GUANGDONG BOLLIYA METAL BUILDING MATERIALS CO.,LTD
NO.9 XINGYE RD, YANYUAN INDUSTRIAL ZONE, XINGTAN,SHUNDE, FOSHAN, GUANGDONG, CHINA528325

The following sample(s) was / were submitted and identified on behalf of the client as:

★Sample Description	:	A2 FR CORE ALUMINIUM COMPOSITE PANEL
SGS Ref. No.	:	GZIN1905021815CM
★Product specification	:	4MM PANEL, ALU SKIN 0.5MM+0.5MM
Manufacturer	:	GUANGDONG BOLLIYA METAL BUILDING MATERIALS CO.,LTD
Sample Receiving Date	:	May 08, 2019
Test Performing Date	:	May 08, 2019 to May 27, 2019

Test Result Summary

Test(s) Requested	Result(s)
EN 13501-1:2018 Fire classification of construction products and building elements -Part 1: Classification using data from reaction to fire tests	Classification: A2-s1, d0

Summary:

1. For further details, please refer to the following page(s).

Signed for and on behalf of
Shunde Branch
SGS-CSTC Co., Ltd.

Irvette Zhang
Approved signatory

SGS-CSTC Standards Technical Services Co., Ltd. Shunde Branch Hardlines

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TESTS AND RESULTS

Test Conducted:

This test is conducted as per EN 13501-1:2018 Fire classification of construction products and building elements -Part 1: Classification using data from reaction to fire tests. And the test methods as following:

1. EN ISO 1716:2010 Reaction to fire tests for products -Determination of the gross heat of combustion. (Calorific Value)
2. EN 13823:2010+A1:2014 Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item.

Mounting and fixing (For EN 13823:2010+A1:2014):

The specimen was tested free standing at a distance of at least 80 mm from the backing board.
Both wings were clamped at the top and the bottom.

Test Results:

Test method	Parameter	Number of tests	Results
EN ISO 1716:2010	Coating [b] PCS (MJ/m^2)	3	0.66
	Aluminum panel [a] PCS (MJ/kg)		0
	Film [d] PCS (MJ/m^2)		3.96
	Core [a] PCS (MJ/kg)		2.0
	The product as a whole [e] PCS (MJ/kg)		2.38
EN 13823:2010+A1:2014	$FIGRA_{0.2MJ}$（W/s）	3	42.5
	THR_{600s}（MJ）		1.1
	SMOGRA（m^2/s^2）		0.7
	TSP_{600s}（m^2）		7.6
	LFS < edge of specimen		Yes
	Flaming particles or droplets		No

Remark:

FIGRA-Fire growth rate index used for classification purposes [W/s]
For the classes A2 and B, $FIGRA_{0.2}MJ$
For the classes C and D, $FIGRA_{0.4}MJ$
LFS -Lateral flame spread [m]
THR_{600s}-Total heat release within 600 s [MJ]
SMOGRA -Smoke growth rate [m^2/s^2]
TSP_{600s} -Total smoke production within 600 s [m^2]
PCS -gross heat of combustion [MJ/kg or MJ/m^2]

Classification and direct field of application:
This classification has been carried out in accordance with EN 13501-1:2018.

Classification:

Fire behaviour		Smoke production			Flaming droplets	
A2	—	s	1	,	d	0

Remark:
The classes with their corresponding fire performance are given in Table 1.
Reaction to fire classification is based on the 7-step scale of A1 to F, where A1 is good and F is bad

Statement:
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.

Warning:
This classification report does not represent type approval or certification of the product.
The test laboratory has, therefore, play no part in sampling the product for the test, although it holds appropriate references to the manufacturer's factory production control that is aimed to be relevant to the samples tested and that will provide for their traceability.

Table 1 — Classes of reaction to fire performance for construction products excluding floorings and linear pipe thermal insulation products.

Class	Test method(s)		Classification criteria	Additional classification
A1	EN ISO 1182 [a] and		$\Delta T \leq 30$℃, and $\Delta m \leq 50\%$, and t_f=0(i.e. no sustained flaming)	-
	EN ISO 1716		*PCS*≤2.0MJ/kg [a] and *PCS*≤2.0MJ/kg [b c] and *PCS*≤1.4MJ/m^2 [d] and *PCS*≤2.0MJ/kg [e]	-
A2	EN ISO 1182 [a] or	and	$\Delta T \leq 50$℃, and $\Delta m \leq 50\%$, and $t_f \leq 20$ s	-
	EN ISO 1716		*PCS*≤3.0MJ/kg [a] and *PCS*≤4.0MJ/m^2 [b] and *PCS*≤4.0MJ/m^2 [d] and *PCS*≤3.0MJ/kg [e]	-
	EN 13823		*FIGRA*≤120W/s and *LFS*<edge of specimen and $THR_{600s} \leq 7.5$MJ	Smoke production [f] and Flaming droplets/particles [g]
B	EN 13823 and		FIGRA≤120W/s and LFS<edge of specimen and THR600s≤7.5MJ	Smoke production [f] and Flaming droplets/particles [g]
	EN ISO 11925-2 [i] Exposure =30s		Fs≤150mm within 60 s	
C	EN 13823 and		FIGRA≤250W/s and LFS<edge of specimen and THR600s≤15MJ	Smoke production [f] and Flaming droplets/particles [g]
	EN ISO 11925-2 [i] Exposure=30s		Fs≤150mm within 60 s	
D	EN 13823 and		FIGRA≤750W/s	Smoke production [f] and Flaming droplets/particles [g]
	EN ISO 11925-2 [i] Exposure=30s		Fs≤150mm within 60 s	
E	EN ISO 11925-2 [i] Exposure =15s		Fs≤150mm within 20 s	flaming droplets/particles [h]
F	EN ISO 11925-2 [i] Exposure =15s		Fs>150mm within 20 s	-

[a] For homogeneous products and substantial components of non-homogeneous products.
[b] For any external non-substantial component of non-homogeneous products.
[c] Alternatively, any external non-substantial component having a PCS ≤ 2,0 MJ/m^2 , provided that the product satisfies the following criteria of EN 13823: FIGRA ≤ 20 W/s, and LFS < edge of specimen, and THR_{600s} ≤ 4,0 MJ, and s1, and d0.
[d] For any internal non-substantial component of non-homogeneous products.
[e] For the product as a whole.
[f] In the last phase of the development of the test procedure, modifications of the smoke measurement system have been introduced, the effect of which needs further investigation. This may result in a modification of the limit values and/or parameters for the evaluation of the smoke production.

s1 = SMOGRA ≤ 30m^2/s^2 and TSP_{600s} ≤ 50m^2 ; s2 = SMOGRA ≤ 180m^2/s^2 and TSP_{600s} ≤ 200m^2; s3 = not s1 or s2
[g] d0 = No flaming droplets/ particles in EN 13823 within 600 s;
d1 = no flaming droplets/ particles persisting longer than 10 s in EN 13823 within 600 s;
d2 = not d0 or d1.
Ignition of the paper in EN ISO 11925-2 results in a d2 classification.
[h] Pass = no ignition of the paper (no classification);
Fail = ignition of the paper (d2 classification).
[i] Under conditions of surface flame attack and, if appropriate to the end–use application of the product, edge flame attack.

SAMPLE INFORMATION AND PICTURES

Area density of the test specimen for EN 13823:2010+A1:2014:	About 9.41kg/m^2
Thickness of the test specimen for EN 13823:2010+A1:2014:	About 4.4mm
Area density of the coating (Face & Back):	0.03224kg/m^2 (Provided by the client)
Area density of the aluminum panel (Face & back):	1.365kg/m^2 (Provided by the client)
Area density of the film:	0.0936kg/m^2 (Provided by the client)
Area density of the core:	5.55kg/m^2 (Provided by the client)


Before test(for EN 13823)


After test(for EN 13823)

Testing time at 435s
(for EN 13823)

Testing time at 435s
(for EN 13823)

Testing time at 920s
(for EN 13823)

Testing time at 920s
(for EN 13823)

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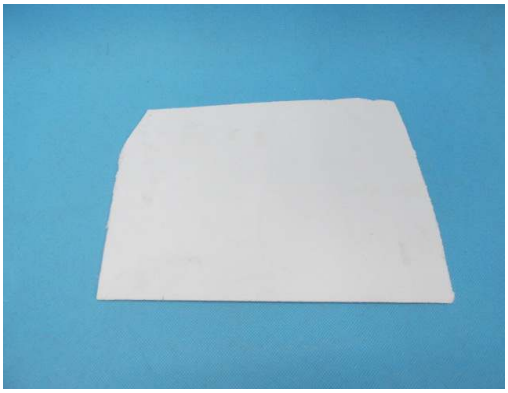
Testing time at 1401s
(for EN 13823)

Testing time at 1401s
(for EN 13823)

Coating



Core

Film

Remark:

1.This test report is to supersede No. SDFS1905002341FF test report which was issued on May 27, 2019. And the original test reports (paper and electronic) are invalid.

2.The content remark with ★ are updated.

End of Report