SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 11501

Date of issue: *December 18, 2025*

Status: FINAL REPORT

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EN 50399

CABLES UNDER FIRE CONDITIONS HEAT RELEASE AND SMOKE PRODUCTION MEASUREMENT ON CABLES DURING FLAME SPREAD TEST

Program: SQ-2599.V1

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1. FOREWORD

This report summarizes the results of the **SQ-2599.V1** proficiency testing program on the verify the heat release and smoke production measurement on cables during flame spread test. 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 October 2025 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator:	Eng. Esteban Di Marco
Assistant Technician:	Valentyn Kravchenko
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine the following parameters:

- Flame spread ($\boldsymbol{FS}$)
- Total heat release ($\boldsymbol{THR}$)
- Peak heat release rate (*peak* $\boldsymbol{HRR}$)
- Fire growth rate index ($\boldsymbol{FIGRA}$)
- Total smoke production ($\boldsymbol{TSP}$)
- Peak smoke production rate (*peak* $\boldsymbol{SPR}$)

These parameters were verified using the following standard:

Standard
EN 50399: 2022

To verify this, batches of cables have been selected.

Participant in this program have not been previously informed about the expected values or value ranges of the samples they receive.

4. PARTICIPANT

Company:	**ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY - OICPE**
Laboratory:	**TESTING LABORATORY FOR ELECTRICAL PRODUCTS CERTIFICATION - LICPE**
Country:	Romania
Client ID:	E478
Contact person:	Razvan Neacsu Quality Manager razvan.neacsu@oicpe.ro

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 33405: 2024, clauses 7.4.1.1 / 7.4.1.2. Stratified random sampling was applied, and samples were selected using random number generation software.

The results of this test are presented below:

Size of each batch: **40 units** Tested samples from each batch: **8 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LEM3533	BATCH: LEM3534	BATCH: LEM3535
FS	NO	YES	YES
THR	YES	YES	YES
peak ***HRR***	YES	YES	YES
FIGRA	YES	YES	YES
TSP	NO	YES	YES
peak ***SPR***	YES	YES	YES

Samples for this program are taken from the selected batch identified as **LEM3535**.

For the indicated batch, 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 sample was sent for testing:

Batch:	LEM3535
Sample ID:	06
Characteristics:	Brown cable - 1 x 10 mm^2 - Cu/PVC - 100 m

7. IMAGES

SAMPLES

8. ASSIGNED VALUES

	BATCH: LEM3535					
	FS (m)	*THR* (MJ)	*peak HRR* (kW)	*FIGRA* (W/s)	*TSP 1200* (m^2)	*peak SPR* (m^2/s)
AVG	0.92	5.3	24.5	203.5	132.1	1.05
SD	0.09	0.5	1.9	1.20	9	0.08

9. PARTICIPANT RESULTS (SEE APPENDIX B)

	CODE: LEM3535-06					
	FS (m)	*THR* (MJ)	*peak HRR* (kW)	*FIGRA* (W/s)	*TSP 1200* (m^2)	*peak SPR* (m^2/s)
AVG	0.88	5.2	23.2	197.7	131.1	1.01

10. STATISTICS

The results must be treated as quantitative.

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	PARAMETER	AVERAGE		| z score |	PERFORMANCE RESULT
		PARTICIPANT RESULT	ASSIGNED VALUE		
LEM3535	*FS* (m)	0.88	0.92	**0.44**	**SATISFACTORY**
	THR (MJ)	5.2	5.3	**0.20**	**SATISFACTORY**
	peak HRR (kW)	23.2	24.5	**0.68**	**SATISFACTORY**
	FIGRA (W/s)	197.7	203.5	**0.29**	**SATISFACTORY**
	TSP 1200 (m^2)	131.1	132.4	**0.11**	**SATISFACTORY**
	peak SPR (m^2/s)	1.01	1.05	**0.50**	**SATISFACTORY**

12. CONCLUSIONS

The overall performance on this **SQ-2599.V1** program from the participant laboratory **ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY - OICPE - TESTING LABORATORY FOR ELECTRICAL PRODUCTS CERTIFICATION - LICPE**, 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

SOUTH QUALITY
PROFICIENCY TESTING PROVIDER

INSTRUCTIONS

PROGRAM:	Cables under fire conditions Heat release and smoke production measurement on cables during flame spread test
CODE:	SQ-2599
VERSION:	1
STANDARD:	EN 50399
COORDINATOR:	Eng. Esteban Di marco (edimarco@ptsouthquality.com)

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1 - **General**

This document serves as a guide for managing the results of the **SQ-2599.V1** program.

2 - **Standard**

EN 50399: 2022

3 - **Tests involved**

TEST	PARAMETERS TO DETERMINE
Verify the accuracy and consistency of the testing method	***FS*** + ***THR*** + *peak* ***HRR*** + ***FIGRA*** + ***TSP*** + *peak* ***SPR***

4 - **Samples**

CODE	SAMPLE	QUANTITY
LEM3535-06	Brown cable - 1 x 10 mm^2	100 m

5 - **Notes**

a) Being a bilateral program there is no deadline to accomplish sending 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 (TEST REPORT # 270/2025)

OICPE
ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY
OICPE - ORGANISM INDEPENDENT PENTRU CERTIFICAREA PRODUSELOR ELECTRICE
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LICPE

LABORATORUL DE ÎNCERCĂRI PENTRU CERTIFICAREA PRODUSELOR ELECTRICE
Testing Laboratory for Electrical Products Certification

RAPORT DE ÎNCERCĂRI

TEST REPORT

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Exemplar nr. 1 din 2

ÎNCERCAREA SOLICITATĂ Required Test	**Heat release and smoke production measurement on cables during flame spread test according to EN 50399:2022**
PRODUSUL Equipment	**Brown cable - 1 x 10 mm²**
PRODUCĂTOR Manufacturer	**Unknown**
CLIENT (nume, adresă, cerere) Customer (name, address, order)	**PT SOUTH QUALITY SAS** Pareja 3981, Villa Devoto, Buenos Aires, Argentina BILATERAL PT Scheme 2599.V1
MANAGER LABORATOR Laboratory Manager	**Eng. Răzvan NEACȘU**
DIRECTOR TEHNIC OICPE OICPE Technical Director	**Eng. Dragoș ROSMETENIUC**

Rezultatele încercărilor se referă numai la produsele încercate.
Acest document poate fi reprodus numai în întregime.

Test results refers only to tested products.
This document may be reproduced only in its entirety.

LICPE Cod PG-24-F-27

Ediţia din 17.02.2025

PRODUCT TECHNICAL DATA:

Brown cable 1x10 mm^2

Drum no.:	Code LEM3535-06
Product sort:	sample
Product reception date:	08.08.2025
Testing period:	21-22.08.2025
Sampling method:	It is unknown, the product was submitted for test by the PT SOUTH QUALITY SAS

Number of tested products: 1 product – SQ – 2599.V1 (100m)

Responsabil de încercări	**Liliana CARAMITU**

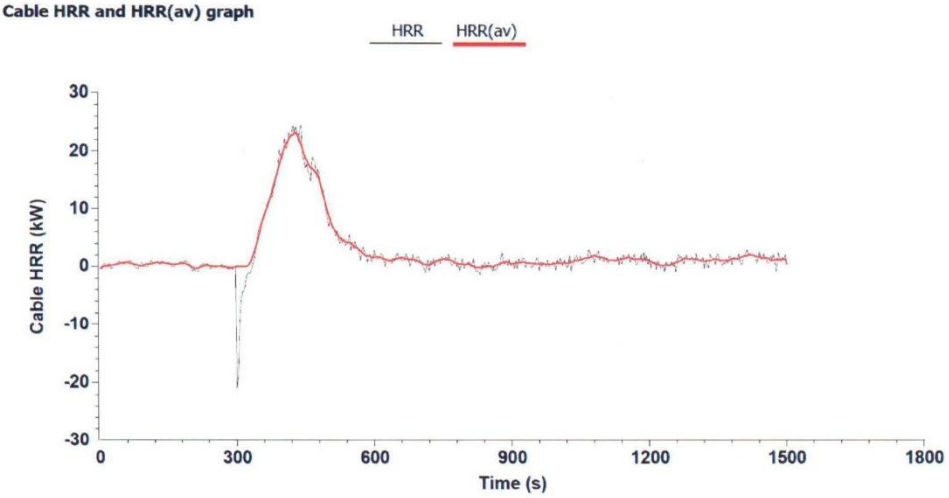
Article from DN	Requirements according to SR EN 50399:2022	Results	Mode of fulfillment of the requirement
Heat release and smoke production measurement on cables during flame spread test			
Test method: SR EN 50399:2022			
	Conditioning:	**Conditioning:**	P
	minimum 16 h at (20±10) °C	24 h at 22 °C	
	Test conditions:		
		- cable outer diameter: 6,3 mm	
	- no. of test pieces: determined in accordance with art. 6.4.3	- no. of test pieces: 25	
	- mounting method: according to Table 1 considering the cable diameter	- mounting method: one cable diameter spacing between cables	P
	- board behind the ladder: NO / YES	- board behind the ladder: NO	-
	- burner flow: 20,5 kW / 30 kW	- burner flow: 20,5 kW	P
	- flame application time: 1200_{0}^{+10} s	- flame application time: 1200 s	P
		Results:	
		THR_{1200} : 5,2 MJ	
		TSP_{1200} : 131,1 m^2	
		peak HRR_{av}: 23,2 kW	
		Time to peak HRR_{av}: 426 s	
		peak SPR_{av}: 1,01 m^2/s	
		Time to peak SPR_{av}: 417 s	
		FIGRA : 197,7 W/s	
		Time to FIGRA: 405 s	
		FS: 0,88 m	
		Flaming particles / droplets: No	
		HRR_{av}, SPR_{av}, THR, TSP and FIGRA graph are presented in Annex 1 of this Test Report.	
		Observations during the test: no	

Method of fulfilling the requirement:
P - The requirement is fulfilled

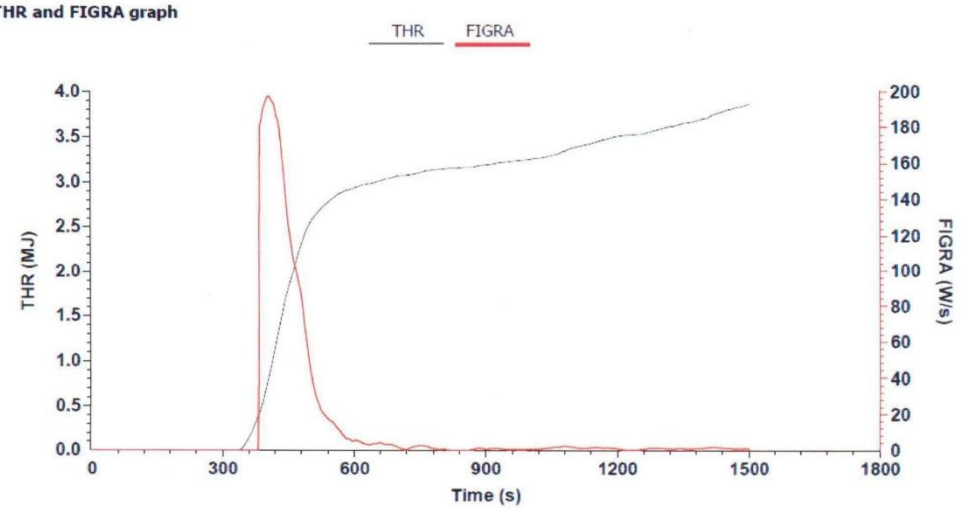
Article from DN	Requirements according to SR EN 50399:2022	Results	Mode of fulfillment of the requirement

Annex 1

Cable HRR and HRR(av) graph



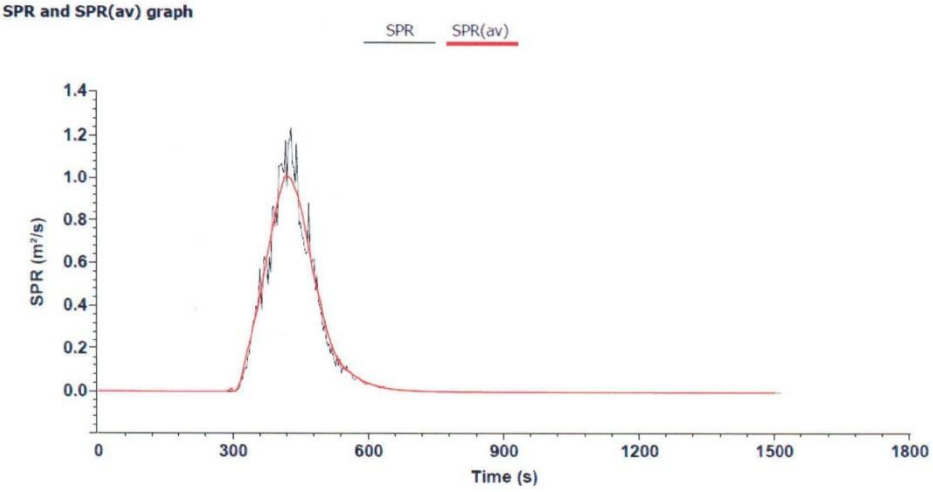
THR and FIGRA graph



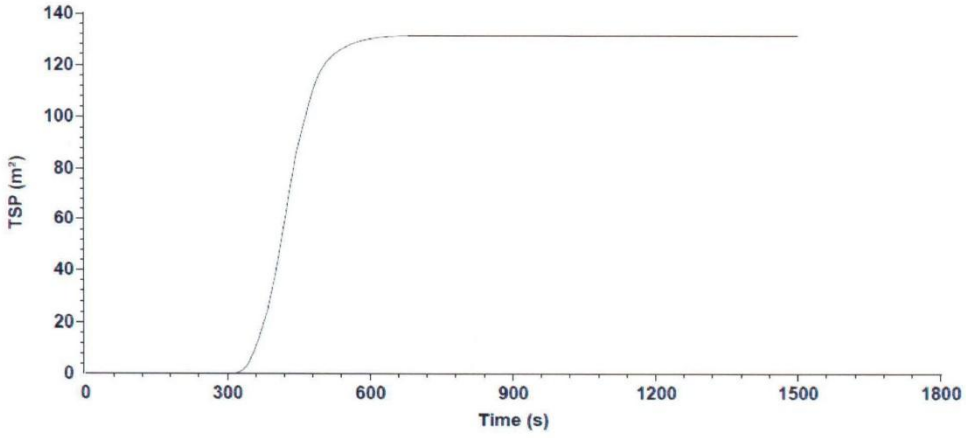
Article from DN	Requirements according to SR EN 50399:2022	Results	Mode of fulfillment of the requirement

ANNEX 1 continued

SPR and SPR(av) graph

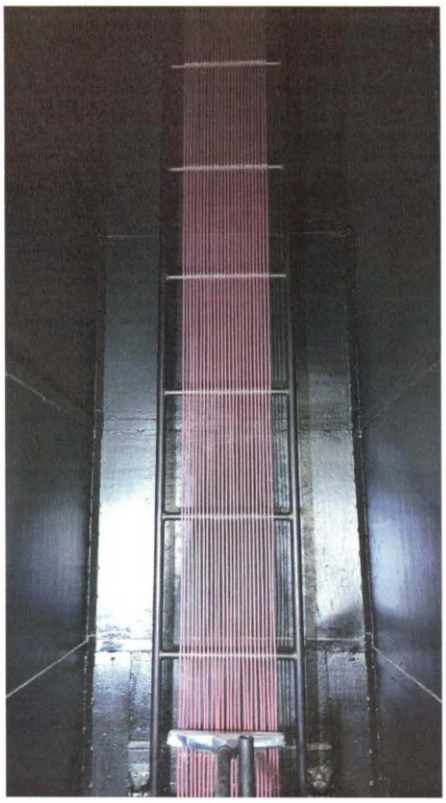


TSP graph

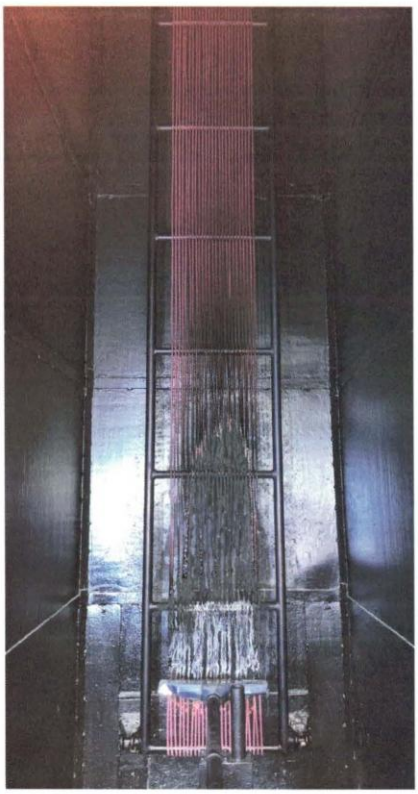


Article from DN	Requirements according to SR EN 50399:2022	Results	Mode of fulfillment of the requirement

ANNEX 1 continued



Before test



After test

Charring length

Article from DN	Requirements according to SR EN 50399:2022	Results	Mode of fulfillment of the requirement

MEASUREMENT UNCERTAINTIES

Test name (TR art.)	Measured / calculated quantity	Measurement apparatus / type / series or inventory	Calibration certificate / issued by	Extended uncertainty [U]	Coverage factor [k]
Heat release and smoke production measurement on cables during flame spread test	ambient temperature	Electronic thermohygrometer / HTC-2 / M200544	23884-11-22 / METROMAT (LE 008)	0,3 °C	2
	relative humidity			2,2 %	2
	cable diameter	Digital micrometer / 293-232-30 / 71759095	07221-03.23 / METROMAT (LE008)	0,1 mm	2
	time	Digital stopwatch / DELTA E 200 / M200473	01092-01.24 / METROMAT (LE 008)	3,7 s	2
	air flow	Flow meter (D) / W2320947C	BCC003/7791851 / 10.2023 Bronkhorst	4,7 mg/s	2
	propane flow	Flow meter (D) / W2320947D	BCC003/7845831/ 10.2023/ Bronkhorst	6,0 mg/s	2
	flame spread length	Tape measure / 710P/ MTM197987	23147-11-22 / METROMAT (LE 008)	4,7 mm	2

Note:
The uncertainty stated is the expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor k = 2 and was determined in accordance with SR Ghid ISO/CEI 98-3:2010.
The measurand value lies within the assigned range of values with the probability of 95,45 %.

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