

REPORT No 11670

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ISO 4589-2

DETERMINATION OF BURNING BEHAVIOUR BY OXYGEN INDEX

- AMBIENT-TEMPERATURE TEST -

Program: SQO-PL14 (Round 12)

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Prepared by:	Reviewed by:	Approved by:
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 **SQO-PL14 (Round 12)** proficiency testing program on the determination of oxygen index (OI) values on plastic materials. This program is carried out under a simultaneous participation format, as described in clause A.2.2 of ISO/IEC 17043: 2023 (Types of PT schemes).

South Quality conducted the testing program in February/March 2026. The aim of the program was to assess laboratory ability to competently perform the nominated tests.

2. ORGANIZATION

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

3. OBJECTIVE

The objective of this proficiency testing program is to determine the minimum volume fraction of oxygen, in admixture with nitrogen, that will support combustion of small vertical test specimens, using the following standard:

Standard
ISO 4589-2: 2017

For the verification of this, plastic samples have been selected.

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

4. PARTICIPANTS

In the present round, 22 laboratories have participated with the following details:

CODE	Country	ISO 17025 accredited	Results delivered
01	Mexico	Yes	Yes
02	Canada	Yes	Yes
03	Belgium	Yes	Yes
04	Italy	Yes	Yes
05	Chile	Yes	Yes
06	France	Yes	Yes
07	Colombia	Yes	Yes
08	Netherlands	Yes	Yes
09	Italy	Yes	Yes
10	South Africa	Yes	Yes
11	Peru	Yes	Yes
12	Brazil	No	Yes
13	Türkiye	Yes	Yes
14	Germany	Yes	Yes
15	Hong Kong	Yes	Yes
16	Argentina	Yes	Yes
17	Spain	Yes	Yes
18	Mexico	Yes	No
19	Spain	Yes	Yes
20	Portugal	Yes	Yes
21	Malaysia	Yes	No
22	Pakistan	No	Yes

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 the samples were selected using random-number-generation software.

The results of this test are presented below:

Size of each batch: **750 samples**

Tested samples from each batch: **150 samples**

DETERMINATION	PLASTIC FILM - HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LP2657	BATCH: LP2658	BATCH: LP2659
OI	NO	YES	YES

Size of each batch: **120 samples**

Tested samples from each batch: **30 samples**

DETERMINATION	PLASTIC SHEET - HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LP2713	BATCH: LP2714	BATCH: LP2715
OI	YES	YES	NO

Samples for this program are taken from selected batches identified as **LP2658**, and **LP2713**.

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 (Participant **Code 20**):

Batch:	LP2658
Sample ID:	010+032+059+120+150+183+222+250+281+308+343+379+407+441+488+520+554+593+635+667
Characteristics:	Plastic film - 20 x 10 cm

Batch:	LP2713
Sample ID:	14 + 54 + 83
Characteristics:	Black plastic sheet - 20 x 20 cm

7. IMAGES



8. ASSIGNED VALUES

The assigned values are obtained from the results reported by all participants (**Consensus values**).

9. PARTICIPANTS RESULTS

LABORATORY CODE	OXIGEN INDEX (Concentration - %)	
	LP2658	LP2713
01	31.8	20.3
02	32.1	22.1
03	31.6	18.1
04	33.5	18.2
05	35.2	22.3
06	33.1	20.0
07	34.7	18.8
08	32.1	19.0
09	31.9	22.2
10	33.2	17.6
11	32.1	19.6
12	33.7	21.1
13	32.6	17.5
14	32.1	18.4
15	32.2	18.7
16	32.5	18.2
17	32.8	18.9
19	32.6	22.3
20	33.0	19.2
22	34.6	23.6

PARAMETER	ASSIGNED VALUES			
	LP2658		LP2713	
	AVG	SD	AVG	SD
OI (%)	32.6	0.8	19.1	1.6

10. STATISTICS

The results must be treated as quantitative.

According B.3.1.3 of ISO 17043 the appropriate technique is to compare participant results with the assigned values. The results can be compare using **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

LABORATORY CODE	z score	
	LP2658	LP2713
01	1.0	0.8
02	0.6	1.9
03	1.2	0.6
04	1.1	0.6
05	3.2	2.0
06	0.6	0.6
07	2.6	0.2
08	0.6	0.1
09	0.9	1.9
10	0.7	0.9
11	0.6	0.3
12	1.3	1.3
13	0.0	1.0
14	0.6	0.4
15	0.5	0.3
16	0.1	0.6
17	0.2	0.1
19	0.0	2.0
20	0.5	0.1
22	2.4	2.8

Laboratory Code 01: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 02: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 03: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 04: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 05: The laboratory has obtained an **UNSATISFACTORY** result in the determination of OI in batch LP2658 and a **SATISFACTORY** result in the determination of OI in batch LP2713.

Laboratory Code 06: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 07: The laboratory has obtained a **QUESTIONABLE** result in the determination of OI in batch LP2658 and a **SATISFACTORY** result in the determination of OI in batch LP2713.

Laboratory Code 08: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 09: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 10: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 11: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 12: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 13: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 14: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 15: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 16: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 17: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 18: The laboratory has not sent the results before the deadline.

Laboratory Code 19: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 20: The laboratory has obtained **SATISFACTORY** results in the determination of OI in both batches.

Laboratory Code 21: The laboratory has not sent the results before the deadline.

Laboratory Code 22: The laboratory has obtained a **QUESTIONABLE** result in the determination of OI in both batches.

GLOBAL PERFORMANCE - SUM OF ABSOLUTE Z-SCORE

POSITION	LABORATORY CODE	Z SCORE
1 st	17	0.3
2 nd	20	0.6
3 rd	8	0.7
3 rd	16	0.7
4 th	15	0.8
5 th	11	0.9
6 th	13	1.0
6 th	14	1.0
7 th	6	1.2
8 th	10	1.6
9 th	4	1.7
10 th	3	1.8
10 th	1	1.8
11 th	19	2.0
12 th	2	2.5
13 th	12	2.6
14 th	9	2.8
14 th	7	2.8
15 th	22	5.2
15 th	5	5.2

12. CONCLUSIONS

The overall performance on this **SQO-PL14 (Round 12)** program from the participating laboratories, based on expected results, is the following:

- Laboratories Codes **01, 02, 03, 04, 06, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 19,** and **20** have obtained a **SUFFICIENT** performance according to the expected results and should not take action.
- Laboratory Code **07** has obtained an **ALMOST SUFFICIENT** performance according to the expected results and must evaluate if it is necessary to take corrective action.
- Laboratories Code **05** and **22** have obtained an **INSUFFICIENT** performance in accordance to the expected results and must take corrective action (See Appendix B).

The criteria used for the evaluation of the overall performance are the following:

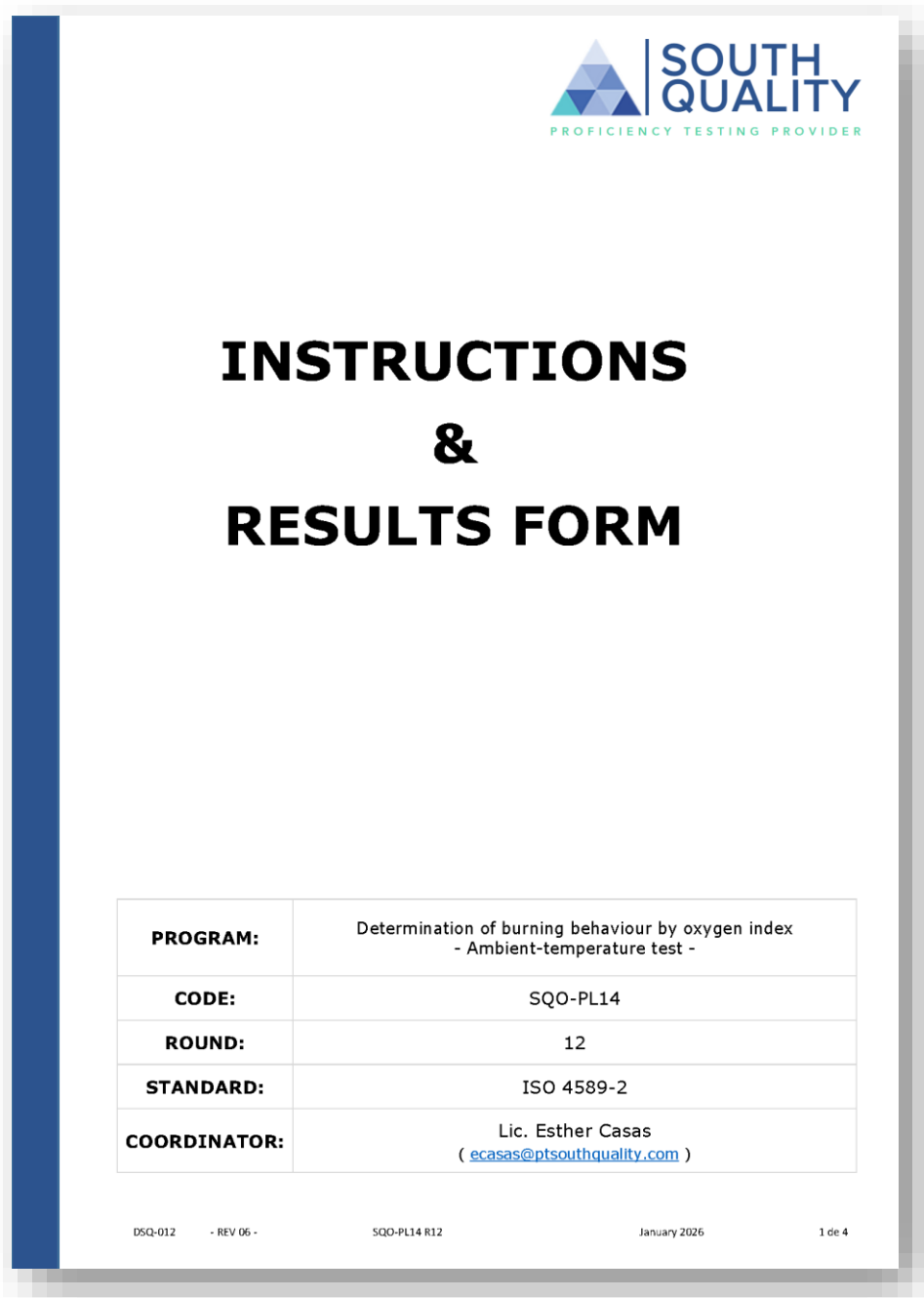
- **SUFFICIENT** performance: No unsatisfactory/questionable results obtained.
- **ALMOST SUFFICIENT** performance: No unsatisfactory results were obtained, but one questionable result was found.
- **INSUFFICIENT** performance: An unsatisfactory result or two questionable results were obtained.


APPENDIX A

A1 - PARTICIPANT DATA

Company: **CITEVE**
Laboratory: **Fire and Comfort Laboratory**
Country: Portugal
Client ID: E462
Contact person: Suzana Blattmann
(sblattmann@citeve.pt)

A2 - PARTICIPANT RESULTS



 **SOUTH
QUALITY**
PROFICIENCY TESTING PROVIDER

INSTRUCTIONS & RESULTS FORM

PROGRAM:	Determination of burning behaviour by oxygen index - Ambient-temperature test -
CODE:	SQO-PL14
ROUND:	12
STANDARD:	ISO 4589-2
COORDINATOR:	Lic. Esther Casas (ecasas@ptsouthquality.com)

DSQ-012 - REV 06 - SQO-PL14 R12 January 2026 1 de 4

1 - General

This document is intended to be filled with the results of the **SQO-PL14 (Round 12)** program.

Results must be typed, not handwritten.

2 - Standard

ISO 4589-2: 2017

3 - Participant

CITEVE Fire and Comfort Laboratory	CODE 20
---------------------------------------	---------

4 - Tests involved

TEST
Determination of oxygen index value (OI)

5 - Samples

CODE	CHARACTERISTICS	QUANTITY
LP2658-XXX	Plastic film - 20 x 10 cm	20
LP2713-XX	Black plastic sheet - 20 x 20 cm	3

SAMPLE DETAILS	
BATCH	ID
LP2658	010 / 032 / 059 / 120 / 150 / 183 / 222 / 250 / 281 / 308 / 343 / 379 / 407 / 441 / 488 / 520 / 554 / 593 / 635 / 667
LP2713	15 / 54 / 83

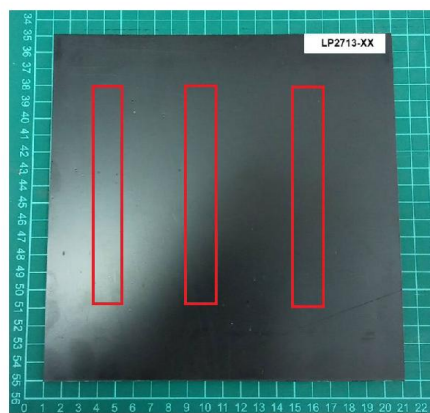
6 - Notes

- a) The deadline for the delivery of results is **March 16, 2026**.
- b) The tables in this document may be modified by the participant, if desired, to include data or observations.
- c) Please attach the routine report issued by your laboratory, detailing the procedure used to determine the OI value, either at the end of this document or as a separate attachment submitted together with it.
- d) The samples must be kept until the end of the program, which concludes with the submission of the final report.
- e) The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to ISO 4589-2.
- f) To review the results, the submission of images of the tests is appreciated. These images can be attached at the end of this document or sent via email.
- g) Upon completion of this document, please convert it to a PDF file and send it to the program coordinator.

7 - Test results

Procedure:	According to standard
Test specimen form:	LP2658-XXX: V
	LP713-XX : IV
Ignition procedure:	LP2658-XXX: B - Propagation ignition
	LP2713-XX : A - Top surface ignition

Orientation of the specimens



Notes: The orientation of the specimens with respect to the ID is indicated in red.

8 - Test results

BATCH	Dimensions (mm)	OI	σ
LP2658	140 x 52	33,0 %	0,297
LP2713	100 x 6	19,2 %	0,085

OBSERVATIONS

Both samples release a lot of black smoke and soot. The test was performed inside a fume hood with the extraction turned off, turning it on immediately after the test was completed. The routine reports issued by our laboratory are sent as a separate attachment, along with this results form.

PHOTOGRAPHS



A3.1 - PARTICIPANT RESULTS (INTERNAL RESULT FORMS)

COMPORTAMENTO AO FOGO - INDICE LIMITE DE OXIGÉNIO (LOI) EN ISO 4589-2:2017 + ISO 7249:2024

Nº amostra: Idioma: Regulamento:

Preparação da amostra: Valor admissível regulamento:

Especificações (EPI): Observações regulamento:

CONDIÇÕES DE ENSAIO

Tipo de material: Densidade: Anisotropia:

Tipo de provete:

Procedimento de ensaio: Equipamentos:

Estado dos provetes: Torção: Massa da meada (g):

Orientação dos provetes:

Condição da amostra: Peso no final do condicionamento:

Condições ambientais de ensaio: Temperatura Humidade Peso após mais 2 h:

Dimensão dos provetes: Comprimento: Largura: Variação =

RESULTADOS

Início do condicionamento:

Início do ensaio: Tempo de condicionamento: h

Nota: Condicionamento da amostra de pelo menos 24h a (20±2)°C e (65±2)%HR

TESTE PRELIMINAR - ignição ao ar livre (se necessário)

Estimativa da % O₂: ⇒ d (Incrementos de O₂):

Nota: normalmente 0,2

PRÉ-TESTE - Determinação do índice de oxigénio (OI) por par X&O até OI ≤ 1,0%

Concentração O ₂ - Co (%)	18,0	20,0	19,0							
Tempo de queima - BD (s)	61	> 180	> 180							
Extensão ardida - L (mm)	3									
Resultado - R (X,O)	O	X	X							

X = atinge um critério de combustão (ver notas da norma em baixo)
O = não atinge nenhum critério de combustão

Nota: O resultado "pa" com resultado "O" ou "X" do pré-teste deve ser transcrito para a 1ª coluna do quadro seguinte.

Observações da queima:

Combustão com chama Combustão sem chama (incandescente) Afterglow Fumo

Combustão irregular Carbonização Forte retração Gotejamento Fuligem

SÉRIE DE MEDIÇÕES N_i (usar incrementos ou reduções, d%, definidos no teste preliminar)

Série de medições N_i
(testar até que X se transforme em O ou O em X)

Concentração O ₂ - Co (%)	18,0	18,2	18,4	18,6	18,8	19,0	19,2
Tempo de queima - BD (s)	57	81	71	90	104	152	>180
Extensão ardida - L (mm)	3	4	6	7	10	17	
Resultado - R (X,O)	O	O	O	O	O	O	X

Nota: Na 1ª coluna repetir o ensaio para o valor de oxigénio escolhido do par XO do pré-teste.

4 medições extra

N _i	1	2	3	C _f (4)
19,2	19,0	19,2	19,0	19,2
>180	174	>180	160	>180
	22		20	
X	O	X	O	X

Nota: Na coluna N_i transcrever o ultimo teste da série de medições N_i.

VERIFICAÇÃO DE d%

Co (%) últimas 6 medições		Concentração de Oxigênio, %			
		Cl	OI	Cl - OI	(Cl - OI) ²
C _f	1	19,2	19,11	0,09	0,0081
	2	19	19,11	-0,11	0,0121
	3	19,2	19,11	0,09	0,0081
	4	19	19,11	-0,11	0,0121
	5	19,2	19,11	0,09	0,0081
n	6	19	19,11	-0,11	0,0121

 $k_{\text{tabelas}} = -0,45$
 $k = -0,45$
 $d = 0,2$

 Resultado das últimas 5 medições:

 Resultado das primeiras 4 medições:

$\sum(Cl-OI)^2 = 0,061$	$\sigma = 0,11$	
	$2\sigma/3 = 0,073$	$1,5\sigma = 0,165$

INDICE LIMITE DE OXIGÊNIO, LOI

RESULTADO
ESTIMATIVA DA INCERTEZA

Resultado	19,155
Resultado Calculado	19,155
Resultado Tratado	19,2 %

REPETIÇÃO COM OUTRO d (%)

 d (Incrementos de O₂)

 4 medições extra com os novos incrementos de O₂

	N _L	1	2	3	C _f (4)
Concentração O ₂ - Co (%)	19,2	19,1	19,2	19,1	19,2
Tempo de queima - BD (s)	>180	153	>180	160	>180
Extensão ardida - L (mm)		19		18	
Resultado - R (X,O)	X	O	X	O	X

 Nota: Na coluna N_L transcrever o último teste da série de medições N_L.

VERIFICAÇÃO DE d%

Co (%) últimas 6 medições		Concentração de Oxigênio, %			
		Cl	OI	Cl - OI	(Cl - OI) ²
C _f	1	19,2	19,155	0,045	0,00203
	2	19,1	19,155	-0,055	0,00302
	3	19,2	19,155	0,045	0,00203
	4	19,1	19,155	-0,055	0,00302
	5	19,2	19,155	0,045	0,00203
n	6	19	19,155	-0,155	0,02402

 $k_{\text{tabelas}} = -0,45$
 $k = -0,45$
 $d = 0,1$

 Resultado das últimas 5 medições:

 Resultado das primeiras 4 medições:

$\sum(Cl-OI)^2 = 0,036$	$\sigma = 0,085$	
	$2\sigma/3 = 0,057$	$1,5\sigma = 0,128$

INDICE LIMITE DE OXIGÊNIO, LOI
RESULTADO
ESTIMATIVA DA INCERTEZA
Notas para o relatório:

Os resultados do ensaio referem-se apenas ao comportamento dos provetes nas condições do ensaio. Estes resultados não devem ser utilizados para inferir os riscos relativos apresentados por diferentes materiais ou formas nestas ou noutras condições de incêndio.

**COMPORTAMENTO AO FOGO - ÍNDICE LIMITE DE OXIGÉNIO (LOI)
EN ISO 4589-2:2017 + ISO 7249:2024**

Nº amostra: Idioma: Regulamento:

Preparação da amostra: Valor admissível regulamento:

Especificações (EPI): Observações regulamento:

CONDIÇÕES DE ENSAIO

Tipo de material: Densidade: Anisotropia:

Tipo de provete:

Procedimento de ensaio: Equipamentos: F.Y012 - Réguas
F.Y023 - F.Y024 - F.X216 - Câmaras

Estado dos provetes: Torção: Massa da meada (g):

Orientação dos provetes:

Condicionamento da amostra: Peso no final do condicionamento:

Condições ambientais de ensaio: Temperatura Humidade Peso após mais 2 h:

Dimensão dos provetes: Comprimento: Largura: Variação =

RESULTADOS

Início do condicionamento:

Início do ensaio: Tempo de condicionamento: h

Nota: Condicionamento da amostra de pelo menos 24h a (20±2)°C e (65±2)%HR

TESTE PRELIMINAR - ignição ao ar livre (se necessário)

Estimativa da % O₂ ⇒ d (Incrementos de O₂)

Nota: normalmente 0,2

PRÉ-TESTE - Determinação do índice de oxigénio (OI) por par X&O até OI ≤ 1,0%

Concentração O ₂ - Co (%)	25,0	28,0	30,0	32,0	34,0	33,0							
Tempo de queima - BD (s)	0	0	0	0	112	116							
Extensão ardida - L (mm)	0	0	0	0	80	80							
Resultado - R (X,O)	O	O	O	O	X	X							

X = atinge um critério de combustão (ver notas da norma em baixo)
O = não atinge nenhum critério de combustão

Nota: O resultado "par" com resultado "O" ou "X" do pré-teste deve ser transcrito para a 1ª coluna o quadro seguinte.

Observações da queima:

Combustão com chama Combustão sem chama (incandescente) Afterglow Fumo

Combustão irregular Carbonização Forte retração Gotejamento Fuligem

SÉRIE DE MEDIÇÕES N_i (usar incrementos ou reduções, d%, definidos no teste preliminar)

Série de medições N_i
(testar até que X se transforme em O ou O em X)

Concentração O ₂ - Co (%)	33,0	33,2	33,4					
Tempo de queima - BD (s)	18	37	112					
Extensão ardida - L (mm)	3	4	80					
Resultado - R (X,O)	O	O	X					

Nota: Na 1ª coluna repetir o ensaio para o valor de oxigénio escolhido do par XO no pré-teste.

4 medições extra

N _i	1	2	3	C _p (4)
	33,4	33,2	33,0	32,8
	112	117	117	123
	80	80	80	80
	X	X	X	O

Nota: Na coluna N_i transcrever o último teste da série de medições N_i.

VERIFICAÇÃO DE d%

Co (%) últimas medições	Concentração de Oxigênio, %				k _{tabela} =
	Ci	Oi	Ci - Oi	(Ci - Oi) ²	
C _f 1	32,6	33	-0,4	0,16	2
2	32,8	33	-0,2	0,04	
3	33	33	0	0	2
4	33,2	33	0,2	0,04	
5	33,4	33	0,4	0,16	0,2
n 6	33,2	33	0,2	0,04	

Resultado das últimas 5 medições: XXXXO

Resultado das primeiras 4 medições: OOX

$\Sigma(Ci-Oi)^2 = 0,44$	$\sigma = 0,297$	
	$2\sigma/3 = 0,198$	$1,5\sigma = 0,445$

ÍNDICE LIMITE DE OXIGÉNIO, LOI

O LOI pode ser determinado

RESULTADO O LOI é de 33 %

ESTIMATIVA DA INCERTEZA 0,54

Resultado	33
Resultado Calculado	33
Resultado Tratado	33,0 %

REPETIÇÃO COM OUTRO d (%)

 d (Incrementos de O₂)

 4 medições extra com os novos incrementos de O₂

	N _i	O ₂			C _f (4)
		1	2	3	
Concentração O ₂ - Co (%)					
Tempo de queima - BD (s)					
Extensão ardida - L (mm)					
Resultado - R (X,O)					

Nota: Na coluna NL transcrever o último teste da série de medições NL.

VERIFICAÇÃO DE d%

Co (%) últimas medições	Concentração de Oxigênio, %				k _{tabela} =
	Ci	Oi	Ci - Oi	(Ci - Oi) ²	
C _f 1					
2					
3					
4					
5					
n 6					

Resultado das últimas 5 medições:

Resultado das primeiras 4 medições: OOX

$\Sigma(Ci-Oi)^2 = na$	$\sigma = na$	
	$2\sigma/3 = na$	$1,5\sigma = na$

Falta incremento de Oxigênio, d

ÍNDICE LIMITE DE OXIGÉNIO, LOI
RESULTADO
ESTIMATIVA DA INCERTEZA
Notas para o relatório:

Os resultados do ensaio referem-se apenas ao comportamento dos provetes nas condições do ensaio. Estes resultados não devem ser utilizados para inferir os riscos relativos apresentados por diferentes materiais ou formas nestas ou noutras condições de incêndio.

A3.2 - PARTICIPANT RESULTS (INTERNAL REPORT #11712/2026/1)



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TEST REPORT Nº: 11712/2026/1
Date of issue: 11/03/2026

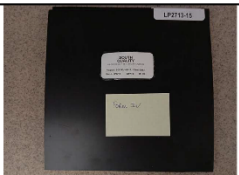

CLIENT:
CITEVE_LFC_LABORATÓRIO DE FOGO E CONFORTO

Request Nr.: 2611429 / 2026

Date of receipt: 25/02/2026

Tests performed between: 06/03/2026 - 10/03/2026

Order Description:
South Quality - SQO-PL14 program (Round 12)

Sample Nr.	Sample	Client Reference	Photo
26002260 / 2026	Material sample	Batch: LP2713	
26002261 / 2026	Material sample	Batch: LP2658	

Digitally certified and approved by
Deolinda Domingues 
(Laboratory Department Direction)

Approved by: **SUZANA BLATTMANN / Laboratory Coordinator**

Notes:

The results of this report concern only to the samples submitted to a test, the sampling is not the responsibility of the laboratory. The test report cannot be partially reproduced without permission from CITEVE. All services provided are in accordance with the document "CITEVE Service Terms and Conditions" available in [CITEVE – Terms and conditions of service](#). Parameters marked with * are not included in the scope of laboratory accreditation and parameters marked with ** are outside the scope of accreditation due to a change in method. Parameters marked with # were contracted to an external laboratory and are accredited and parameters marked with ## were contracted to an external laboratory and are not accredited. The symbol used as a decimal separator is the comma. In the declaration of conformity, when issued, the decision rule does not consider the uncertainty associated with the test, except in cases where a different decision rule is defined in the text of conformity (see document "Decision rules for statement of conformity by CITEVE Laboratories" published in [Policies and decision rules](#)). The expanded uncertainty presented was calculated by multiplying the standard uncertainty by the expansion factor k=2, which for a normal distribution allows associating to the result a confidence level of approximately 95%.

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Rua Fernando Mesquita, 2785 | 4760-034 Vila Nova de Famalicão | Portugal | +351 252 300 300 | sec.lab@citeve.pt

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RESULTS

Sample Nr.: 26002260 / 2026

Client Reference: Batch: LP2713

BURNING BEHAVIOUR - OXYGEN INDEX (LOI) / EN ISO 4589-2:2017 *

Sample Description: Material sample

Oxygen index (OI)	19,2 %
Oxygen volume fraction increment (d)	0,1 %
Standard deviation (σ)	0,085
Uncertainty estimation	0,51
Observed burning behaviour	Flaming combustion Soot Smoke

Notes

These test results relate only to the behaviour of the specimens under the conditions of this test. These results shall not be used to infer the relative hazards presented by differing materials or shapes under these or other fire conditions.

Test Conditions:

Material	Plastic material
Anisotropy in the material	Isotropic
Specimen orientation	Length direction
State of specimens	As received
Sample conditioning	72 h at (23±2)°C and (50±5)%RH
Ignition procedure	A
Test specimens form	Type IV - self-supporting 3 mm thick
Specimens dimensions	100 mm x 6 mm

Note: See annexes

Sample Nr.: 26002261 / 2026

Client Reference: Batch: LP2658

BURNING BEHAVIOUR - OXYGEN INDEX (LOI) / EN ISO 4589-2:2017 *

Sample Description: Material sample



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Oxygen index (OI)	33,0 %
Oxygen volume fraction increment (d)	0,2 %
Standard deviation (σ)	0,297
Uncertainty estimation	0,54
Observed burning behaviour	Flaming combustion Soot Smoke

Notes

These test results relate only to the behaviour of the specimens under the conditions of this test. These results shall not be used to infer the relative hazards presented by differing materials or shapes under these or other fire conditions.

Test Conditions:

Material	Plastic material
Anisotropy in the material	Isotropic
Specimen orientation	Length direction
State of specimens	As received
Sample conditioning	98 h at (23±2)°C and (50±5)%RH
Ignition procedure	B
Test specimens form	Type V - flexible material, thickness ≤ 10,5 mm
Specimens dimensions	140 mm x 50 mm

Note: See annexes



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11/03/2026

ANNEXES

(They are an integral part of the report)

Sample Nr.	Sample Description	Parameter / Procedure	Annex
26002260 / 2026	Material sample	BURNING BEHAVIOUR - OXYGEN INDEX (LOI) / EN ISO 4589-2:2017	Attachment 1
26002261 / 2026	Material sample	BURNING BEHAVIOUR - OXYGEN INDEX (LOI) / EN ISO 4589-2:2017	Attachment 2

ANEXO DO RELATÓRIO | REPORT ANNEX | ANNEXE DU RAPPORT





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ANEXO DO RELATÓRIO | REPORT ANNEX | ANNEXE DU RAPPORT



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APPENDIX B

VOID

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