P01

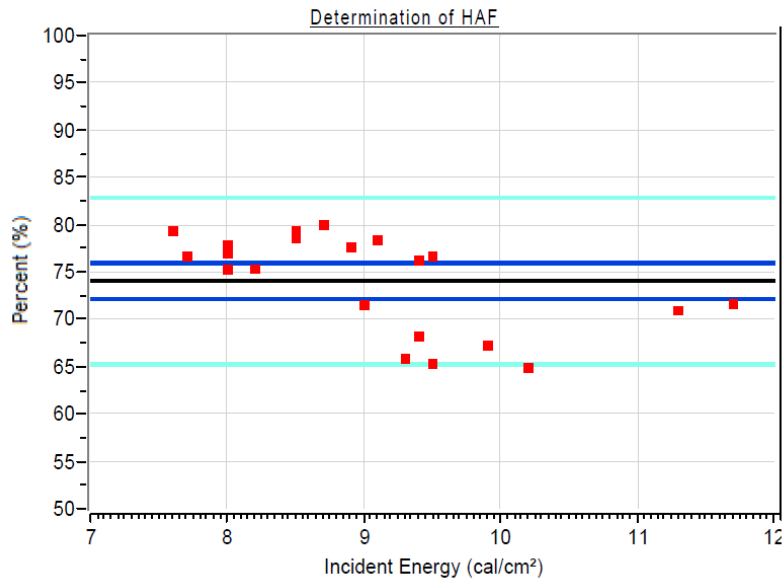


ATPV = 9.3 cal/cm²

Probability	E _i
5%	8.6
10%	8.8
20%	8.9
30%	9.1
40%	9.2
50%	9.3
60%	9.4
70%	9.5
80%	9.6
90%	9.8


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


Total points analyzed = 21
Points above Stoll = 8
Points above mix zone = 5
Points below mix zone = 10
Pts within 20% = 19
Pts in mix zone = 5





HAF = 74 %

Confidence Intervals
 95% CI = 72.1 , 75.9

Data pts 

Best Fit 

95% CI 

95% CI pts 

Date:
Nov-18-15

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

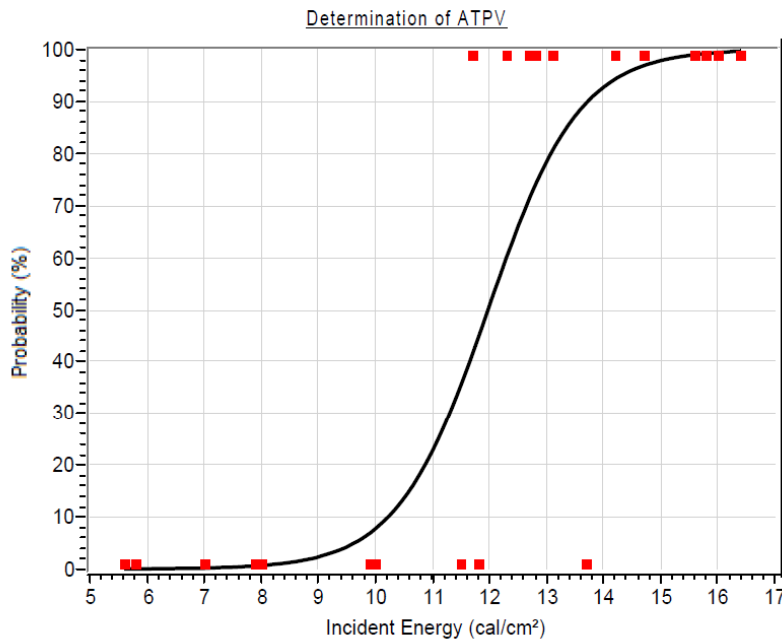
Report #
K-418811-1511P25-R00

Test Performed in accordance with: ASTM F1959/F1959M-14



Fabric Description:

ArcWear, Mfg. Milliken,
Style Amplitude (Tested Wet), 7.0 oz/yd² 237 g/m² Twill,
88% Cotton 12% Nylon, Navy,
AAD 7.7 oz/yd² 261 g/m²,
ArcWear# 1511P25

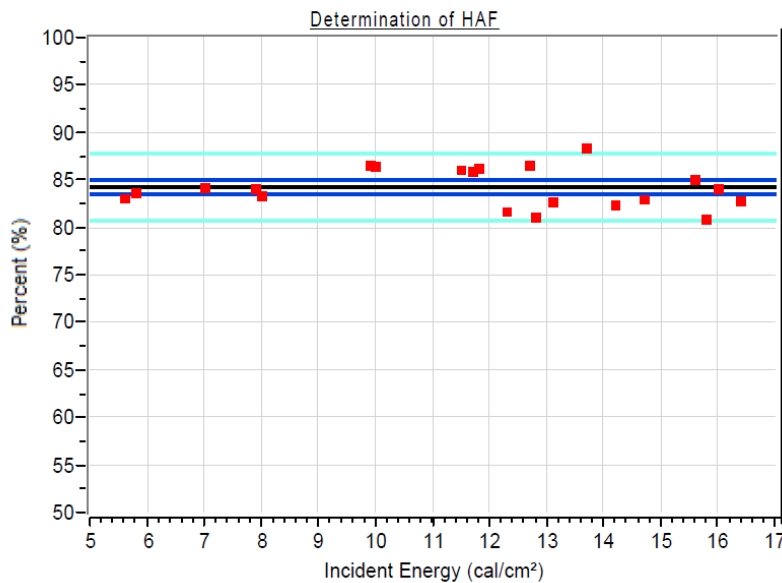


ATPV = 12 cal/cm²

Probability	E _i
5%	9.6
10%	10.2
20%	10.9
30%	11.3
40%	11.7
50%	12.0
60%	12.3
70%	12.7
80%	13.1
90%	13.7

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

Total points analyzed = 21
 Points above Stoll = 11
 Points above mix zone = 6
 Points below mix zone = 8
 # Pts within 20% = 11
 # Pts in mix zone = 7



HAF = 84 %

Confidence Intervals
 95% CI = 83.2 , 84.8

Data pts

Best Fit

95% CI

95% CI pts

Date:
Nov-18-15

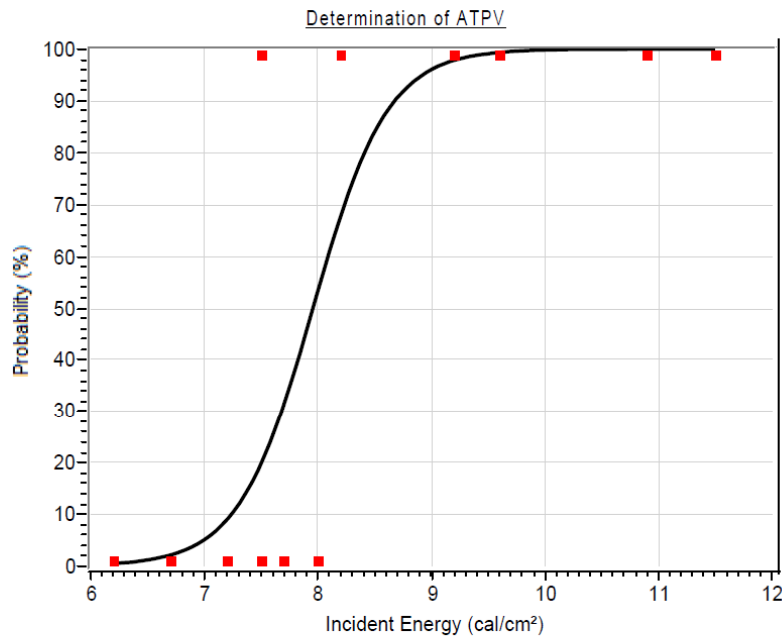
Report #
K-418811-1508Ps20-R00

Determination of ATPV by performing logistic regression on the panel
burn response as indicated in Summary Table
Test Performed in accordance with: ASTM F1959/F1959M-14



Fabric Description:

EMD Chemicals Inc., 10% IR3535 Insect Repellent Lotion , EPA Approved Formulation, Number 70759-2, applied to Milliken Amplitude, 7.0 oz/yd² Twill, 88% Cotton 12% Nylon, Navy, AAD 7.7 oz/yd², ArcWear# 1508P20

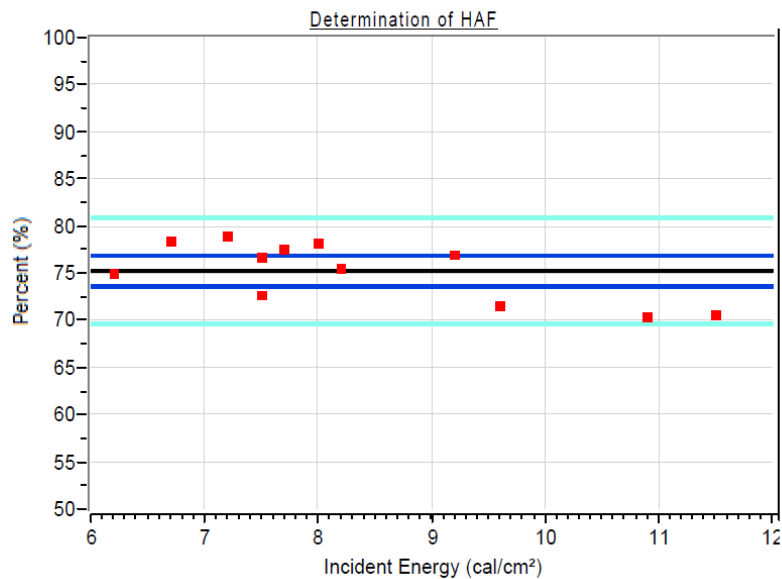


ATPV = 8.0 cal/cm²

Probability	Ei
5%	7.0
10%	7.2
20%	7.5
30%	7.7
40%	7.8
50%	8.0
60%	8.1
70%	8.2
80%	8.4
90%	8.7

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

Total points analyzed = 12
Points above Stoll = 6
Points above mix zone = 5
Points below mix zone = 3
Pts within 20% = 8
Pts in mix zone = 4




HAF = 75 %
 Confidence Intervals
 95% CI = 73.4 , 76.6

Data pts

Best Fit

95% CI

95% CI pts

Date: Nov-18-15 Report # K-418811-1508Ps20-R00	Summary of Measured Energy and Observations Test Performed in accordance with : ASTM F1959/F1959M-14	
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Fabric Description: EMD Chemicals Inc., 10% IR3535 Insect Repellent Lotion , EPA Approved Formulation, Number 70759-2, applied to Milliken Amplitude, 7.0 oz/yd² Twill, 88% Cotton 12% Nylon, Navy, AAD 7.7 oz/yd², ArcWear# 1508P20

Test #	Panel	Test Current A	Cycles of 50Hz	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-418811-7755	A	8355	12.2	9.6	0.8	71.6	Yes	-	-	-	No
2	K-418811-7755	B	8355	12.2	10.9	1.4	70.4	Yes	-	-	-	No
3	K-418811-7755	C	8355	12.2	11.5	1.5	70.6	Yes	-	-	-	No
4	K-418811-7756	A	8436	8.2	7.5	0.2	72.7	Yes	-	-	-	No
5	K-418811-7756	B	8436	8.2	6.7	-0.5	78.4	No	-	-	-	No
6	K-418811-7756	C	8436	8.2	8.0	-0.2	78.2	No	-	-	-	No
7	K-418811-7757	A	8431	8.7	6.2	-0.4	75.0	No	-	-	-	No
8	K-418811-7757	B	8431	8.7	7.5	-0.2	76.7	No	-	-	-	No
9	K-418811-7757	C	8431	8.7	7.7	-0.5	77.6	No	-	-	-	No
10	K-418811-7758	A	8420	9.7	9.2	0.1	77.0	Yes	-	-	-	No
11	K-418811-7758	B	8420	9.7	7.2	-0.5	79.0	No	-	-	-	No
12	K-418811-7758	C	8420	9.7	8.2	0.0	75.5	Yes	-	-	-	No
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Fabric panels were pretreated with insect repellent lotion applied to 2"x10" sections directly over the panel sensors. No evidence of ignition or afterflame during testing.