

TEST REPORT

No. : SC090620617

Date : Jul.02,2009

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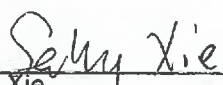
HBS Aluminium Systems

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

Sample Name : FR aluminium composite panel
 Sample No. : SC090620617
 Test Required : This test is conducted as per EN 13823:2002 and EN ISO 11925-2:2002, and the results classification has been carried out in accordance with EN 13501-1:2007.
 Test Method : Please see next pages
 Product specification : 4mm
 Manufacturer : Maxbond International Co.,Ltd.
 Date of Receipt : Jun.11,2009
 Test Period : Jun.11,2009 to Jul.02,2009
 Test Result(s) : Please see next pages

***** To be continued*****

Signed for SGS-CSTC Standards
 Technical Services Co., Ltd


 Sally Xie
 Authorized signatory

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I. Test reference

EN 13501-1:2007 Fire classification of construction products and building elements— Part 1: Classification using data from reaction to fire tests.

1. EN 13823: 2002 Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item.
2. EN ISO 11925-2: 2002 Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test.

II. Test results:

Test method	Parameter	Specimen number	Results
EN 13823	FIGRA (W/s)	3	37.7
	LFS< edge of specimen		YES
	THR _{600s} (MJ)		3.63
	SMOGRA (m ² /s ²)		11
	TSP _{600s} (m ²)		21
	Flaming particles or droplets		NO
EN ISO 11925-2 Exposure = 30 s	Fs ≤ 150 mm	6	YES
	Ignition of the filter paper		NO

***** To be continued *****

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III. Classification

This classification has been carried out in accordance with EN 13501-1:2007.

Conclusion: The product, FR ALUMINIUM COMPOSITE PANEL, classification is as following.

Fire behaviour		Smoke production		Flaming droplets
B	—	s	1	d 0

Reaction to fire classification: B—s 1, d 0

Remark: The classes with their corresponding fire performance are given in annex A.

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.

***** To be continued*****

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Annex A

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	$\Delta T \leq 30^{\circ}\text{C}$, and $\Delta m \leq 50\%$, and $t_f = 0$ (i.e. no sustained flaming)	-
	EN ISO 1716	$\text{PCS} \leq 2.0 \text{ MJ/kg}^a$ and $\text{PCS} \leq 2.0 \text{ MJ/kg}^{bc}$ and $\text{PCS} \leq 1.4 \text{ MJ/m}^2^d$ and $\text{PCS} \leq 2.0 \text{ MJ/kg}^e$	-
A2	EN ISO 1182 ^a or	and $\Delta T \leq 50^{\circ}\text{C}$, and $\Delta m \leq 50\%$, and $t_f \leq 20 \text{ s}$	-
	EN ISO 1716		
	EN 13823	$\text{FIGRA} \leq 120 \text{ W/s}$ and $\text{LFS} < \text{edge of specimen}$ and $\text{THR}_{600\text{s}} \leq 7.5 \text{ MJ}$	Smoke production ^f and Flaming droplets/particles ^g
B	EN 13823 and	$\text{FIGRA} \leq 120 \text{ W/s}$ and $\text{LFS} < \text{edge of specimen}$ and $\text{THR}_{600\text{s}} \leq 7.5 \text{ MJ}$	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ Exposure = 30s	$F_s \leq 150 \text{ mm}$ within 60 s	
C	EN 13823 and	$\text{FIGRA} \leq 250 \text{ W/s}$ and $\text{LFS} < \text{edge of specimen}$ and $\text{THR}_{600\text{s}} \leq 15 \text{ MJ}$	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ Exposure = 30s	$F_s \leq 150 \text{ mm}$ within 60 s	

***** To be continued *****

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Class	Test method(s)	Classification criteria	Additional classification
D	EN 13823 and	FIGRA $\leq$ 750W/s	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ Exposure=30s	Fs $\leq$ 150mm within 60 s	
E	EN ISO 11925-2 ⁱ Exposure =15s	Fs $\leq$ 150mm within 20 s	flaming droplets/particles ^h
F	No performance determined		

^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 $\leq 2,0 \text{ MJ/m}^2$, provided that the product satisfies the following criteria of EN 13823: FIGRA $\leq 20 \text{ W/s}$, and LFS < edge of specimen, and THR_{600s} $\leq 4,0 \text{ MJ}$, 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 $\leq 30 \text{ m}^2/\text{s}^2$ and TSP_{600s} $\leq 50 \text{ m}^2$; s2 = SMOGRA $\leq 180 \text{ m}^2/\text{s}^2$ and TSP_{600s} $\leq 200 \text{ m}^2$; 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.

***** To be continued *****

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2. EN ISO 11925-2: 2002

I. Test reference

This test is conducted as per EN ISO 11925-2:2002 Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test.

II. Sample details

Material / Color	FR ALUMINIUM COMPOSITE PANEL / SILVER
Size of sample (mm)	250×90 ×4, 6pcs

	Temperature (°C)	Humidity (%)	Duration (h)
Precondition	23±2	50±5	>360
Flame application time	30 s		

III. Test Results

(A) Face ignition

(A) Face ignition			
Parameter	1	2	3
Occurrence of ignition (Yes/No)	YES	YES	YES
Whether flame reaches 150 mm	NO	NO	NO
Time to reach 150 mm	--	--	--
Ignition of the filter paper (Yes/No)	NO	NO	NO

(B) Bottom edge ignition

Parameter	1	2	3
Occurrence of ignition (Yes/No)	YES	YES	YES
Whether flame reaches 150 mm	NO	NO	NO
Time to reach 150 mm	---	---	---
Ignition of the filter paper (Yes/No)	NO	NO	NO

***** To be continued *****

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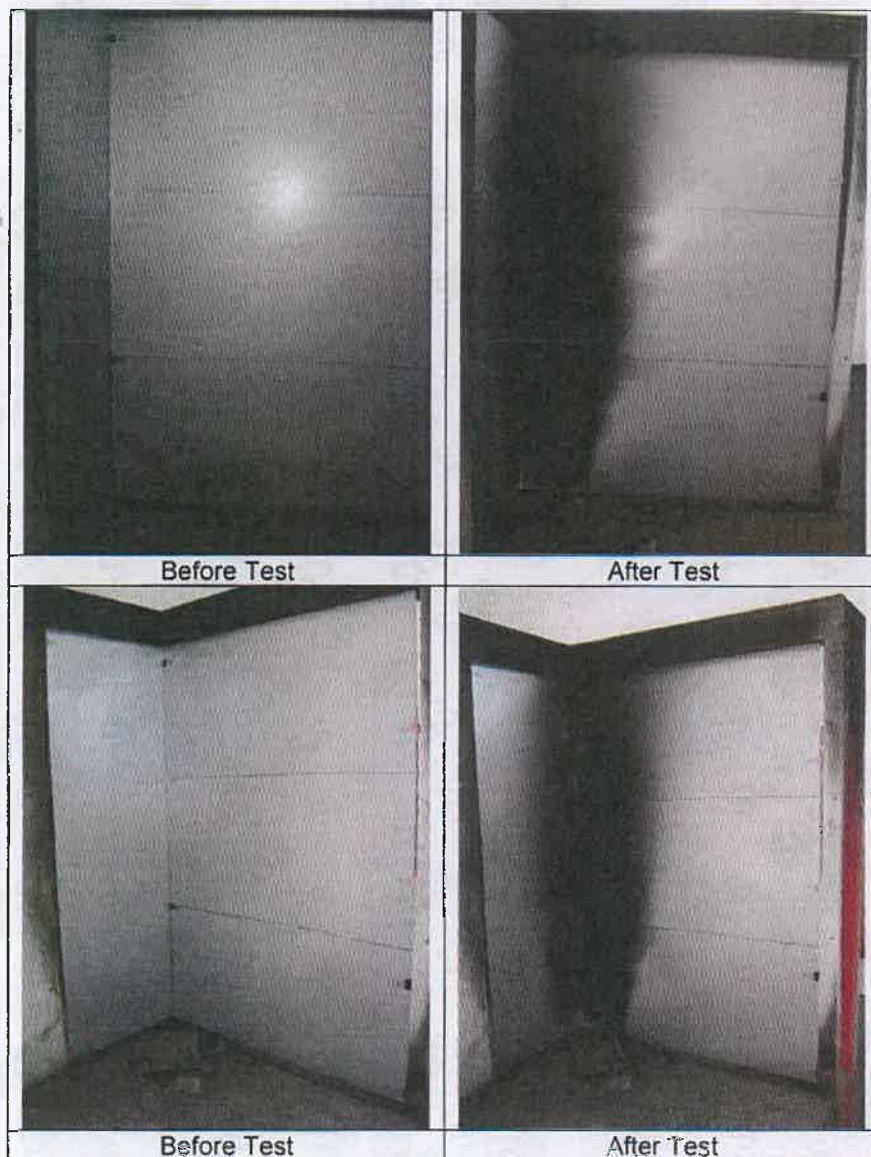
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Photo Appendix:



***** End of report *****

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