SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 11414

Date of issue: *October 29, 2025*

Status: FINAL REPORT

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ASTM D6413

FLAME RESISTANCE OF TEXTILES (VERTICAL TEST)

Program: SQ-1090

****

Prepared by:	Reviewed by:	Approved by:
cn=BERENICE C. FERREL, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=tech@ptsouthquality.com, c=AR 2025.10.29 16:12:15 -03'00'	cn=ESTHER CASAS, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=ecasas@ptsouthquality.com, c=AR 2025.10.30 10:55:38 -03'00'	cn=Emiliano Medina, o=SOUTH QUALITY, ou=PT SOUTH QUALITY SAS, email=quality@ptsouthquality.com, c=ES 2025.10.30 15:12:47 -03'00'
Berenice Ferrel Assistant Technician	**Lic. Esther Casas** Physics expert	**Eng. Emiliano Medina** Quality Assurance Lead

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1. FOREWORD

This report summarizes the results of the **SQ-1090** proficiency testing program on the determination of the vertical flame resistance of textiles. This program is conducted in a bilateral format, following the A.3.3 classification of the ISO 17043 standard ("Split-sample testing schemes").

South Quality conducted the testing program in September 2025 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator:	Lic. Esther Casas
Assistant Technician:	Berenice Ferrel
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine the burn time, using the following standard:

Standard
ASTM D6413/D6413M - 22

To verify this, batches of fabrics have been selected.

Participants in this program have not been previously informed about the expected behavior of the samples they receive.

4. PARTICIPANT

Company:	**Element Material Technology Canada Inc.**
Laboratory:	**Toronto - Fire Testing**
Country:	Canada
Client ID:	C114
Contact person:	Mel Garces Supervisor mel.garces@element.com

5. HOMOGENEITY

Several batches were prepared identically by the staff at South Quality.

Subsequently, a homogeneity study was conducted with an ISO 17025 accredited laboratory.

The control process followed ISO Guide 35: 2017, clause 7.4.1.2. Stratified random sampling was employed, and samples were chosen using random number generation software.

The results of this test are presented below:

Size of each batch: **50 units** Tested samples from each batch: **10 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LT2318	BATCH: LT2319	BATCH: LT2320
Burn time	NO	YES	YES

Size of each batch: **50 units** Tested samples from each batch: **10 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LT2489	BATCH: LT2490	BATCH: LT2491
Burn time	YES	NO	YES

Samples for this program are taken from the selected batches identified as **LT2319** and **LT2489**.

For the indicated batches, the values determined in the homogeneity study are utilized as the assigned values.

The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

6. SAMPLE INFORMATION

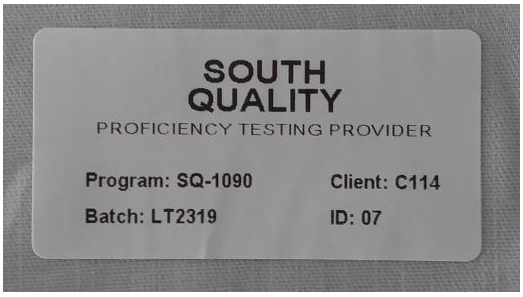
The following samples were sent for testing:

Batch:	LT2319
Sample ID:	07
Characteristics:	Grey fabric - 150 x 100 cm

Batch:	LT2489
Sample ID:	10
Characteristics:	Black fabric - 150 x 100 cm

7. IMAGES

SAMPLES



8. ASSIGNED VALUES

BATCH	WARP DIRECTION			
	AFTERFLAME TIME		AFTERGLOW TIME	
	(s)	SD	(s)	SD
LT2319	32.8	1.8	25.2	1.4
LT2489	40.1	2.4	83.5	2.8

BATCH	WEFT DIRECTION			
	AFTERFLAME TIME		AFTERGLOW TIME	
	(s)	SD	(s)	SD
LT2319	32.5	3.8	27.5	2.2
LT2489	39.6	3.1	71.2	3.2

9. PARTICIPANT RESULTS (SEE APPENDICES B AND C)

CODE	WARP DIRECTION	
	AFTERFLAME TIME (s)	AFTERGLOW TIME (s)
LT2319-07	33.0	23.2
LT2489-10	39.6	80.4

CODE	WEFT DIRECTION	
	AFTERFLAME TIME (s)	AFTERGLOW TIME (s)
LT2319-07	36.0	26.8
LT2489-10	37.0	77.0

10. STATISTICS

The results must be treated as quantitative.

For quantitative results, the comparison is made according B.3.1.3 of ISO 17043 and the appropriate technique is to compare participant results with the assigned values.

The results can be compare using percent difference ***z score***.

$$z = \frac{x - X}{\hat{\sigma}}$$

x is the participant's result

X is the assigned value

$\hat{\sigma}$ is the standard deviation

The performance evaluation of each sample is carried out with the following criteria:

$|z| \leq 2.0$ indicates "satisfactory" performance and generates no signal;

$2.0 < |z| < 3.0$ indicates "questionable" performance and generates a warning signal;

$|z| \geq 3.0$ indicates "unsatisfactory" performance and generates an action signal;

11. EVALUATION OF PERFORMANCE

BATCH	DIRECTION	AFTERFLAME TIME (S)		| z score |	PERFORMANCE RESULT
		PARTICIPANT RESULT	ASSIGNED VALUE		
LT2319	WARP	33.0	32.8	**0.1**	SATISFACTORY
	WEFT	36.0	32.5	**0.9**	SATISFACTORY
LT2489	WARP	39.6	40.1	**0.2**	SATISFACTORY
	WEFT	37.0	39.6	**0.8**	SATISFACTORY

Batch	Direction	Afterglow Time (s)		| z score |	Performance Result
		Participant Result	Assigned Value		
LT2319	Warp	23.2	25.2	**1.4**	SATISFACTORY
	Weft	80.4	83.5	**1.1**	SATISFACTORY
LT2489	Warp	26.8	27.5	**0.3**	SATISFACTORY
	Weft	77.0	71.2	**1.8**	SATISFACTORY

12. CONCLUSIONS

The overall performance on this **SQ-1090** program from the participant laboratory **ELEMENT MATERIAL TECHNOLOGY CANADA INC. - Toronto - Fire Testing** is **SUFFICIENT** based on expected results.

The criteria used for evaluating the overall performance are as follows:

- **SUFFICIENT** performance: No unsatisfactory/questionable results were obtained.
- **ALMOST SUFFICIENT** performance: No unsatisfactory results were obtained, but one questionable result was found.
- **INSUFFICIENT** performance: An unsatisfactory result or two questionable results were obtained.

APPENDIX A

INSTRUCTIONS

INSTRUCTIONS

PROGRAM:	Flame resistance of textiles (Vertical test)
CODE:	SQ-1090
VERSION:	-
STANDARD:	ASTM D6413
COORDINATOR:	Lic. Esther Casas (ecasas@ptsouthquality.com)

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1 - **General**

This document serves as a guide for managing the results of the **SQ-1090** program.

2 - **Standard**

ASTM D6413/D6413M - 22

3 - **Tests involved**

TEST
Determination of the vertical flame resistance of textiles

4 - **Samples**

CODE	SAMPLE	QUANTITY
LT2319-07	Grey fabric - 150 x 100 cm	1
LT2489-10	Black fabric - 150 x 100 cm	1

5 - **Notes**

a) Being a bilateral program, there is no deadline for submitting results.
b) The participant must submit the results using the usual report employed by their laboratory.
c) Samples must be retained until the end of the program, which concludes with the submission of the final report.
d) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.

PHOTOGRAPHS

APPENDIX B

PARTICIPANT RESULTS (TR # 25-002-392 A)

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element.com

ASTM D6413/D6413M-22 Proficiency Testing of "LT2319-07"

A Report To:	**PT South Quality SAS** Pareja 3981 - Villa Devoto (C1419GVG) Ciudad Autónoma de Buenos Aires Argentina
Phone:	+54 9 11 2614 n6800
Attention: E-mail:	Lic. Esther Casas ecasas@ptsouthquality.com
Submitted by:	Element Fire Testing
Report No.	25-002-392(A) 3 pages + Appendix
Date:	September 16, 2025

1.0 ACCREDITATION

ISO/IEC 17025 for a defined Scope of Testing by the American Association for Laboratory Accreditation (A2LA), Certificate Number: 6524.03.

2.0 SPECIFICATIONS OF ORDER

Determine vertical flame resistance in accordance with ASTM D6413/D6413M-22, when tested "as received" only, as per PT South Quality Proficiency Testing Provider.

2.1 History of Report Revision

This is the original.

3.0 SAMPLE IDENTIFICATION

Material Identification	**"LT2319-07"**
Supplied Material Description *	Grey fabric - 150 x 100 cm
Measured Material Weight (g/m^2)	207
Date of Material Receipt	2025-08-21
Element Sample Identification Number	25-002-S0392-1
Date of Test	2025-09-16

* The material description as supplied by the client. Element cannot always validate the accuracy of the description provided. If appreciable differences observed between the material description and the specimen, test data may not be representative. Information or data supplied by the client can affect validity of results.

4.0 SUMMARY OF TEST PROCEDURE

Ten specimens, each 76 x 300 mm, are conditioned for a minimum period of 24 hours at a temperature of 23 ± 2°C (73 ± 4°C) and a relative humidity of 50%. Specimens are individually suspended in specified holders in a specific cabinet, 19 mm (0.75 in.) above the tip of a methane-fueled Bunsen burner. The lower edge of the test specimen is exposed to a 38 mm (1.5 in.) flame for 12 seconds. After all flaming and glowing activity has ceased, specimens are removed from the holder, are then folded and creased longitudinally through the highest point of visible char. The hook from a specified weight is then pierced through one side of the specimen approximately 6 mm (0.25 in.) from the lower edge and the other side of the fabric is lifted. Char length is determined to be the length to the top the physical tear created by the hanging weight, to the original bottom edge of the specimen.

5.0 PERFORMANCE REQUIREMENTS

ASTM D6413/D6413M-22 is solely a test method to determine burning behaviour and, as such, does not cite performance criteria.

5.1 Table 1. Applied Loads by Original Sample Weight

g/m^2	oz/yd^2	Applied Loads	
		g	lbs
68 to 203	2.0 to 6.0	100	0.22
> 203 to 508	> 6.0 to 15.0	200	0.44
> 508 to 780	> 15.0 to 23.0	300	0.66
> 780	> 23.0	475	1.05

6.0 SAMPLE PREPARATION

Specimens were cut by Element to appropriate dimensions and quantity for testing. The material was tested as-received (original, supplied state).

7.0 TEST RESULTS

ASTM D6413/D6413M-22

Standard Test Method for Flame Resistance of Textiles (Vertical Test)

Specimen	Char Length (mm)	Afterflame Time (s)	Afterglow Time (s)	Melting Dripping (Yes/No)
Warp 1	300	31.0	18.0	No
Warp 2	300	35.0	20.0	No
Warp 3	300	33.0	26.0	No
Warp 4	300	35.0	26.0	No
Warp 5	300	31.0	26.0	No
Warp Average:	300	33.0	23.2	-
Weft 6	300	33.0	21.0	No
Weft 7	300	33.0	27.0	No
Weft 8	300	35.0	27.0	No
Weft 9	300	46.0	31.0	No
Weft 10	300	33.0	28.0	No
Weft Average:	300	36.0	26.8	-

Specimen weight (g/m^2): 207 Applied Weight Load ** (g): 200

** Due to the full burn distance for each specimen, tearing load weights were not applied.

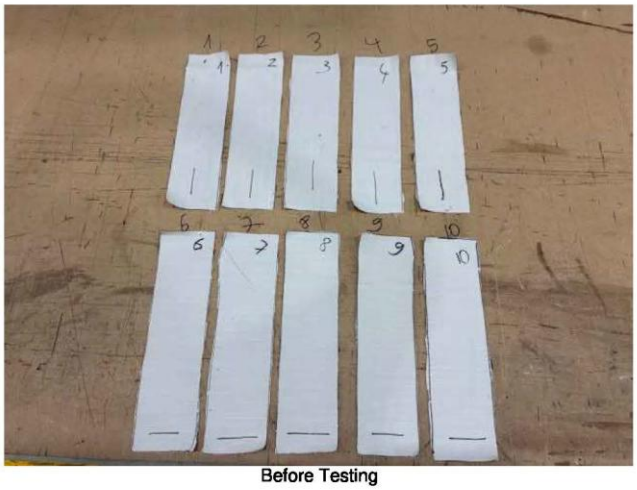
Serap Carpino,
Technologist, Fire Testing.

Mel Garces,
Supervisor, Fire Testing.

Note: This report is related only to the sample identified and shall not be reproduced, except in full, without approval. It is covered under Element Materials Technology Canada Inc. Standard Terms and Conditions of Contract, which are accessible at www.element.com, or by calling 1-866-263-9268. Direct readings reported could form the basis for acceptance or rejection (pass/fail) and do not take into account or incorporate uncertainty

A.0 APPENDIX

A.1 Test Photographs



Before Testing

After Testing

APPENDIX C

PARTICIPANT RESULTS (TR # 25-002-392 B)

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ASTM D6413/D6413M-22 Proficiency Testing of "LT2489-10"

A Report To:	**PT South Quality SAS** Pareja 3981 - Villa Devoto (C1419GVG) Ciudad Autónoma de Buenos Aires Argentina
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2.1 History of Report Revision

This is the original.

3.0 SAMPLE IDENTIFICATION

Material Identification	**"LT2489-10"**
Supplied Material Description *	Black fabric - 150 x100 cm
Measured Material Weight (g/m^2)	279
Date of Material Receipt	2025-08-21
Element Sample Identification Number	25-002-S0392-2
Date of Test	2025-09-16

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Ten specimens, each 76 x 300 mm, are conditioned for a minimum period of 24 hours at a temperature of 23 ± 2°C (73 ± 4°C) and a relative humidity of 50%. Specimens are individually suspended in specified holders in a specific cabinet, 19 mm (0.75 in.) above the tip of a methane-fueled Bunsen burner. The lower edge of the test specimen is exposed to a 38 mm (1.5 in.) flame for 12 seconds. After all flaming and glowing activity has ceased, specimens are removed from the holder, are then folded and creased longitudinally through the highest point of visible char. The hook from a specified weight is then pierced through one side of the specimen approximately 6 mm (0.25 in.) from the lower edge and the other side of the fabric is lifted. Char length is determined to be the length to the top the physical tear created by the hanging weight, to the original bottom edge of the specimen.

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7.0 TEST RESULTS

ASTM D6413/D6413M-22

Standard Test Method for Flame Resistance of Textiles (Vertical Test)

Specimen	Char Length (mm)	Afterflame Time (s)	Afterglow Time (s)	Melting Dripping (Yes/No)
Warp 1	300	31.0	84.0	No
Warp 2	300	44.0	83.0	No
Warp 3	300	46.0	88.0	No
Warp 4	300	39.0	71.0	No
Warp 5	300	38.0	76.0	No
Warp Average:	300	39.6	80.4	-
Weft 6	300	38.0	70.0	No
Weft 7	300	40.0	76.0	No
Weft 8	300	37.0	72.0	No
Weft 9	300	28.0	71.0	No
Weft 10	300	42.0	96.0	No
Weft Average:	300	37.0	77.0	-

Specimen weight (g/m^2): 279 Applied Weight Load ** (g): 200

** Due to the full burn distance for each specimen, tearing load weights were not applied.

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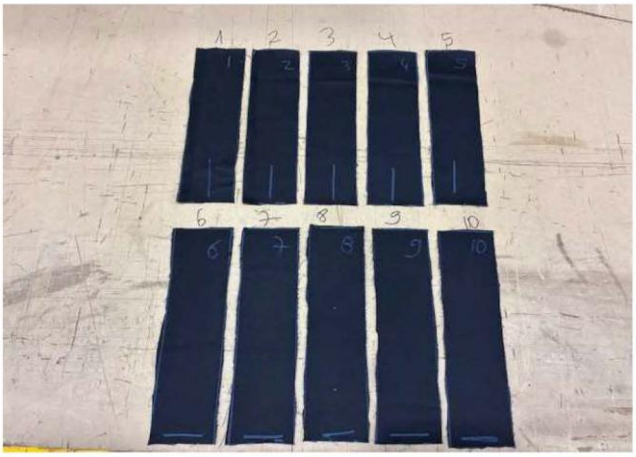

Before Testing

After Testing

----- END OF REPORT -----