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**CAN/ULC-S109 Flame Resistance  
of "FR354 NAVY" Fabric**

A Report To: **Safety Components Incorporated**  
40 Emery Street  
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USA

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Attention: Jacques Cantin

Submitted By: Fire Testing

Report No. 10-002-178  
3 pages + appendix

Date: March 30, 2010

**ACCREDITATION** To ISO/IEC 17025 for a defined Scope of Testing by the Standards Council of Canada

### **SPECIFICATIONS OF ORDER**

Determine flame resistance in accordance with the CAN/ULC-S109-03 Small and Large Flame Tests, as per our Quotation No. 10-002-2335 accepted March 8, 2010.

### **IDENTIFICATION**

Material identified as "FR354 NAVY, 100% Coated Polyester Fabric".

(Exova sample identification number 09-002-S0178)

### **TEST RESULTS**

#### **CAN/ULC-S109-03 Small-Flame Test**

#### Standard Methods of Tests for Flame-Resistant Textiles and Films

Tested "as-received"

	Damaged Length (mm)	Afterflame Time (s)	Flaming Dripping (s)	
Direction 1 1:	97	0.0	1.0	
2:	106	0.0	1.8	
3:	96	0.0	0.9	
4:	103	0.0	1.3	
5:	100	0.0	1.5	
Direction 2 6:	118	6.2	0.0	
7:	116	4.4	0.0	
8:	120	5.0	0.0	
9:	115	3.7	0.0	
10:	<u>119</u>	4.1	0.0	
Average:	109	-	-	
Maxima Specified by ULC-S109 Small Flame Test:	165	-	-	(average)
	190	-	2.0	(individual)

**TEST RESULTS (continued)****CAN/ULC-S109-03 Large Flame Test**Standard Methods of Tests for Flame-Resistant Textiles and Films

Tested "as-received" and in single sheet configuration.

	Damaged Length (mm)	Afterflame Time (s)	Flaming Dripping (s)	
Direction 1 1:	15	0.0	0.0	
2:	23	0.0	0.0	
3:	16	0.0	0.0	
4:	12	0.0	0.0	
5:	21	0.0	0.0	
Direction 2 6:	22	0.0	0.0	
7:	17	0.0	0.0	
8:	14	0.0	0.0	
9:	20	0.0	0.0	
10:	<u>19</u>	0.0	0.0	
Average:	18	-	-	
Maxima Specified by ULC-S109 Large Flame Test:	-	-	-	(average)
	250	-	2.0	(individual)
	(Above tip of test flame)			

**CONCLUSIONS**

When tested "as-received", the material identified in this report meets the flame resistance requirements of both the Small-Flame and Large-Flame Tests of CAN/ULC-S109-03.

**Note: This is an electronic copy of the report. Signatures are on file with the original report.**

Anne-Lise Larsen,  
Fire Testing

Ian Smith,  
Fire Testing

Note: This report and service are covered under Exova Canada Inc. Standard Terms and Conditions of Contract which may be found on the Exova website ([www.exova.com](http://www.exova.com)), or by calling 1-866-263-9268.

**APPENDIX**

(1 Page)

Summary of Test Procedure

**CAN/ULC-S109-03**

Standard Methods of Tests for Flame-Resistant Textiles and Films

Small-Flame Test

Ten specimens are cut, each 70 x 250 mm, with five in the warp direction and five in the weft direction, where applicable. The specimens are conditioned for 30 minutes at 105°C, or if they melt or distort at these temperatures, 18 - 22°C at 50% R.H. for at least 12 hours or by drying in an oven for 1 hour at 60°C.

Each specimen is removed from the conditioning chamber individually, clamped in a U-shaped metal holder and suspended in a specified cabinet. The free edge of the specimen is positioned 20 mm above the tip of a gas burner which has been adjusted to yield a flame height of 40 mm. Flame exposure time is 12 seconds. Char length and afterflame time are measured.

Flame Resistance Requirements:

Maximum Average Length of Char or Destroyed Material for <u>Ten Specimens</u> 165 mm	Maximum Length of Char or Destroyed Material for any <u>Specimens</u> 190 mm
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The specified maximum flaming time for residue on the floor of the tester from any specimen is 2.0 seconds.

Large-Flame Test

For conducting flame tests of fabrics in single sheets, the procedure specifies ten specimens, 125 mm by 750 mm to 2100 mm long. The specimens are conditioned at 105 ±2°C for 30 minutes or, if distortion or melting occurs at these temperatures, 20 ± 2°C at 25 - 50% relative humidity for at least 12 hours or by drying in an oven for 1 hour at 60°C.

Each specimen is removed from the conditioning chamber and cooled in a desiccator prior to being suspended in a steel stack 310 mm square and 2130 mm high, the said stack being open both top and bottom and supported 300 mm above the floor. The lower edge of the specimen is positioned 100 mm above the tip of a gas burner which is inclined at 25° to the vertical. The burner, which has been adjusted to yield a flame 280 mm in height is ignited and inserted directly beneath the specimen for 2 minutes. Char length is measured from the tip of the flame, upwards.

For conducting flame tests of fabrics hung in folds, at least four specimens 625 mm by 750 mm to 2100 mm are required. Each specimen is folded longitudinally to form four folds.

Flame Resistance Requirements - Specified Maxima:

<u>Specimen Configuration</u>	<u>Char Length or Damaged Material Length (mm)</u>	<u>Flaming Residue on Floor of Tester (s)</u>
Single sheets	250	2.0
Folded	635	2.0

Note: As stated in the standard, "fabrics shall comply with both the Small-Flame and the Large-Flame Test".