LGAI Technological Center, S.A.
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QATAR CD CERTIFICATE

PRODUCT APPROVAL No. QTR-1303

APPLUS+ LGAI TECHNOLOGICAL CENTER S.A., in compliance with the requirements of Fire Prevention Department and General Directorate of Civil Defence of Ministry of Interior, State of Qatar, certifies:

Product range: **LAFFAN ALUMINIUM FOAM**

Company: **LAFFAN ALUMINIUM FACTORY**
Factory 6114, street 11, New Industrial Area,
P.O. Box 41134, DOHA - QATAR

Manufactured by: **LAFFAN ALUMINIUM FACTORY**
Factory 6114, street 11, New Industrial Area,
P.O. Box 41134, DOHA - QATAR

Description:
Aluminium foam is made from aluminium ingots, calcium metals and titanium hydrate.

Have been tested according to the standards:
Fire tests of buildings products in compliance with the following standards:

- Determination of reaction to fire in accordance with Standard UNE-EN-ISO 1182:2011: "Fire reaction tests for construction products. Non-combustibility test".
- Determination of combustion heat according to Standard UNE-EN-ISO 1716:2011: "Fire-reaction Tests of construction materials. Determination of combustion heat."

The product conditioning was conducted in compliance with Standard UNE-EN 13238: 2011: "Reaction to fire tests for building products. Conditioning procedures and general rules for selection of substrates". The samples were stored in a conditioning chamber at (23±2)ºC, and at (50±5)% relative humidity, until a constant weight was reached.

Renovation of the initial certificate issued on November 22nd 2017 .This certificate was first issued on December 10th 2018 and will remain valid as long as the test methods and/or factory production control requirements in the certification scheme, used to assess the performance of the declared characteristics, do not change, and the product, and the manufacturing conditions in the plant are not modified significantly.

Valid until December 10th 2019.

Bellaterra, December 10th 2018

Applus LGAI Technological Center, S.A. **Xavier Ruiz Peña** Product Conformity B. U., Managing Director	
You can find this certificate on our website: https://apps.applus.com/microsites/microsites/FECIP/login	

This document shall not be valid without the technical annex, whose number coincides with the number of certificate.

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TECHNICAL ANNEX **10.12.18 / Ed.1**

Having obtained the following results:

Passed criteria according to the standards.

This classification has been made in compliance with the procedures provided in Standard UNE-EN 13501-1:2007 +A1:2010: "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".

Test Method	RESULTS			
	CRITERIA CLASS A1	Nº TESTS	AVERAGE	COMPLIANCE
UNE-EN ISO 1182:2011	$\Delta T \leq 30^{o}C$ (for Tf)	5	4.5	YES
	$\Delta m \leq 50\%$		22.82	YES
	tf = 0 s		0	YES
UNE-EN ISO 1716:2011	PCS ≤ 2.0 MJ/kg	0 (*)	0 (*)	YES

(*) In accordance with the point 9.4.1 of the test standard, metallic components do not need to be tested, and their higher gross heat of combustion used to calculate the total PCS will be 0.

The product, LAFFAN ALUMINIUM FOAM, related to their fire reaction behaviour, is classified as:

Fire Behaviour		Smoke production			Droplets in flames	
A1	-	s	-	,	d	-

Fire reaction classification: **CLASS A1**

More details in the following Tests reports:

- Test report 17/14784-1528 Part 1; Date 01/08/2017
- Test report 17/14784-1528 Part 2; Date 01/08/2017

Technical characteristics of specimens:

Aluminium foam is the new material from aluminium and gas bubbles inside mixture, silver colour and density between 200-400 kg/m³.

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Test description:

- Non-Ignitability UNE-EN-ISO 1182:2011: Test started on July 17, 2017 and ended on July 19, 2017.
  - The temperature variation during the realization of the test did not go beyond 5ºC, maintaining the environmental conditions of the laboratory at a temperature of 23 ± 5ºC, and relative humidity 50 ± 20%.
  - Gathering of samples: From the product, 5 test samples were obtained plus 2 of reserve.
  - Preparation of samples: Cylinder-shaped samples measuring 45^{+0}_{-2} mm in diameter and (50±3) mm in height were prepared, in accordance with section 5.1 of the test standard.
  - Conditioning: Once the general conditioning described under section 5 of the report Nº 17/14784-1528 Part 1 was completed, the samples were reconditioned in an oven at (60 +5)ºC, from 20 to 24 hours, in accordance with the instructions specified in section 6 of the test standard.
- Combustion Heat UNE-EN-ISO 1716:2011:
  - In accordance with the point 9.4.1 of the test standard, metallic components do not need to be tested, and their higher gross heat of combustion used to calculate the total PCS will be 0.