

Date:
September 27, 2005

Report #
K-422637-02

High Current Test Laboratory
Kinectrics Inc., Canada
Test Summary



Client

Protective Textile Solutions
Orangeville, Ontario

Fabric description

11.8 oz/yd² CarbonX™ C11 Twill, black

Reference Standard

ASTM F1959/F1959M-04 Standard Test Method for Determining the Arc Rating of Materials for Clothing

Test Parameters:

Test current: 7.98kA

Number of samples analysed: 24

Distance to Fabric: 12

Incident Energy Range: 12 to 18 cal/cm²

Arc Gap: 12

Summary

The arc rating of this material is intended for use as flame resistant clothing for workers exposed to electric arcs. The material used in this test method are in the form of flat specimens, actual performance of the complete garment may vary depending on the final design and assembly of the garment. This test method does not apply to the electrical contact or electrical shock hazard.

Based on the data obtained and analysed in accordance with the latest version of the applicable standards, the following Arc Rating was calculated.

Arc Thermal Performance Value, ATPV = 14.9 Cal/cm²
Heat Attenuation Factor, HAF = 80.8%

Panel data and observations of the fabric samples after the arc exposure were collected and summarized in the attached table. The graphs and statistics on the attached sheets provide more detailed information to better understand the Arc Rating assigned to this material. The client shall review this full report, the video recordings of the arc exposure and the photographs of the samples after the test to determine if the material meets the intended specification.

Test performed by:

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Contact information

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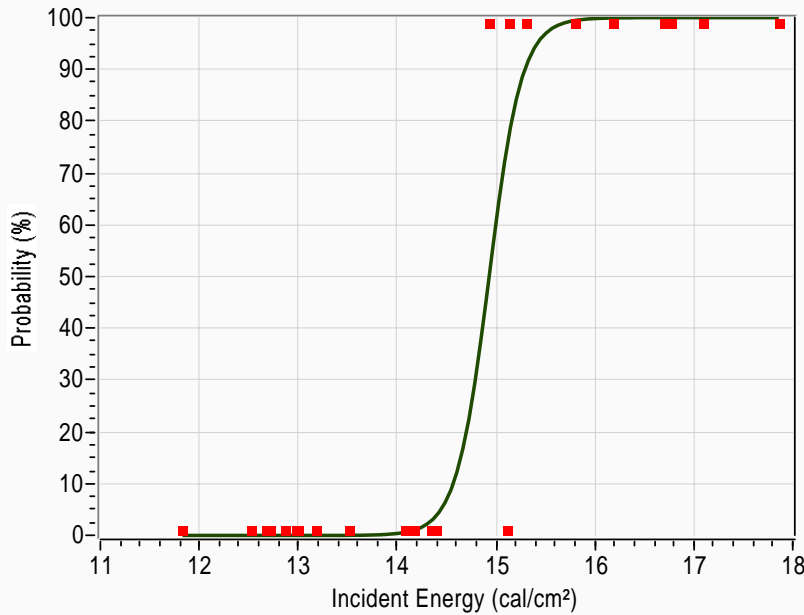
ASTM F1959/F1959M-04
Standard Test Method for Determining the Arc Rating of Materials for Clothing



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 Orangeville, Ontario

Fabric Description: 11.8 oz/yd² CarbonX™ C11 Twill, black

Determination of ATPV, 50% Probability of 2nd Degree Burn

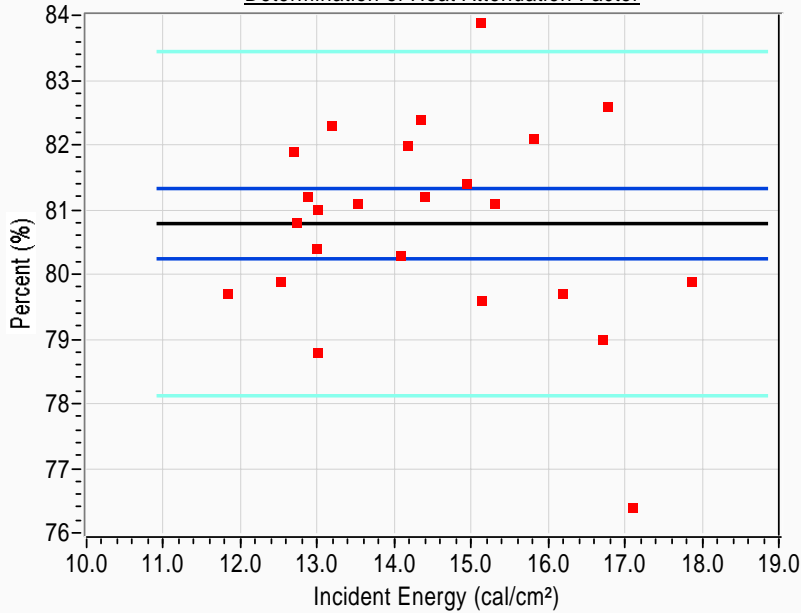


ATPV = 14.9 cal/cm²

Probability of Burn	Ei
5%	14.4
10%	14.6
20%	14.7
30%	14.8
40%	14.9
50%	14.9
60%	15.0
70%	15.1
80%	15.2
90%	15.3

Pts = 24
 # Pts above Stoll = 9
 # Pts Break-Open = 0
 # Pts always >STOLL = 8
 # Pts always <STOLL = 14
 # Pts within 20% = 23
 # Pts in mix zone = 2

Determination of Heat Attenuation Factor



HAF = 80.8 %

Confidence Intervals
 95% CI = 80.2 , 81.3

Data pts
 Best Fit
 95% CI
 95% CI pts

ASTM F1959/F1959M-04
Standard Test Method for Determining the Arc Rating of Materials for



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Test #	Panel	Cycles # (60Hz)	Ei cal/cm ²	SCD cal/cm ²	HAF %	Burn yes/no	Break Open Y/N	After Flame sec.	Omit Y/N	Comment	Ignition T-shirt	
1	05-2958	A	18.2	17.09	1.15	76.4	Yes	-	none	No	Surface charred, back not discoloured, not brittle or weak	
2	05-2958	B	18.2	16.70	0.58	79.0	Yes	-	-	No	"	
3	05-2958	C	18.2	17.86	0.73	79.9	Yes	-	-	No	"	
4	05-2959	A	16.2	15.13	0.15	79.6	Yes	-	-	No	"	
5	05-2959	B	16.2	13.51	-0.21	81.1	No	-	-	No	"	
6	05-2959	C	16.2	15.80	0.04	82.1	Yes	-	-	No	"	
7	05-2960	A	14.2	12.52	-0.28	79.9	No	-	-	No	Surface charred, back not discoloured, not brittle or weak	
8	05-2960	B	14.2	12.68	-0.45	81.9	No	-	-	No	"	
9	05-2960	C	14.2	12.87	-0.27	81.2	No	-	-	No	"	
10	05-2961	A	15.2	12.99	-0.07	78.8	No	-	-	No	"	
11	05-2961	B	15.2	11.83	-0.28	79.7	No	-	-	No	"	
12	05-2961	C	15.2	13.00	-0.27	81.0	No	-	-	No	"	
13	05-2962	A	16.2	15.30	0.08	81.1	Yes	-	-	No	"	
14	05-2962	B	16.2	14.08	-0.07	80.3	No	-	-	No	"	
15	05-2962	C	16.2	12.98	-0.26	80.4	No	-	-	No	"	
16	05-2963	A	16.2	16.77	0.15	82.6	Yes	-	-	No	"	
17	05-2963	B	16.2	12.72	-0.22	80.8	No	-	-	No	"	
18	05-2963	C	16.2	13.18	-0.38	82.3	No	-	-	No	"	
19	05-2964	A	16.2	16.18	0.44	79.7	Yes	-	-	No	"	
20	05-2964	B	16.2	15.11	-0.29	83.9	No	-	-	No	"	
21	05-2964	C	16.2	14.39	-0.11	81.2	No	-	-	No	"	
22	05-2965	A	16.2	14.93	0.06	81.4	Yes	-	-	No	"	
23	05-2965	B	16.2	14.34	-0.15	82.4	No	-	-	No	"	
24	05-2965	C	16.2	14.17	-0.12	82.0	No	-	-	No	"	
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