

CLASSIFICATION OF REACTION TO FIRE IN ACCORDANCE WITH UNE-EN 13501-1:2019

V/F
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Product name: **Larson A2[®] 405**
Classification report n^o: **21/32305613-2**
Date of issue: **29th September, 2021**

1.-INTRODUCTION

This classification report defines the classification assigned to Larson A2[®] 405 in accordance with the procedures given in the UNE-EN 13501-1:2019 standard.

2.- DETAILS OF CLASSIFIED PRODUCT

2.1.-General

The product, Larson A2[®] 405, is defined as panels with facings of aluminium sheets and composite core, with total thickness of 4 mm.

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2.2.-Product description

There were received few items:

1. Composite panel composed of two aluminium sheets bonded by means of to a mineral A2 core, lacquered by one face with HQPE.

Commercial reference of the product: Larson A2[®] 405.

The product is composed of 3 layers:

- Layer 1: Aluminium 0.5 mm thick, density 2720 kg/m³, AlnaturAnodicBrushHQ1G colour and smooth appearance.
Reference of the finished: HQPE 23 µm/m² of paint applied, 1 layer, 70 g/m² of weight and dried extract of 47.5 g/m².
- Layer 2: A2 core, 3 mm thick, density 1800 Kg/m³, white colour and rugous appearance.
92% mineral à MDH (Magnesium Hydroxide) and ATH (Alumina Trihydrate)
8% polymers

- Layer 3: Aluminium, 0.5 mm thick, density 2720 kg/m³, aluminium colour and smooth appearance.

Reference of the finished: Greenish primer with a thickness of 1 µm and superficial density of 0.8 g/m².

Between A2 core and Aluminium there are adhesive (Resin (anhydride-modified vinyl acetate polymers)), with a thickness of 0.05 mm, density of 938 kg/m³, superficial density of 4.69·10⁻² kg/m², transparent colour and smooth surface.

2. Fixing system: **Alucoil's LCH-1 vertical riveted system**. Based on extruded raw aluminium omega profiles, placed always vertically and whose separation will depend on the wind loads acting on each project. Larson A2[®] 405 composite panels are riveted to these profiles each 500 mm (maximum), with Ø5'0mm aluminium - stainless steel standard blind rivets. Omega vertical profiles are fixed to the substrate through U-shaped folded raw aluminium brackets, 3 mm thick, through DIN 933 M8 galvanized screws. Brackets are connected to the test substrates through suitable screws.

3. Insulation: mineral wool panels, 40 mm thick, density of the layer: 70 kg/m³ and brown color. Reference: **Rockwool Alpharock-E 225**. Fixed to substrate through **EJOT ejotherm STR H 080** metallic fixation.

These constructive system components are installed with an air gap of approximately 20 mm between the inner skin of the panel and the exterior face of the insulation.

The sample was fixed to the standard substrate (Particleboard, not fire retardant treated according to UNE-EN 13238:2011) with screws.

Manufacturer: ALUCOIL, S.A. Address: P. I. Bayas, C/ Ircio, Parc. R72-R77 – 09200 MIRANDA DE EBRO (Burgos).

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
Applus – LGAI	ALUCOIL, S.A.	18/17917-1716 M1 Part 1	UNE EN 13823:2012+A1:2016 2-10-2018
			UNE-EN ISO 1716:2011 16-06-2017 / 3-10-2018

3.2- Results of the Tests

Test Method	RESULTS			
	CRITERIA CLASS A2	Nº TESTS	AVERAGE	COMPLIANCE
UNE-ENISO 1716:20111	PCS \leq 4.0 MJ/m ² (1)	15	1.91 MJ/m ²	YES
	PCS \leq 3.0 MJ/kg (3)		0.00 MJ/kg	YES
	PCS \leq 4.0 MJ/m ² (2)		2.08 MJ/m ²	YES
	PCS \leq 3.0 MJ/kg (3)		1.74 MJ/kg	YES
	PCS \leq 4.0 MJ/m ² (2)		0.01 MJ/m ²	YES
	PCS \leq 3.0 MJ/kg (3)		-0.35 MJ/kg	YES
	PCS \leq 3.0 MJ/kg (4)		1.39 MJ/kg	YES
UNE-EN 13823:2012 +A1:2016	FIGRA _{0.2 MJ} \leq 120 W/s	3	1.59	YES
	LFS < edge of the sample	3	<to edge	YES
	THR _{600s} \leq 7.5 MJ	3	0.60	YES
	CRITERIA subclass 's1'	Nº TESTS	AVERAGE	COMPLIANCE
	SMOGR \leq 30 m ² /s ²	3	0.68	YES
	TSP _{600s} \leq 50 m ²	3	34.58	YES
	CRITERIA subclass 'd0'	Nº TESTS	AVERAGE	COMPLIANCE
	Fall of droplets/particles in flames within 600 s	3	NO	YES

- (1) Non substantial external component
- (2) Non substantial internal component
- (3) Substantial component
- (4) Product as a whole

4.- CLASSIFICATION AND FIELD OF APPLICATION

4.1- Reference of classification

This classification has been carried out in accordance with UNE-EN 13501-1:2019: "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, LARSON A2® 405, 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		Flaming 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, and may extend to the following parameters:

→Variable parameter 1: **METAL MATERIAL (aluminum, steel, stainless steel and cooper)**

After performing the test with the aluminium sheets and considering that:

- The four components are not combustible and classified as A1 in accordance with the European commission 96/603/CE.
- Melting point of aluminium is approx. 660°C.
- Melting point of steel is approx. 1400°C.
- Melting point of stainless steel is approx. 1400°C.
- Melting point of cooper steel is approx. 1085°C.

It can be concluded by extension that the Larson A2® 405 products with the four metal materials can be included in the same Euroclass.

→Variable parameter 2: PAINT FINISHING

Products with the commercial reference Larson A2[®] 405 are manufactured with different kind of paint finishing.

After performing the study on report 16/12641-1471 of the tree paint finishing in existence (HQPE, PVDF 2L COASTAL and PVDF 3L COASTAL) and having determined which one is the most unfavorable (HQPE), the test was completed over that finishing. The obtained results are valid for all of these mentioned paint finishing.

→Variable parameter 3: SUBSTRATE

Having performed the tests with the product applied on the substrate of particleboard, with a density of $680 \pm 50 \text{ kg/m}^3$, a thickness of $12 \pm 2 \text{ mm}$ and a class D-s2, d0, the results are valid for substrates for final use based on wood and also whichever substrate for final use with classes A1 and A2-s1, d0 (concrete, brickwall, etc.), as it is indicated in the standard UNE-EN 13238:2011.

→Variable parameter 4: INSULATION

Regulations say that testing with A1 rock wool is valid for every other A1 rock wool insulation with equal or greater thickness (40 mm, higher thickness and without insulation) and same density. Also, for constructive systems WITHOUT insulation.

→Variable parameter 5: ASSEMBLIES

After carrying out the most unfavorable assembly, by extension, it is concluded that the fire reaction classification obtained for the product Larson A2[®] is valid for the assemblies referenced as Larson A2[®] RIVETED and Larson A2[®] CASSETTE.

→Variable parameter 6: AIR GAP

Any other greater air gaps are validated (20 mm and higher).

→Variable parameter 7: JUNCTIONS

According to ETAG agreement, this classification is extending on an identical system and product with horizontal and vertical junctions lower than the tested ones.

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

The product is suitable for coating and facades, interiors and industrial applications.

4.4.- LIMITATIONS

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

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Technician Responsible of Euroclasses
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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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