

## CLASSIFICATION REPORT

Petitioner's reference: **Digidelta Internacional, S.A.**  
Industrial zone Torres Novas, Lote 1  
Casal Torteiro, 2350-483 Torres Novas  
Portugal

Prepared By: **LGAI Technological Center, S.A.**  
**(APPLUS)**  
Campus UAB  
Ronda de la Font del Carme, s/n  
E - 08193 Bellaterra (Barcelona)

Product name: **Decal PVC Free UVP + decal PP  
overlamine P HT 65 UVP**

Report nº: **22/32308842-2**

Date of issue: **28<sup>th</sup> February, 2023**

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## **1.-INTRODUCTION**

This classification report defines the railway classification assigned to "Decal PVC Free UVP + decal PP overlamine P HT 65 UVP" in accordance with the procedures given in the EN 45545-2:2013+A1:2015 standard.

## **2.-TEST REQUESTED**

Fire tests of railway products in compliance with the following standards:

- ISO 5658-2:2006 and ISO 5658-2 Amd1:2011: "Reaction to fire tests -- Spread of flame Part 2: Lateral spread on building and transport products in vertical configuration."
- ISO 5660-1:2015 and ISO 5660-1:2015/Amd1:2019: "Reaction to fire tests -- Heat release, smoke production and mass loss rate -- Part 1: Heat release rate (cone calorimeter method)"
- EN ISO 5659-2:2017: "Plastics -- Smoke generation -- Part 2: Determination of optical density by a single-chamber test"
- EN 45545-2:2013+A1:2015 Annex C (Normative). Method 1: "Railway applications. Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components. Annex C: Testing Methods for determination of toxic gases from railway products. Smoke chamber method. "

### **3.- DETAILS OF CLASSIFIED PRODUCT**

In accordance with the technical specifications provided by the petitioner:

Product trade name: Decal PVC Free UVP + decal PP overlamine P HT 65 UVP

The product is composed by four layers:

- Layer nº1: Overlamination of polypropylene, thickness of 65 µm, smooth appearance and clean glossy colour (with a superficial density of 52,9 g/m<sup>2</sup>) and clean mat colour (with a superficial density of 51 g/m<sup>2</sup>).
- Layer nº2: Adhesive, thickness of 20 mm, superficial density of 20 g/m<sup>2</sup> (dry), white colour and smooth appearance.
- Layer nº3: Polypropylene, thickness of 65 µm, smooth appearance and white mat colour (with a superficial density of 60,2 g/m<sup>2</sup>), white glossy colour (with a superficial density of 58,8 g/m<sup>2</sup>) and clean glossy colour (with a superficial density of 54,3 g/m<sup>2</sup>).
- Layer nº4: Adhesive, thickness of 20 mm, superficial density of 20 g/m<sup>2</sup> (dry), white colour and smooth appearance.

Fixing method: The test has been performed with the product stick to the steel sheet in accordance with the standard UNE-EN 13238:2011.

Manufacturer: Digidelta Internacional, S.A., Industrial zone Torres Novas, Lote 1, Casal Torteiro, 2350-483 Torres Novas, Portugal.

### **4.-REPORT AND RESULTS IN SUPPORT OF THIS CLASSIFICATION**

#### **4.1-REPORTS**

<b>Name of Laboratory</b>	<b>Name of sponsor</b>	<b>Report ref. no.</b>	<b>Test method and date</b>
Applus – LGAI (Nº9/LE895)	Digidelta Internacional, S.A.	22/32308842-1	ISO 5660-1:2015 and ISO 5660-1:2015Amd1:2019 19-04-2022

<b>Name of Laboratory</b>	<b>Name of sponsor</b>	<b>Report ref. no.</b>	<b>Test method and date</b>
GAIKER* (Nº72/LE187)	Digidelta Internacional, S.A.	P-22-24691/1/I	ISO 5658-2:2006 and ISO 5658-2 Amd1:2011 17-05-2022
			EN ISO 5659-2:2017 + EN 45545-2:2013+A1:2015 Anexo C (Normative) 13-05-2022

\* Test performed by a partner accredited laboratory; the complete tests report is attached in this classification report in Annexes, with file number: P-22-24691/1/I.

## 4.2.- TEST RESULTS

### REQUIREMENT 1

Test method	Parameter	Number of tests	Continuous parameter mean	Compliance parameters R1-HL1	Compliance parameters R1-HL2	Compliance parameters R1-HL3
T02 ISO 5658-2	CFE (kW/m <sup>2</sup> )	3	<b>28,8</b>	≥ 20 kW/m <sup>2</sup>	≥ 20 kW/m <sup>2</sup>	≥ 20 kW/m <sup>2</sup>
T03.01 ISO 5660-1: 50 kW/m <sup>2</sup>	MARHE (kW/m <sup>2</sup> )	3	<b>59,75</b>	--	≤ 90 kW/m <sup>2</sup>	≤ 60 kW/m <sup>2</sup>
T10.01 ISO 5659-2: 50 kW/m <sup>2</sup>	Ds (4 minutes) (dimensionless)	6	<b>63,7</b>	≤ 600	≤ 300	≤ 150
T10.02 ISO 5659-2: 50 kW/m <sup>2</sup>	VOF4 (min)	6	<b>115,5</b>	≤ 1200 min	≤ 600 min	≤ 300 min
T11.01 ISO 5659-2: 50 kW/m <sup>2</sup> + EN 45545-2 Annex C. Method 1	CIT <sub>G</sub> (4 minutes) (dimensionless)	6	<b>0,111</b>	≤ 1,2	≤ 0,9	≤ 0,75
T11.01 ISO 5659-2: 50 kW/m <sup>2</sup> + EN 45545-2 Annex C. Method 1	CIT <sub>G</sub> (8 minutes) (dimensionless)	6	<b>0,101</b>	≤ 1,2	≤ 0,9	≤ 0,75

## 5.- CLASSIFICATION AND FIELD OF APPLICATION

This classification has been carried out according to European standard EN 45545-2:2013+A1:2015. Railway applications – Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and component.

The classifications obtained is the following one:

Product reference: <b>Decal PVC Free UVP + decal PP overlaminat P HT 65 UVP</b>	Classification according to EN 45545-2:2013+A1:2015 (1) and (2)
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REQUIREMENT	HAZARD LEVEL
R1	HL3

## **6.- FIELD OF APPLICATION**

(1) Classifications valid for the product described in the description of the classified product section.

(2) Classifications valid for any colour and/or pattern of the product, as it is detailed in EN 45545-2:2013+A1:2015 standard, chapter 4.2.f., with the following parameter being extended:

The product Decal PVC Free UVP + decal PP overlamine P HT 65 UVP is manufactured with different finishes. After carrying out the test at White glossy colour finish, by extension, all the finishes are included in the same classification:

- White glossy
- White matte
- Clear glossy

## **7.- LIMITATIONS**

This classification document does not represent type approval or certification of the product.

Responsible of Euroclasses  
LGAI Technological Center S.A. (APPLUS)

Laboratory Manager  
LGAI Technological Center S.A. (APPLUS)

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The results refer exclusively to the samples tested at the time and under the conditions indicated.

The uncertainties pertain to the expanded uncertainty, which has been obtained by multiplying the typical measurement uncertainty by the coverage factor  $k=2$  which, for a regular distribution, corresponds to a coverage probability of approximately 95%. The uncertainty has been calculated and they are available under request.

**Applus+** guarantees that this task has been carried out in compliance with the requirements of our Quality and Sustainability System, and furthermore, that the contractual terms and legal regulations have been complied with. In the framework of our improvement programme, we would appreciate any comments you may deem appropriate. These should be addressed to the manager who signs this document, or to the Quality Director of Applus+, at the following address: [satisfaccion.cliente@applus.com](mailto:satisfaccion.cliente@applus.com)

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ANNEX



TEST REPORT

SUBJECT Nº/REPORT: P-22-24691/1/I  
COMPANY: DIGIDELTA INTERNACIONAL, S.A  
ADDRESS: Industrial Zone Torres Novas, Lote 1  
CASAL TORTEIRO,  
2350-483 TORRES NOVAS (PORTUGAL)

TESTED MATERIAL: DECAL PVC FREE UVP +  
DECAL PP OVERLAMINATE P HT 65 UVP

DATE OF RECEPTION: 14<sup>th</sup>.10.2022  
DATE OF ANALYSIS: 04<sup>th</sup>.11.2022 to 02<sup>nd</sup>.12.2022

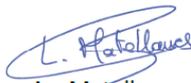
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14  
(INCLUDING THIS COVER SHEET)

The results of the analysis only refer to the tested item.

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ENAC is a signatory to the Multilateral Agreement (MLA), MRA Mutual Recognition Agreement of the European Cooperation for Accreditation (EA) and the International Laboratory Accreditation Cooperation (ILAC), in testing.

  
A. Matellanes  
E & C Coordination  
Zamudio, 28<sup>th</sup> February 2023



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## MATERIAL

It has been received from DIGIDELTA INTERNACIONAL, S.A, specimens of a plastic film adhered on steel sheet standard substrate.

## DATA SUPPLIED BY THE CLIENT

The principal characteristics are the following ones according to the information supplied by the test applicant:

Product trade name:                   DECAL PVC FREE UVP +  
  DECAL PP OVERLAMINATE P HT 65 UVP

### Exposed face characteristics (polyproline film overlamine):

Material:                                 Polypropylene  
Thickness:                               65 microns  
Surface density:                        51 - 53 g/m<sup>2</sup>  
Colour and aspect:                    Clear matt and smooth  
Orientability:                          No

### Internal layer characteristics (adhesive):

Type:                                      Adhesive  
Thickness:                                20 microns  
Surface density:                        20 g/m<sup>2</sup> (dry)  
Colour and aspect:                    Clear and smooth  
Orientability:                          No



Internal layer characteristics (polypropylene film):

Material:	Polypropylene
Thickness:	65 microns
Surface density:	55 - 60 g/m <sup>2</sup>
Colour and aspect:	White matt and smooth
Orientability:	No

Internal layer characteristics (adhesive):

Type:	Adhesive
Thickness:	20 microns
Surface density:	20 g/m <sup>2</sup> (dry)
Colour and aspect:	Clear and smooth
Orientability:	No

Back layer (not exposed layer) characteristics (steel plate):

Type:	Steel sheet
Thickness:	0,8 mm
Density:	7850 ± 50 kg/m <sup>3</sup>

**IDENTIFICATION AND CODIFICATION**

The material has been referred by the applicant and coded internally as:

Your Reference:

Our Reference:

DECAL PVC FREE UVP +  
DECAL PP OVERLAMINATE P HT 65 UVP

P-22-24691-B-1



## TESTS AND EQUIPMENT

It has been applied the following reaction to fire tests:

- Reaction to fire tests- Spread of flame- Part 2: Lateral spread on building and transport products in vertical configuration according to EN ISO 5658-2: 2006 + Amd.1: 2011 and under these conditions:
  - a) Tested on the exposed face (plastic film),
  - b) The pilot flame is a mixture of propane and air,
- Plastics. Smoke generation. Part 2: Determination of optical density by a single-chamber test according to EN ISO 5659-2:2017.
- Railway applications- Fire protection on railway vehicles- Part 2: Requirements for fire behaviour of materials and components. Annex C: Testing methods for determination of toxic gases from railway products. Smoke chamber method according to EN 45545-2:2013 + A1:2015. Annex C. Method 1.

These last two tests are carried out simultaneously and under these conditions:

- a) applying a radiation of 50 kW/m<sup>2</sup> on the surface of the exposed face (plastic film),
- b) the distance between the surface of the specimen and the lowest edge of the radiator is 25 mm and pilot flame is not applied,
- c) the test lasts 600 s (according to Table 6 in EN 45545-2:2013 + A1:2015 standard)

The principal equipment used to carry out the tests has been the following one:

- Smoke chamber (MT FU 0054), heat flux meter associated (MT FU 0063) and its accessories.
- FTIR, model Gasmeter CX-400, which operates with the analysis software Calcmet STD&PRO. Version 11.11 and its accessories (MT FU 0059), with the capacity to operate with the smoke chamber simultaneously (MT FU 0054).
- Vertical radiant panel (MT FU 0052), anemometer (MT FU 0061) and optical pyrometer (MT FU 0056)
- Weighing machine (MT LB 0224), time device (MT FU 0029) and caliber (MT FU 0037)

*NOTE:*

*Before tests specimens were conditioned at (23 ± 2) °C and (50 ± 5) % of relative humidity until constant mass.*

## RESULTS

The results, collected in the attached data sheets, are summarized in the following tables:

**Sample:**

DECAL PVC FREE UVP +

DECAL PP OVERLAMINATE P HT 65 UVP

P-22-24691-B-1

**Lateral flame spread determination test a/t ISO 5658-2:2006 + Amd 2011<sup>(1)</sup>**

PARAMETER	Specimen 1	Specimen 2	Specimen 3	AVERAGE
CFE (kW/m <sup>2</sup> )	24,3	31,0	31,0	28,8

The following table shows the flame front evolution during the test:

Time (s) at which mark is reached	Specimen 1	Specimen 2	Specimen 3
50 mm	36	36	24
100 mm	36	36	24
150 mm	38	40	38
200 mm	46	45	63
250 mm	66	84	83
300 mm	101	84	83
350 mm	138	-	-
400 mm	-	-	-
450 mm	-	-	-
500 mm	-	-	-
550 mm	-	-	-
600 mm	-	-	-
650 mm	-	-	-
700 mm	-	-	-
750 mm	-	-	-

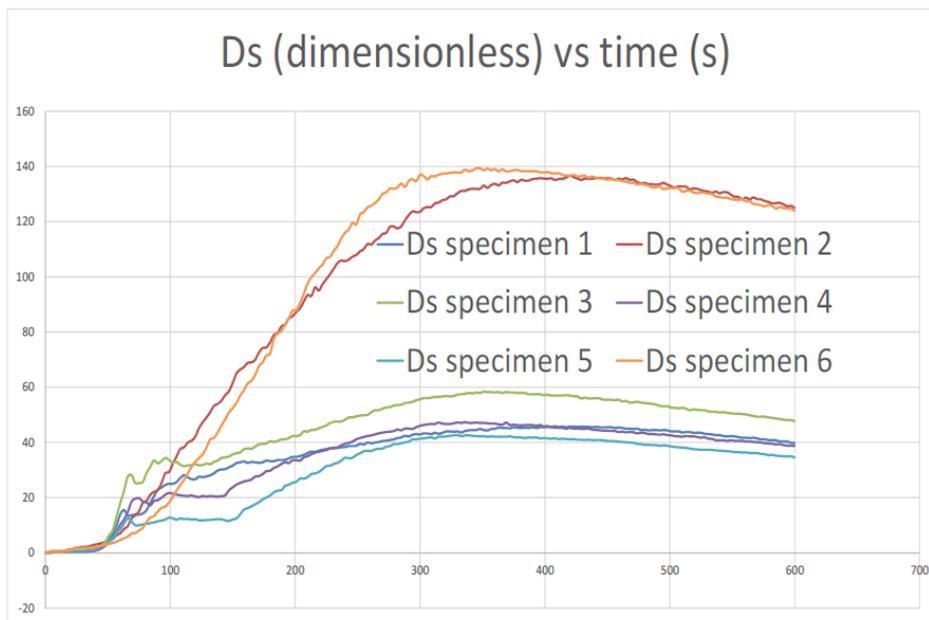


**Optical smoke density determination a/t ISO 5659-2:2017 <sup>(1)</sup>**

PARAMETER	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 5	Specimen 6	AVERAGE <sup>(2)</sup>
Ds (4): Density at the 4 <sup>th</sup> minute	38,4	105,7	48,3	39,5	34,5	116,0	63,7
VOF4 (min)	93,1	178,4	114,6	80,2	58,8	167,8	115,5
Dm: Maximum density	45,9	136,7	58,4	47,3	42,7	139,3	78,4

*(2) 6 specimens were to be tested as repeatability criteria regarding D.max parameter was not reached with the first three tested specimens (ISO 5659-2:2017 standard. Section 10.9.2)*

The following figure shows the smoke density evolution during the 10 minutes test (Ds vs t(s)):



**Gas toxicity determination test a/t EN 45545-2:2013 + A1:2015. Annex C. Method 1 <sup>(1)</sup>**

PARAMETER	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 5	Specimen 6	AVERAGE (3)
CIT <sub>G</sub> 4 minutes	0,131	0,094	0,109	0,097	0,173	0,060	<b>0,111</b>
CIT <sub>G</sub> 8 minutes	0,139	0,018	0,091	0,114	0,179	0,064	<b>0,101</b>

*(3) 6 specimens were to be tested as repeatability criteria regarding D.max parameter was not reached with the first three tested specimens (EN ISO 5659-2:2017 standard. Section 10.9.2)*

**NOTES:**

- (1) Product tested on the exposed face (plastic film)*
- (2) The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.*
- (3) This document does not represent type approval or certification of the product.*
- (4) Uncertainty is available for the test applicant*



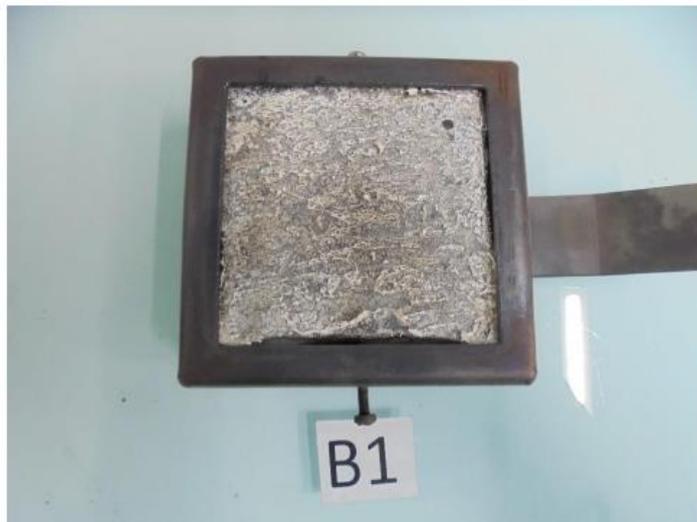
## ANNEX

ASPECT SHOWN BY THE PRODUCT REFERRED AS:

**DECAL PVC FREE UVP +**

**DECAL PP OVERLAMINATE P HT 65 UVP**

AFTER THE OPTICAL DENSITY TEST A/T EN ISO 5659-2:2017 AND TOXIC GAS  
DETERMINATION TEST A/T EN 45545-2:2013 + A1:2015. ANNEX C. METHOD 1.  
TESTED ON THE EXPOSED FACE (PLASTIC FILM)



ASPECT SHOWN BY THE PRODUCT REFERRED AS:  
**DECAL PVC FREE UVP +**  
**DECAL PP OVERLAMINATE P HT 65 UVP**  
AFTER VERTICAL RADIANT PANEL TEST A/T EN ISO 5658-2:2006 + AMD 2011  
TESTED ON THE EXPOSED FACE (PLASTIC FILM)



ENSAYO DE PANEL RADIANTE VERTICAL  
VERTICAL RADIANT PANEL

Nº ASUNTO/SUBJECT Nº: P-22-24691 INICIO DE ENSAYO/BEGINNING OF TEST: 04/11/2022  
MATERIAL/MATERIAL: P-22-24691-01 FIN DE ENSAYO/END OF TEST: 23/11/2022  
NORMA/PROCEDURE: EN ISO 5658-2 TEMPERATURA/TEMPERATURE (°C): 20  
ANALISTA/ANALYST: I. Goyoaga HUMEDAD/HUMIDITY (%): 46

TIPO DE MATERIAL: Film plástico TYPE OF MATERIAL: Plastic film TIPO DE SUBSTRATO: Chapa de acero (sustrato estándar) TYPE OF SUBSTRATE: Steel sheet (standard substrate) TIPO DE UNIÓN: Adherido TYPE OF JOINT: Adhered TIPO DE JUNTAS: - TYPE OF SEALS: -
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RESULTADOS / RESULTS				
PROBETA / SPECIMEN	1	2	3	MEDIA AVERAGE
Espesor / Thickness (mm)	0,96	0,95	0,96	---
Tiempo de ignición de la muestra (s) Specimen ignition time (s)	33	33	17	---
Tiempo de extinción del frente de llamas (s) Flame front extinction time (s)	203	375	295	---
Distancia máxima recorrida (mm) Maximum flame spread (mm)	350	300	300	---
Tiempo de distancia máxima (s) Time of max. flame spread (s)	138	84	83	---
CFE (kW/m <sup>2</sup> )	24,295	30,98	30,98	28,75
Qsb (MJ/m <sup>2</sup> )	2,5621	2,4386	2,5898	2,53
Qt (MJ)	0,1774	0,1646	0,1332	0,16
qp (kW)	0,9799	0,845	0,51	0,78
Duración del ensayo / Duration of the test (s)	803	975	895	---

Valor Medio de CFE / CFE average value (kW/m<sup>2</sup>) = 28,75

Valor Medio de Qsb / Qsb average value (MJ/m<sup>2</sup>) = 2,53

Valor Medio de Qt / Qt average value (MJ) = 0,16

Valor Medio de qp / qp average value (kW) = 0,78

OBSERVACIONES/OBSERVATIONS:

¿Desprendimiento de material inflamado? (SÍ/NO): No

Does flaming debris fall during the test? (YES/NO): No

Tiempo al que se produce dicho desprendimiento (s): -

Time at which flaming debris occurs (s): -

Explicación en el caso de que no sean válidos los resultados de ensayo: -

Explanation in case test results are not valid: -

Otras observaciones: Ninguna

Other observations: None

NOTA: Los resultados del ensayo corresponden al comportamiento de las muestras de un producto, bajo las condiciones particulares de ensayo. No pretenden constituir el único criterio de valoración del riesgo potencial de incendio que puede llevar el uso del producto.

NOTE: These test results relate only to the behaviour of the product under the particular conditions of this test and they are not intended to be sole criterion for assessing the potential fire hazard of the product in use.

Gaiker

MEMBER OF  
BASQUE RESEARCH  
& TECHNOLOGY ALLIANCE

ENSAYO DE DENSIDAD DE HUMOS  
SMOKE DENSITY TEST

Nº ASUNTO / SUBJECT Nº: P-22-24691 INICIO DE ENSAYO / BEGINNING OF TEST: 25/11/2022  
MATERIAL / MATERIAL: P-22-24691-B1 FIN DE ENSAYO / END OF TEST: 25/11/2022  
NORMA / PROCEDURE: EN ISO 5659-2 TEMPERATURA / TEMPERATURE [°C]: 19  
ANALISTA / ANALYST: Edgar.A HUMEDAD / HUMIDITY [%]: 52

TIPO DE MATERIAL: Lámina de plástico
TYPE OF MATERIAL: Plastic sheet
TIPO DE SUBSTRATO: Acero (sustrato estándar)
TYPE OF SUBSTRATE: Steel (standard substrate)
CARA ENSAYADA: Lámina plástica
FACE TESTED: Plastic sheet
Nivel de radiación / Radiation level [kW/m <sup>2</sup> ]: 50
Llama piloto (Sí / No) / Pilot Flame (Yes / No): No / No

RESULTADOS / RESULTS				
PROBETA / SPECIMEN	1	2	3	MEDIA AVERAGE
Espesor / Thickness [mm]	1,01	0,93	0,92	0,95
Masa inicial/ Initial Mass (g)	35,55	34,48	34,81	34,95
Masa final/ Final Mass (g)	34,74	33,66	34,02	34,14
Pérdida de masa / Mass Loss (g)	0,81	0,82	0,79	0,81
Tiempo de ignición / Ignition Time (s)	57,00	-	69,00	63,00
Tiempo de extinción / Extinction Time (s)	126,00	-	126,00	126,00
Ds(4): Densidad al minuto 4 / Density at 4th minute	38,37	105,70	48,25	64,11
VOF4 [min]	93,05	178,41	114,64	128,70
Dm: Densidad máxima / Maximum density	45,90	136,72	58,41	80,34
Dm: Densidad máxima corregida / Maximum corrected density	42,60	135,68	55,77	78,02
Duración del ensayo / Duration of the test (s)	600,00	600,00	600,00	---

Valor medio de Ds (4) / Ds (4) average value = 64,11  
Valor Medio de VOF4 / VOF4 average value (min) = 128,70  
Valor medio de Dm / Dm average value = 80,34

OBSERVACIONES / OBSERVATIONS:

Otras observaciones: Serie 1  
Other observations: Set 1

NOTA: Los resultados del ensayo corresponden al comportamiento de las muestras de un producto, bajo las condiciones particulares de ensayo. No pretenden constituir el único criterio de valoración del riesgo potencial de incendio que puede llevar el uso del producto.

NOTE: These test results relate only to the behaviour of the product under the particular conditions of this test and they are not intended to be sole criterion for assessing the potential fire hazard of the product in use.

**ENSAYO DE DENSIDAD DE HUMOS**  
**SMOKE DENSITY TEST**

Nº ASUNTO / SUBJECT Nº: P-22-24691 INICIO DE ENSAYO / BEGINNING OF TEST: 02/12/2022  
MATERIAL / MATERIAL: P-22-24691-B1 FIN DE ENSAYO / END OF TEST: 02/12/2022  
NORMA / PROCEDURE: EN ISO 5659-2 TEMPERATURA / TEMPERATURE (°C): 20  
ANALISTA / ANALYST: I. Gojoaga HUMEDAD / HUMIDITY (%): 40

TIPO DE MATERIAL: Lámina plástica TYPE OF MATERIAL: Plastic sheet
TIPO DE SUBSTRATO: Chapa de acero (sustrato estándar) TYPE OF SUBSTRATE: Steel sheet (standards substrate)
CARA ENSAYADA: Cara lámina FACE TESTED: Plastic sheet
Nivel de radiación / Radiation level (kW/m <sup>2</sup> ): 50 kw/m2
Llama piloto (Sí / No) / Pilot Flame (Yes / No): No / No

RESULTADOS / RESULTS				
PROBETA / SPECIMEN	1	2	3	MEDIA AVERAGE
Espesor / Thickness (mm)	0,98	0,98	0,97	0,98
Masa inicial/ Initial Mass (g)	35,12	35,48	34,75	35,12
Masa final/ Final Mass (g)	34,31	34,67	33,90	34,29
Pérdida de masa / Mass Loss (g)	0,81	0,81	0,85	0,82
Tiempo de ignición / Ignition Time (s)	108,00	66,00	-	87,00
Tiempo de extinción / Extinction Time (s)	141,00	147,00	-	144,00
Ds(4): Densidad al minuto 4 / Density at 4th minute	39,51	34,48	116,00	63,33
VOF4 (min)	80,16	58,81	167,75	102,24
Dm: Densidad máxima / Maximum density	47,33	42,68	139,33	76,44
Dm: Densidad máxima corregida / Maximum corrected density	45,64	41,17	137,88	74,89
Duración del ensayo / Duration of the test (s)	600,00	600,00	600,00	---

Valor medio de Ds (4) / Ds (4) average value = 63,33  
Valor Medio de VOF4 / VOF4 average value (min) = 102,24  
Valor medio de Dm / Dm average value = 76,44

**OBSERVACIONES / OBSERVATIONS:**

Otras observaciones: Serie 2  
Other observations: Set 2

NOTA: Los resultados del ensayo corresponden al comportamiento de las muestras de un producto, bajo las condiciones particulares de ensayo. No pretenden constituir el único criterio de valoración del riesgo potencial de incendio que puede llevar el uso del producto.

NOTE: These test results relate only to the behaviour of the product under the particular conditions of this test and they are not intended to be sole criterion for assessing the potential fire hazard of the product in use.

ENSAYO DE TOXICIDAD DE GASES  
SMOKE TOXICITY TEST

NP ASUNTO / SUBJECT Nº: P-22-24691

MATERIAL / MATERIAL: P-22-24691-01

ANALISTA / ANALYST: fdgrr.A

T<sub>0</sub> 4 min (°C)= 80,1 T<sub>0</sub> 8 min (°C) 87,5

PROBETA SPECIMEN 1	4 min			8 min		
	GAS	C (ppm)	C (mg/m <sup>3</sup> )	CTIG	C (ppm)	C (mg/m <sup>3</sup> )
CO <sub>2</sub>	2158,89	3263,527	0,004	2507,75	3754,862	0,004
CO	26,16	25,164	0,001	56,91	54,227	0,003
NO	34,59	-	-	35,11	-	-
NO <sub>2</sub>	0,00	-	-	0,46	-	-
SO <sub>2</sub>	1,25	2,741	0,001	0,05	0,973	0,000
HCl	0,00	0,000	0,000	0,00	0,000	0,000
HF	3,26	2,240	0,007	0,00	0,000	0,000
HCN	0,02	0,015	0,000	0,10	0,099	0,000
HBr	0,97	2,696	0,002	6,04	16,629	0,014
NDx	34,59	54,663	0,116	35,56	55,666	0,118
Total			0,131			0,139

T<sub>0</sub> 4 min (°C)= 82,4 T<sub>0</sub> 8 min (°C) 86,6

PROBETA SPECIMEN 2	4 min			8 min		
	GAS	C (ppm)	C (mg/m <sup>3</sup> )	CTIG	C (ppm)	C (mg/m <sup>3</sup> )
CO <sub>2</sub>	269,59	408,338	0,000	546,49	821,131	0,001
CO	64,74	62,634	0,004	129,93	123,280	0,007
NO	24,00	-	-	0,00	-	-
NO <sub>2</sub>	1,81	-	-	2,75	-	-
SO <sub>2</sub>	3,51	7,755	0,002	3,07	6,702	0,002
HCl	0,00	0,000	0,000	0,00	0,000	0,000
HF	0,00	0,000	0,000	0,00	0,000	0,000
HCN	0,11	0,355	0,000	0,38	0,343	0,001
HBr	0,00	0,000	0,000	0,00	0,000	0,000
NDx	25,81	41,023	0,087	2,29	3,593	0,009
Total			0,094			0,018

T<sub>0</sub> 4 min (°C)= 85,1 T<sub>0</sub> 8 min (°C) 89,1

PROBETA SPECIMEN 3	4 min			8 min		
	GAS	C (ppm)	C (mg/m <sup>3</sup> )	CTIG	C (ppm)	C (mg/m <sup>3</sup> )
CO <sub>2</sub>	2249,39	3397,330	0,004	2280,79	3287,209	0,004
CO	42,57	40,915	0,002	73,43	69,796	0,004
NO	27,10	-	-	22,95	-	-
NO <sub>2</sub>	1,78	-	-	0,60	-	-
SO <sub>2</sub>	0,39	0,859	0,001	1,43	3,100	0,001
HCl	0,00	0,000	0,000	0,00	0,000	0,000
HF	0,00	0,000	0,000	0,00	0,000	0,000
HCN	0,00	0,000	0,000	0,26	0,235	0,000
HBr	2,69	7,670	0,006	1,82	5,275	0,004
NDx	29,88	45,601	0,097	23,55	36,774	0,079
Total			0,109			0,093

Valor Medio CTIG (4ª minuto) / 4th minute CTIG average value= 0,111

Valor Medio CTIG (8ª minuto) / 8th minute CTIG average value= 0,083

OBSERVACIONES / OBSERVATIONS:

Otras observaciones: Serie 1  
Other observations: Set 1

NOTA: Los resultados del ensayo corresponden al comportamiento de las muestras de un producto, bajo las condiciones particulares de ensayo. No pretenden constituir el único criterio de valoración del riesgo potencial de incendio que puede llevar el uso del producto.

NOTE: These test results relate only to the behaviour of the product under the particular conditions of this test and they are not intended to be the safe criterion for assessing the potential fire hazard of the product in use.

ENSAYO DE TOXICIDAD DE GASES  
SMOKE TOXICITY TEST

PROBETA / SUBJECT Nº: P-22-24691

MATERIAL / MATERIAL: P-22-24691-01

ANALISTA / ANALYST: Edgar A

Tª 4 min (°C): 83,5 Tª 8 min (°C) 86,9

PROBETA SPECIMEN 1	4 min			8 min		
	GAS	C (ppm)	C (mg/m3)	CTG	C (ppm)	C (mg/m3)
CO2	2085,88	3136,802	0,004	2104,78	3135,171	0,004
CO	37,90	36,268	0,002	58,10	55,073	0,003
NO	21,33	-	-	25,67	-	-
NO2	0,00	-	-	0,43	-	-
SO2	2,05	4,484	0,001	2,13	4,615	0,001
HCl	0,00	0,000	0,000	0,00	0,000	0,000
HF	0,00	0,000	0,000	0,00	0,000	0,000
HCN	0,02	0,022	0,000	0,61	0,561	0,001
HBr	8,01	23,252	0,019	8,54	23,389	0,019
NOx	21,33	33,533	0,021	26,10	40,644	0,026
Total			0,097			0,114

Tª 4 min (°C): 83,3 Tª 8 min (°C) 86,5

PROBETA SPECIMEN 2	4 min			8 min		
	GAS	C (ppm)	C (mg/m3)	CTG	C (ppm)	C (mg/m3)
CO2	2237,33	3362,960	0,004	2456,37	3659,337	0,004
CO	46,30	42,374	0,002	75,12	71,215	0,004
NO	46,63	-	-	50,02	-	-
NO2	0,00	-	-	0,22	-	-
SO2	1,19	2,602	0,001	1,43	3,099	0,001
HCl	0,00	0,000	0,000	0,00	0,000	0,000
HF	0,00	0,000	0,000	0,00	0,000	0,000
HCN	0,00	0,000	0,000	0,00	0,000	0,000
HBr	7,72	21,336	0,017	1,94	5,314	0,004
NOx	46,63	70,133	0,049	50,24	76,246	0,056
Total			0,173			0,179

Tª 4 min (°C): 86,9 Tª 8 min (°C) 90,9

PROBETA SPECIMEN 3	4 min			8 min		
	GAS	C (ppm)	C (mg/m3)	CTG	C (ppm)	C (mg/m3)
CO2	190,06	284,991	0,000	433,15	636,890	0,001
CO	63,73	59,817	0,003	121,51	113,688	0,002
NO	2,49	-	-	14,41	-	-
NO2	4,59	-	-	2,41	-	-
SO2	2,89	6,249	0,002	2,46	5,201	0,002
HCl	0,00	0,000	0,000	0,00	0,000	0,000
HF	14,32	9,674	0,031	0,00	0,000	0,000
HCN	0,00	0,000	0,000	0,04	0,039	0,000
HBr	0,10	0,273	0,000	0,00	0,000	0,000
NOx	7,08	11,004	0,023	16,82	25,850	0,025
Total			0,060			0,064

Valor Medio CTG (4ª minuto) / 4th minute CTG average value: 0,110

Valor Medio CTG (8ª minuto) / 8th minute CTG average value: 0,119

OBSERVACIONES / OBSERVATIONS:

Otras observaciones: Serie 2  
Other observations: Set 2

NOTA: Los resultados del ensayo corresponden al comportamiento de las muestras de un producto, bajo las condiciones particulares de ensayo. No pretenden constituir el único criterio de valoración del riesgo potencial de incendio que puede llevar al uso del producto.

NOTE: These test results relate only to the behaviour of the product under the particular conditions of this test and they are not intended to be the safe criterion for assessing the potential fire hazard of the product in use.