

**REPORT No.** 081266-6-a

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**PURPOSE** Railway applications — Fire protection on railway vehicles — Part 2:  
Requirements for fire behaviour of materials and components EN  
45545-2:2013

**TESTED SAMPLE** ALUMINIUM COMPOSITE SANDWICH PANEL WITH ALUMINIUM  
HONEYCOMB CORE

**REF. «LARCORE»**

**DATE OF RECEIPT** 16.01.2014

**TEST DATE** 27.01.2014 – 11.02.2014

**DATE OF ISSUE** 20.05.2019

**DATE OF TRANSLATION** 16.05.2019

- \* The results of the current report concern only and exclusively the sample tested.
- \* This report shall not be reproduced without the express authorisation of FUNDACIÓN TECNALIA R&I.
- \* The validity of this classification report is restricted to the applicable regulation at the time and place of carrying out the final assembly of the product referenced in this report.
- \* In case of lawsuit, the original Spanish version shall be taken as reference.



## EXECUTIVE SUMMARY

The Commission Regulation (EU) No 1302/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the 'rolling stock — locomotives and passenger rolling stock' subsystem of the rail system in the European Union (attached) chapter 4.2.10.2.1 it is said that:

*...” the certificate to prove compliance of a material with the standard, which shall be issued immediately after testing of this material, shall be reviewed every 5 years”,  
...” in case there is no change in the product characteristics and manufacturing process, and no change in the requirements (TSI), it is not required to perform new testing of this material; the certificate needs only to be updated regarding its date of issue”.*

ALUCOIL S.A.U. has stated that the material described in this report (081266-6-a) is identical to the material tested according to the test report 14\_04508-6 M2, issued at 26.10.2014, where the tested material is described.

## 1.- PURPOSE

The objective of this report is to define the classification of the reaction to fire for the aluminium composite sandwich panel with aluminium honeycomb core referenced as «**LARCORE**» in accordance with European Standard EN 45545-2-2:2013: “Railway applications — Fire protection on railway vehicles — Part 2: Requirements for fire behaviour of materials y components EN 45545-2:2013”.

«**LARCORE**»

## 2.- DESCRIPTION OF THE TESTED SAMPLE

The sample received is comprised of an aluminium composite sandwich panel with an aluminium honeycomb core.



### 3.- REPORT ON WHICH THE CLASSIFICATION IS BASED

ISSUING LABORATORY	<b>FUNDACIÓN TECNALIA R&amp;I (Headquarters Azpeitia)</b> Bº Lasao, Área Anardi 5 20730 Azpeitia (Guipúzcoa)
TESTED SAMPLES:	ALUMINIUM COMPOSITE SANDWICH PANEL WITH ALUMINIUM HONEYCOMB CORE
COMMERCIAL REFERENCE:	« <b>LARCORE</b> »
TEST REPORTS:	081266-1-a, 081266-2-a, 081266-3-a, 081266-4-a y 081266-5-a
ISSUE DATE:	20.05.2019
TESTS CONDUCTED:	In accordance with Standards ISO 5658, ISO 5659-2 and EN ISO 9239-1, ISO 5660-1

**NOTE:**

The classification adopted in this report refers exclusively to the material received and tested at Tecnalia for the dates indicated, and must be accompanied by reports 081266-1-a, 081266-2-a, 081266-3-a, 081266-4-a y 081266-5-a.

## RESULTS

TEST METHOD	LARCORE Thickness (mm)	PARAMETERS	RESULTS
T02 ISO 5658-2	5.5	CFE kW/m <sup>2</sup>	49.53
	40		49.53
T03.01 ISO 5660-1: 50 kW/m <sup>2</sup>	5.5	MARHE kW/m <sup>2</sup>	18.58
	40		2.20
T10.01 UNE EN ISO 5659-2: 50kW/m <sup>2</sup>	5.5	D <sub>s</sub> (4) dimensionless	10.07
	25		2.06
T10.02 UNE EN ISO 5659-2: 50 kW/m <sup>2</sup>	5.5	VOF <sub>4</sub> min	9.67
	25		2.00
T11.01 UNE EN ISO 5659-2: 50 kW/m <sup>2</sup> (*)	5.5	CIT <sub>G</sub> dimensionless (8 min)	0.18
	25		0.07
T10.04 UNE EN ISO 5659-2: 50 kW/m <sup>2</sup>	5.5	D <sub>s</sub> max dimensionless	141,40
	25		44,05

The activities marked with an asterisk are not covered by the ENAC accreditation.

### Requirement R1 and others in accordance with European Standard EN 45545-2:2013

TEST METHOD	Maximum or Minimum	RISK LEVEL		
		HL1	HL2	HL3
T02 ISO 5658-2 (CFE kW/m <sup>2</sup> )	Minimum	20	20	20
T03.01 ISO 5660-1: 50 kW/m <sup>2</sup> MARHE kW/m <sup>2</sup>	Maximum	-	90	60
T10.01 UNE EN ISO 5659-2: 50kW/m <sup>2</sup> D <sub>s</sub> (4) dimensionless	Maximum	600	300	150
T10.02 UNE EN ISO 5659-2: 50 kW/m <sup>2</sup> VOF <sub>4</sub> min	Maximum	1200	600	300
T11.01 UNE EN ISO 5659-2: 50 kW/m <sup>2</sup> CIT <sub>G</sub> dimensionless (*)	Maximum	1.2	0.9	0.75
T10.04 UNE EN ISO 5659-2: 50 kW/m <sup>2</sup>	Maximum	-	600	300

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## RESULTS

TEST METHOD	LARCORE Thickness (mm)	PARAMETERS	RESULTS
T04 EN ISO 9239	5.5	CHF (kw/m <sup>2</sup> )	10.9
	40		10.9
T03.02 ISO 5660-1: 25 kW/m <sup>2</sup>	5.5	MARHE kW/m <sup>2</sup>	2.16
	40		1.11
T10.03 UNE EN ISO 5659-2: 25 kW/m <sup>2</sup>	5.5	D <sub>s</sub> max dimensionless	1.16
	25		0.45
T11.01 UNE EN ISO 5659-2: 25 kW/m <sup>2</sup> (*)	5.5	CIT <sub>G</sub> dimensionless (8 min)	0.05
	25		0.01

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### Requirement R10 and others in accordance with European Standard EN 45545-2:2013

TEST METHOD	Maximum or Minimum	RISK LEVEL		
		HL1	HL2	HL3
T04 EN ISO 9239 (CHF kW/m <sup>2</sup> )	Minimum	4.5	6	8
T03.01 ISO 5660-1: 25 kW/m <sup>2</sup> MARHE kW/m <sup>2</sup>	Maximum	-	-	-
T10.01 UNE EN ISO 5659-2: 25 kW/m <sup>2</sup> D <sub>s</sub> max dimensionless	Maximum	600	300	150
T11.01 UNE EN ISO 5659-2: 25 kW/m <sup>2</sup> CIT <sub>G</sub> dimensionless (*)	Maximum	1.2	0.9	0.75

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## 4.- CLASSIFICATION

The samples of aluminium composite sandwich panel with aluminium honeycomb core, commercial reference «**LARCORE**» received at FUNDACIÓN TECNALIA R&I on 16 January 2014, have been given a reaction to fire classification:

**Compliant with requirements R1, R2, R3, R6, R7, R8, R9, R10, R11, R12, R17, R19 and R21 for Risk Levels HL1, HL2 and HL3 in accordance with Standard EN 45545-2:2013**

- In accordance with requirements R1, R2, R3, R6, R7, R8, R9, R10, R11, R12, R17, R19 and R21, Risk Levels HL1, HL2 and HL3 (EN 45545-2:2013) are applicable to the entire range of thicknesses between 5.5 mm and 40 mm for sandwich panels, commercial reference «**LARCORE**». (\*)