

Report # K-352101-01-R01

Test Report

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



Samples Received:
Aug-13-18

Samples Tested:
Aug-17-18

Tested for

Norfab Corp.
1032 Stanbridge Street
Norristown, PA 19401
USA

Contact information for item tested:

Harish Lilani
1032 Stanbridge Street
Norristown, PA 19401
(Ph) (610) 805-6100

Test item description

4 Layer System, Ensemble 1, Style NF OS #10TT342-Br over NF #8TT298 over Thermal Liner 11NFC4MA1 or PB1
(L1) Norfab Corp., Style NF OS #10TT342-Br (or (HVYL)), 9.7 oz/yd² Twill,
60% Lenzing FR, 40% Para-Aramid, Brown, Pre-wash Weight: 10.2 oz/yd²; Weight as Tested: 11 oz/yd²;
(L2) Norfab Corp., Style NF #8TT298, 8.0 oz/yd² Twill, 100% Twaron, Yellow,
Pre-wash Weight: 7.80 oz/yd²; Weight as Tested: 8.6 oz/yd²;
(L3) SXHCO or NORAFIN, Style NF #11NFC4MA1 or PB1, 7.2 oz/yd²,
80% Meta-Aramid, 20% Para-Aramid, Yellow, Pre-wash Weight: 7.4 oz/yd²; Weight as Tested: 7.8 oz/yd²;
(L4) MILLIKEN or WUXI, Style NF Face Fabric # MA1 or PB1, 3.2 oz/yd² Plain Weave,
93% M-Aramid, 5% P-Aramid, 2% Antistat, Light Blue, Pre-wash Weight: 3.2 oz/yd²; Weight as Tested: 3.4 oz/yd²;

Reference Standard

IEC 61482-1-1:2009 Method A, ASTM F1959/F1959M-14e1
Complying with both IEC and ASTM Standard Test Method for Determining the Arc Rating of Materials for Clothing

Test Parameters:

Test current: 8 kA
Arc Gap: 30 cm
Distance to Fabric: 30 cm

Number of samples analysed: 21
Incident Energy Range: 72 to 110 cal/cm²

Arc Rating, ATPV = 100 Cal/cm²
Heat Attenuation Factor, HAF = 98%

Due to the limitations of the test apparatus, some systems having a rating above 100 cal/cm² may not be completed by standard logistic regression. For this reason, systems having a predicted Arc Rating of 100 cal/cm² or greater are assigned a base Arc Rating of 100 cal/cm². No variations to standard method noted.

Rev. 01 - Added manufacturer details for L3 and L4 and changed Style name of L4 from
"NF TL #6NFC1MA1 or PB1" as per Client's request due to typographical error on Nov. 1, 2018.
Samples tested as received, pre-test laundering as required by standard was arranged by client.

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.

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. KINECTRICS 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 KINECTRICS INC. Kinectrics Inc. does not accept any liability for any damages, either directly, consequentially or otherwise resulting from the use of this report.

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

©Kinectrics. Partial reproduction of this report is strictly prohibited without the express written consent of Kinectrics Inc.

Prepared by:

Digitally signed by
Yosbani Guerra
Date: 2018.11.07
13:30:53 -05'00'

Yosbani Guerra
HCL Technologist
Kinectrics Inc.

Approved by:

Andrew Haines
2018.11.07
13:38:19 -05'00'

Andrew Haines
HCL Supervising Technologist
Kinectrics Inc.

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

Date:
Aug-17-18

Report #
K-352101-01-R01

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

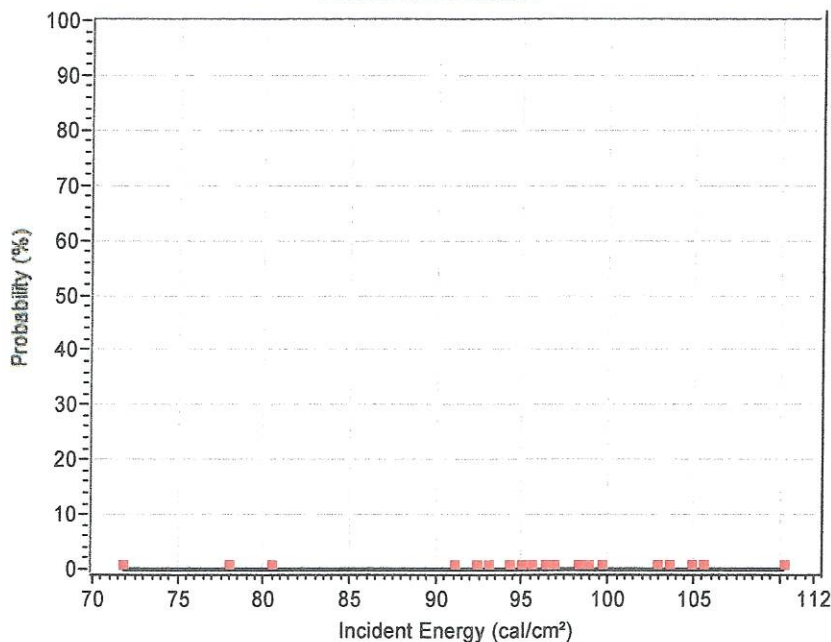
Test Performed in accordance with: IEC 61482-1-1:2009 Method A,
ASTM F1959/F1959M-14e1



Fabric Description:

4 Layer System, Ensemble 1, Style NF OS #10TT342-Br over NF #8TT298 over Thermal Liner 11NFC4MA1 or PB1
(L1) Norfab Corp., Style NF OS #10TT342-Br (or (HVYL)), 9.7 oz/yd² Twill,
60% Lenzing FR, 40% Para-Aramid, Brown, Pre-wash Weight: 10.2 oz/yd²; Weight as Tested: 11 oz/yd²;
(L2) Norfab Corp., Style NF #8TT298, 8.0 oz/yd² Twill, 100% Twaron, Yellow, Pre-wash Weight: 7.80 oz/yd²; Weight as Tested: 8.6 oz/yd²;
(L3) SXHCO or NORAFIN, Style NF #11NFC4MA1 or PB1, 7.2 oz/yd²,
80% Meta-Aramid, 20% Para-Aramid, Yellow, Pre-wash Weight: 7.4 oz/yd²; Weight as Tested: 7.8 oz/yd²;
(L4) MILLIKEN or WUXI, Style NF Face Fabric # MA1 or PB1, 3.2 oz/yd² Plain Weave,
93% M-Aramid, 5% P-Aramid, 2% Antistat, Light Blue, Pre-wash Weight: 3.2 oz/yd²; Weight as Tested: 3.4 oz/yd²;

Determination of ATPV

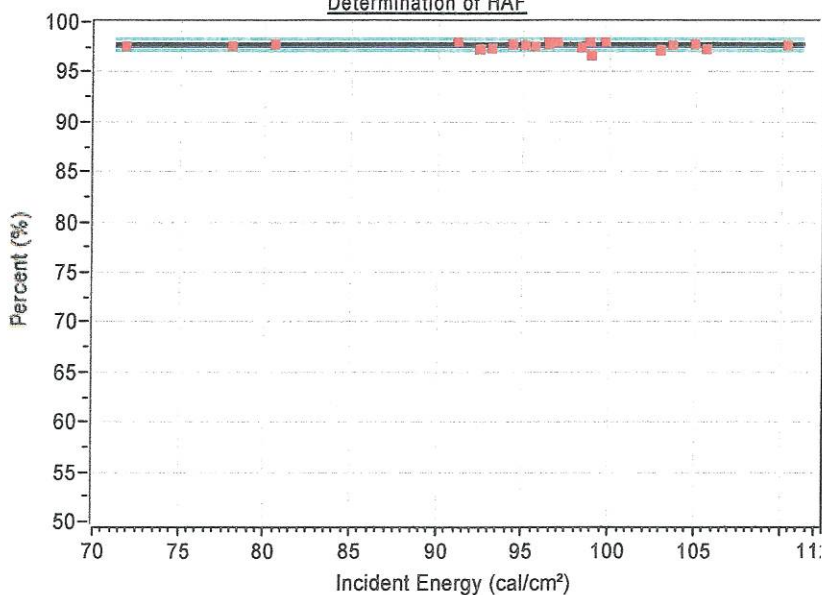


**Fabric System Arc Rating
Limited by Apparatus**

ATPV = 100 cal/cm²





Total points analyzed = 21
Points above Stoll = 0
Points above mix zone = 0
Points below mix zone = 0
Pts within 20% = 0
Pts in mix zone = 0

Determination of HAF



HAF = 98 %

Confidence Intervals
95% CI = 97.9 , 98.1

Data pts 
Best Fit 
95% CI 
95% CI pts 

Fabric Description: 4 Layer System, Ensemble 1, Style NF OS #10TT342-Br over NF #8TT298 over Thermal Liner 11NFC4MA1 or PB1
 (L1) Norfab Corp., Style NF OS #10TT342-Br (or (HVT/L)), 9.7 oz/yd² Twill,
 60% Lenzing FR, 40% Para-Aramid, Brown, Pre-wash Weight: 10.2 oz/yd², Weight as Tested: 11 oz/yd²;
 (L2) Norfab Corp., Style NF #8TT298, 8.0 oz/yd² Twill, 100% Twaron, Yellow, Pre-wash Weight: 7.80 oz/yd², Weight as Tested: 8.6 oz/yd²;
 (L3) SXHCO or NORAFIN, Style NF #11NFC4MA1 or PB1, 7.2 oz/yd²,
 80% Meta-Aramid, 20% Para-Aramid, Yellow, Pre-wash Weight: 7.4 oz/yd², Weight as Tested: 7.8 oz/yd²;
 (L4) MILLIKEN or WUXI, Style NF Face Fabric # MA1 or PB1, 3.2 oz/yd² Plain Weave,
 93% M-Aramid, 5% P-Aramid, 2% Antistat, Light Blue, Pre-wash Weight: 3.2 oz/yd², Weight as Tested: 3.4 oz/yd².

Test #	Panel	Test Current A	Cycles of 60Hz	EI Cal/cm²	SCD Cal/cm²	HAF %	>Steel Y/N	Break Open Y/N	Ablation Y/N	After Flame sec.	Omit Y/N	Comment
1	K-352101-4595	A	8107	125.2	92.4	-0.8	97.4	No	N	2	No	
2	K-352101-4595	B	8107	125.2	93.1	-0.6	97.5	No	N	2	No	
3	K-352101-4595	C	8107	125.2	94.3	-0.8	97.9	No	N	2	No	
4	K-352101-4595	A	8074	135.3	105.6	-0.4	97.4	No	N	3	No	
5	K-352101-4595	B	8074	135.3	104.5	-0.7	97.5	No	N	3	No	
6	K-352101-4595	C	8074	135.3	98.3	-0.8	97.6	No	N	3	No	
7	K-352101-4597	A	8047	135.3	110.3	-0.8	97.8	No	N	2	No	
8	K-352101-4597	B	8047	135.3	95.6	-0.7	97.7	No	N	2	No	
9	K-352101-4597	C	8047	135.3	99.7	-0.9	98.1	No	N	2	No	
10	K-352101-4598	A	8044	135.3	102.9	-0.5	97.2	No	N	2	No	
11	K-352101-4598	B	8044	135.3	103.6	-0.9	97.8	No	N	1.5	No	
12	K-352101-4598	C	8044	135.3	98.9	-0.1	98.8	No	N	2	No	
13	K-352101-4598	A	8036	130.3	95.4	-0.9	97.9	No	N	2.5	No	
14	K-352101-4598	B	8036	130.3	91.1	-0.7	98.1	No	N	2	No	
15	K-352101-4599	C	8036	130.3	98.4	-1.0	98.1	No	N	1.5	No	
16	K-352101-4600	A	8015	130.2	98.8	-0.9	98.1	No	N	2	No	
17	K-352101-4600	B	8015	130.2	95.0	-0.7	97.8	No	N	2	No	
18	K-352101-4600	C	8015	130.2	96.9	-0.8	98.1	No	N	2	No	
19	K-352101-4601	A	7997	110.3	80.5	-0.9	97.9	No	N	2	No	
20	K-352101-4601	B	7997	110.3	76.0	-0.9	97.7	No	N	2	No	
21	K-352101-4601	C	7997	110.3	71.8	-0.8	97.7	No	N	2	No	
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												

21 samples exhibited afterflame during testing with an average duration of 2.1 seconds.
 There was no evidence of break-open or ablation in any of the samples tested.