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CLASSIFICATION OF REACTION TO FIRE IN ACCORDANCE WITH EN 13501-1:2007+A1:2009

PYROGUARD UK LIMITED

Haydock, WA11 9GA UNITED KINGDOM

International House, Millfield Lane

Sponsor:

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Prepared by:	LGAI Technological Center, S.A. (APPLUS) Campus UAB Ronda de la Font del Carme, s/n E - 08193 Bellaterra (Barcelona)	Tests marked with (*) are not covered by the ENAC accreditation.
Product name:	PYROGUARD T	

21/24533-317 M2

Date of issue: **16th May, 2022**

Description of the modification: An error at the year of the classification standard on the introduction section has been corrected. The modifications are shown in italics.

The present report supersedes the classification report number 21/24533-317 M1 issued on 27th May, 2021. It is responsibility of the client to replace the original and all the copies.

1.-INTRODUCTION

Classification report n^o:

This classification report defines the classification assigned to "PYROGUARD T" in accordance with the procedures given in the *EN* 13501-1:2007+A1:2009 standard.

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2.- DETAILS OF CLASSIFIED PRODUCT

2.1.-General

The product, PYROGUARD T, is defined as transparent laminated fire resistance safety glass according to the petitioner.

2.2.-Product description

In accordance with the technical specifications provided by the petitioner:

Product trade name: **PYROGUARD T**

Product range was tested:

SAMPLE 1:

EW/13-1, thickness of 13 mm, superficial density 29,5 kg/m², transparent laminated fire resistance safety glass.

The product is compose by 3 layers + perimeter sealant:

- -Layer 1: Toughened glass
- -Layer 2: Nano composite Gel interlayer
- -Layer 3: Toughened glass

- Perimeter sealant (grey-black):

- Primary sealant
- Secondary sealant (EW)

<u>EW/13-1</u>	Nano composite Gel interlayer	Primary sealant	Secondary sealant (EW)	Toughened glass
m ³ /m ² for the tested 1500 x 1000 panel	2.89 x 10 ⁻³	4.96 x 10 ⁻⁵	6.0 x 10⁻⁵	1.0 x 10 ⁻²
ρ (g/cm ³)	1.7	1.5	1.8	2.5



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SAMPLE 2:

EI/47-3, thickness of 47 mm, superficial density 96 kg/m², transparent laminated fire resistance safety glass.

The product is compose by 7 layers + perimeter sealant:

- -Layer 1: Toughened glass
- -Layer 2: Nano composite Gel interlayer
- Layer 3: Toughened glass
- -Layer 4: Nano composite Gel interlayer
- -Layer 5: Toughened glass
- -Layer 6: Nano composite Gel interlayer
- -Layer 7: Toughened glass

- Perimeter sealant (grey-black):

- Primary sealant
- Secondary sealant (EI)

EI/47-3	Nano composite Gel interlayer	Primary sealant	Secondary sealant (EI)	Toughened glass
m ³ /m ² for the tested 1500 x 1000 panel	2.01 x 10 ⁻²	1.13 x 10 ⁻⁴	5.60 x 10 ⁻⁴	2.60 x 10 ⁻²
ρ (g/cm ³)	1.7	1.5	1.8	2.5

Manufacturer: PYROGUARD UK LIMITED, International House, Millfield Lane, Haydock, WA11 9GA, UNITED KINGDOM.

3.-REPORT AND RESULTS IN SUPPORT OF THIS CLASSIFICATION

3.1- Reports

Name of Laboratory	Name of sponsor	Report ref. no.	Test method and date
		19/19491-1009 M2	UNE-EN ISO 1716:2011 03-06-2019
Applus – LGAI	LIMITED	Part 1	UNE-EN 13823:2012+A1:2016 20-05-2019



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3.2- Results of the Tests

SAMPLE 1 (EW/13-1)

Test Method		RESULT	S	
	CRITERIA CLASS A2	Nº TESTS	AVERAGE	COMPLIANCE
	$PCS \leq 3.0 \text{ MJ/kg}(1)$		-0.36 MJ/kg	YES
	$PCS \leq 3.0 \text{ MJ/kg}(2)$		-0.23 MJ/kg	YES
	$PCS \le 3.0 \text{ MJ/kg}(1)$		-0.36 MJ/kg	YES
	$PCS \le 4.0 \text{ MJ/m}^2(3)$		0.27 MJ/m ²	YES
	$PCS \le 4.0 \text{ MJ/m}^2(3)$		0.27 MJ/m ²	YES
UNE-EN ISO	$PCS \le 4.0 \text{ MJ/m}^2(3)$	15	0.27 MJ/m ²	YES
1716:2011	$PCS \le 4.0 \text{ MJ/m}^2(3)$	15	0.27 MJ/m ²	YES
	$PCS \le 4.0 \text{ MJ/m}^2$ (4)		0.12 MJ/m ²	YES
	$PCS \le 4.0 \text{ MJ/m}^2$ (4)		0.12 MJ/m ²	YES
	$PCS \le 4.0 \text{ MJ/m}^2$ (4)		0.12 MJ/m ²	YES
	$PCS \le 4.0 \text{ MJ/m}^2$ (4)		0.12 MJ/m ²	YES
	$PCS \leq 3.0 \text{ MJ/kg} (6)$		1.57 MJ/kg	YES
	$FIGRA_{0.2~\text{MJ}} \leq 120~\text{W/s}$	3	0.00	YES
	LFS < edge of the sample	3	< to edge	YES
	$THR_{600s} \leq 7.5 \ \text{MJ}$	3	0.14	YES
UNE-EN	CRITERIA subclass `s1'	Nº TESTS	AVERAGE	COMPLIANCE
13823:2012	$SMOGRA \le 30 \ m^2/s^2$	3	0.00	YES
+A1:2016	$TSP_{600s} \leq 50 \ m^2$	3	19.72	YES
	CRITERIA subclass 'd0'	Nº TESTS	AVERAGE	COMPLIANCE
	Fall of droplets/particles in flames within 600 s	3	NO	YES

(1)(2) Substantial component

(3)(4) Non substantial external component(6) Product as a whole



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SAMPLE 2 (EI/47-3)

Test Method		RESULT	S	
	CRITERIA CLASS A2	Nº TESTS	AVERAGE	COMPLIANCE
	$PCS \leq 3.0 \text{ MJ/kg}(1)$		-0.36 MJ/kg	YES
	$PCS \leq 3.0 \text{ MJ/kg}(2)$		-0.23 MJ/kg	YES
	$PCS \leq 3.0 \text{ MJ/kg}(1)$		-0.36 MJ/kg	YES
	$PCS \leq 3.0 \text{ MJ/kg}(2)$		-0.23 MJ/kg	YES
	$PCS \leq 3.0 \text{ MJ/kg}(1)$		-0.36 MJ/kg	YES
	$PCS \leq 3.0 \text{ MJ/kg}(2)$		-0.23 MJ/kg	YES
	$PCS \leq 3.0 \text{ MJ/kg}(1)$		-0.36 MJ/kg	YES
UNE-EN ISO	$PCS \le 4.0 \text{ MJ/m}^2(3)$	15	0.62 MJ/m²	YES
1716:2011	$PCS \le 4.0 \text{ MJ/m}^2(3)$	15	0.62 MJ/m²	YES
	$PCS \le 4.0 \text{ MJ/m}^2(3)$		0.62 MJ/m²	YES
	$PCS \le 4.0 \text{ MJ/m}^2(3)$		0.62 MJ/m²	YES
	$PCS \le 4.0 \text{ MJ/m}^2 (5)$		1.66 MJ/m ²	YES
	$PCS \le 4.0 \text{ MJ/m}^2 (5)$		1.66 MJ/m ²	YES
	$PCS \le 4.0 \text{ MJ/m}^2 (5)$		1.66 MJ/m ²	YES
	$PCS \le 4.0 \text{ MJ/m}^2 (5)$		1.66 MJ/m ²	YES
	$PCS \leq 3.0 \text{ MJ/kg} (6)$		0.04 MJ/kg	YES
	$FIGRA_{0.2~\text{MJ}} \leq 120~\text{W/s}$	3	0.00	YES
	LFS < edge of the sample	3	< to edge	YES
	$THR_{600s} \leq 7.5 \ \text{MJ}$	3	0.19	YES
UNE-EN	CRITERIA subclass `s1'	Nº TESTS	AVERAGE	COMPLIANCE
13823:2012 +A1:2016	$SMOGRA \le 30 \ m^2/s^2$	3	0.00	YES
	$TSP_{600s} \leq 50 \ m^2$	3	15.62	YES
	CRITERIA subclass 'd0'	Nº TESTS	AVERAGE	COMPLIANCE
	Fall of droplets/particles in flames within 600 s	3	NO	YES

(1)(2) Substantial component(3)(5) Non substantial external component(6) Product as a whole



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4.- CLASSIFICATION AND FIELD OF APPLICATION

4.1- Reference of classification

This classification has been carried out in accordance with *EN 13501-1:2007+A1:2009*. "Classification in terms of the behaviour to fire of construction products and building elements. Part 1: Classification made from the data gathered during fire reaction tests".

4.2- Classification

The product, PYROGUARD T (EW/13-1), in relation to its reaction to fire behaviour is classified:

A2

The additional classification in relation to smoke production is:

s1

The additional classification in relation to flaming droplets / particles is:

d0

Fire Behaviour		Smoke Production			Flam	ing droplets
A2	-	S	1	,	d	0

REACTION TO FIRE CLASSIFICATION : A2-s1,d0

This classification is only valid for the final conditions of use described in the present report.



The product, PYROGUARD T (EI/47-3), in relation to its reaction to fire behaviour is classified:

A2

The additional classification in relation to smoke production is:

s1

The additional classification in relation to flaming droplets / particles is:

d0

Fire Behaviour		Smoke Production			Flam	ing droplets
A2	-	S	1	,	d	0

REACTION TO FIRE CLASSIFICATION : A2-s1,d0

This classification is only valid for the final conditions of use described in the present report.

4.3- Field of application (*)

• This classification is valid for the following product parameters:

The classification is only valid for the product characteristics shown, with the following parameters being extended:

- Variable parameter 1: THICKNESS

Products with commercial reference: PYROGUARD T is manufactured in different thickness, which depend on the number of toughened glass + nanocomposite gel interlayer layers in the system composed with.



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	L = layer								
15v10m	TG = toughened glass								
1,5 × 1,0 m	NGI	= nai	nocor	nposit	e gel	interla	ayer		
	L1	L2	L3	L4	L5	L6	L7		
EW30/13-1	ΤG	NGI	ΤG						
EW60/13-1	TG	NGI	TG						
EW90/13-1	ΤG	NGI	ΤG						
EW120/13-1	ΤG	NGI	ΤG						
EW/15-1	ΤG	NGI	ΤG						
EW/19-1	ΤG	NGI	ΤG						
EW/22-1	ΤG	NGI	ΤG						
EW/23-1	ΤG	NGI	ΤG						
EI30/16-1	TG	NGI	ΤG						
EI30/18-1	TG	NGI	ΤG						
EW30/15-1	TG	NGI	TG						
EW/24-1	TG	NGI	TG						
EW/25-1	ΤG	NGI	ΤG						
EW/26-1	ΤG	NGI	ΤG						
EW/27-1	TG	NGI	TG						
EI30/18-2	TG	NGI	ΤG	NGI	TG				
EI30/20-2	TG	NGI	TG	NGI	ΤG				
EI30/24-2	TG	NGI	TG	NGI	TG				
EI60/25-3	ΤG	NGI	ΤG	NGI	ΤG	NGI	TG		
EI60/26-2	ΤG	NGI	ΤG	NGI	ΤG				
EI60/33-3	TG	NGI	ΤG	NGI	ΤG	NGI	ΤG		
EI90/32-2	ΤG	NGI	ΤG	NGI	ΤG				
EI90/35-3	TG	NGI	TG	NGI	ΤG	NGI	ΤG		
EI90/37-3	TG	NGI	TG	NGI	TG	NGI	ΤG		
EI90/38-3	TG	NGI	TG	NGI	TG	NGI	TG		
EI90/39-3	TG	NGI	TG	NGI	TG	NGI	ΤG		
EI90/40-3	TG	NGI	ΤG	NGI	ΤG	NGI	TG		
EI90/42-3	TG	NGI	TG	NGI	ΤG	NGI	ΤG		
EI120/47-3	ΤG	NGI	ΤG	NGI	ΤG	NGI	TG		
EI30/24-2 SWS	TG	NGI	TG	NGI	TG				
EI30/32-2 SWS	TG	NGI	TG	NGI	TG				
EI60/32-2 SWS	TG	NGI	TG	NGI	TG				
EI60/36-3 SWS	TG	NGI	TG	NGI	TG	NGI	ΤG		
EI30/36-3 SWS	ΤG	NGI	TG	NGI	TG	NGI	ΤG		
EI90/47-3 SWS	ΤG	NGI	TG	NGI	ΤG	NGI	TG		



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After performing the test with the thinnest and the thickest products of the range, by extension it is concluded that PYROGUARD T intermediate thicknesses product range, is included in the following Euroclass:

Fire Reaction Classification: A2-s1,d0

This classification is only valid for the final conditions of use described in the present report.

• The classification is valid for the following final use applications:

Fire resistance safety laminated glass for integrity, radiation reduction and insulation.

Substrate	Non
Fixing method	N/A
Joints	No
Air gap	200 mm separation and ventilated
Others	-

4.4.- LIMITATIONS

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

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

The results refer exclusively to the samples tested at the time and under the conditions indicated. The results refer exclusively to the samples tested at the time and under the conditions indicated. At the customer's request, the agreed decision rule to declare conformance to the specification or standard, is by following a simple binary decision rule. In this case, the upper limit of the probability value of false acceptance or false rejection, according to ILAC G8, is 50%.

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