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EVALUATION CENTER
Intertek Testing Services NA Ltd.
1500 Brigantine Drive
Coquitlam, B.C. V3K 7C1

RENDERED TO

Serge Ferrari
Zone Industrielle B.P. 54
38352 La Tour Du Pin Cedex
France

PRODUCT EVALUATED: 251 PVC Coated Fabric
EVALUATION PROPERTY: Flame Resistance

Report of testing 251 PVC coated fabric for compliance with the applicable requirements of the following criteria: CAN/ULC S109-03, Standard for Flame Tests of Flame-Resistant Fabrics and Films.

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TEST REPORT

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2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for Serge Ferrari, on PES yarns coated with PVC fire retardant on both sides and varnished to determine whether the submitted samples would meet the small and large flame requirements of CAN/ULC S109-03, *Standard for Flame Tests of Flame-Resistant Fabrics and Films*. This evaluation began September 7, 2012 and was completed the same day.

3 Test Samples

3.1. SAMPLE SELECTION

Samples were submitted to Intertek directly from the client and were not independently selected for testing. Samples were received at the Evaluation Center on April 27, 2011.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

3.2.1. Material Specifications

➤ *Material Description*

The samples consisted of a PVC coated fabric that was white in colour and had a discernible warp and weft orientation. The material was identified by the client as 251 PVC fabric with a thickness of 0.32 mm and a weight of 325 g/m².

➤ *Small Flame Test*

A total of ten samples were cut from the submitted material, each measuring 250mm in length and 90mm in width. Half the samples were cut in the direction of the weft and half were cut in the direction of the warp.

➤ *Small Flame Weathered Test*

A total of ten samples were cut from the submitted material, each measuring 250mm in length and 90mm in width. Half the samples were cut in the direction of the weft and half were cut in the direction of the warp.

➤ *Large Flame Test*

A total of four samples were cut from the submitted material, each measuring 1200mm in length and 625mm in width. Half the samples were cut in the direction of the weft and half were cut in the direction of the warp.

3.2.2. Sample Conditioning

All the test samples were subjected to the Water Leaching in section 5.3 and the Scrubbing in section 5.4, prior to being dried in an oven for at least 30 minutes at 105°C.

In addition to the above conditioning the small flame weathered samples were subjected to the accelerated weathering in section 5.5.

3.2.3. Sample Mounting

➤ *Small Flame and Small Flame Weathered Tests*

The test samples were placed in the specimen holder, with clamps along each edge of the sample, leaving the ends free and exposing a surface area 50mm wide by 250mm long. The holder was then placed in the test apparatus.

➤ *Large Flame Test*

The test samples were folded and steel wire was inserted through the folds to hold their shape throughout the test. The samples were placed in the apparatus and the sides were held in place using clamps and guide wires leaving the ends free.

Ten trial runs were conducted for the small flame, and weathered samples, and 4 trial runs for the large flame.

4 Testing and Evaluation Methods

4.1. SMALL FLAME TEST

Once the specimen holder was in place, it was held 20mm above the centre of the opening of a Bunsen burner. The burner was supported in such a way that it was 25° from the vertical. The burner supplied a flame 40mm long, with the intake air supply shut off. The flame impinged the sample for a period of 12 seconds.

4.2. SMALL FLAME WEATHERED TEST

The test specimen were weathered for 360 hours in a Ultra Violet Condensation Screening device model UV 2000I, TS ID #D2731 weathered in accordance with Section 5.5 of the ULC – S109M Standard for Flame Tests of Flame Resistant Fabrics and Films standard. Once the specimen holder was in place, it was held 20mm above the centre of the opening of a Bunsen burner. The burner was supported in such a way that it was 25° from the vertical. The burner supplied a flame 40mm long, with the intake air supply shut off. The flame impinged the sample for a period of 12 seconds

4.3. LARGE FLAME TEST

Once the specimen was in place, it was held 100mm above the centre of the opening of a Bunsen burner. The burner was supported in such a way that it was 25° from the vertical. The burner supplied a flame 280mm long, with the intake air supply shut off. The flame impinged the sample for a period of 120 seconds.

4.4. ACCEPTANCE CRITERIA

A sample will meet the requirements of CAN/ULC S109 if the following criteria are met:

➤ *Small Flame and Weathered Samples*

- Portions or residues from the test specimen which break or drip from the sample during the test shall not continue to burn for more than two seconds on the floor of the test apparatus.
- The vertical spread of flame and smouldering combustion shall not exceed 190mm on any one specimen and shall not exceed 165mm on an average of ten specimens.

➤ *Large Flame Samples*

- Portions or residues from the test specimen which break or drip from the sample during the test shall not continue to burn for more than two seconds on the floor of the test apparatus.
- The vertical spread of flame and smouldering combustion shall not exceed 635mm on any one specimen.

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

5.1.1. Small Flame Test Results

Sample No.	Fabric Direction	After Burn (sec.)	Damaged Length (mm)	Flaming Drip (Y/N)	Floor Burn (sec.)
1	Warp	0	111	N	N/A
2	Warp	0	123	N	N/A
3	Warp	0	90	N	N/A
4	Warp	0	97	N	N/A
5	Warp	0	93	N	N/A
6	Weft	0	113	N	N/A
7	Weft	0	100	N	N/A
8	Weft	0	71	N	N/A
9	Weft	0	109	N	N/A
10	Weft	0	113	N	N/A
Average Damage Length:			95mm		

5.1.2. Small Flame Weathered Test Results

Sample No.	Fabric Direction	After Burn (sec.)	Damaged Length (mm)	Flaming Drip (Y/N)	Floor Burn (sec.)
1	Warp	0	126	N	N/A
2	Warp	0	137	N	N/A
3	Warp	0	119	N	N/A
4	Warp	0	134	N	N/A
5	Warp	0	101	N	N/A
6	Weft	0	144	N	N/A
7	Weft	0	134	N	N/A
8	Weft	0	120	N	N/A
9	Weft	0	130	N	N/A
10	Weft	0	118	N	N/A
Average Damage Length:			126mm		

5.1.3. Large Flame Test Results

Sample No.	Fabric Direction	After Burn (sec.)	Damaged Length (mm)	Flaming Drip (Y/N)	Floor Burn (sec.)
1	Warp	0	260	Y	0
2	Warp	0	301	Y	0
3	Wet	0	287	Y	0
4	Weft	0	275	Y	0
Maximum Damage Length:			281mm		

5.1.4. Additional Flaming

There was flaming drip on the large flame test but no burning on the floor of the test apparatus.

6 Conclusion

The samples of 251 PVC coated Fabric submitted by Serge Ferrari therefore met the requirements of CAN/ULC-S109-03, *Standard for Flame Tests of Flame-Resistant Fabrics and Films*, small and large flame test.

PVC Preconstraint 702 fabric	Maximum Spread of Flame	Average Spread of Flame	Floor Burn > 2 seconds
Small Flame Samples	123mm	95mm	No
Small Flame (Weathered)	144mm	126mm	No
Large Flame Samples	301mm	N/A	No

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK TESTING SERVICES NA LTD.

Tested and
Reported by:


Greg Philp
Technician – Building Products Testing

Reviewed by:


Scott Leduc, EIT
Test Engineer – Building Products