Intertek

TEST REPORT

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EVALUATION CENTER

Intertek Testing Services Ltd., Shanghai Jinqiao Branch
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Shanghai 201206

RENDERED TO

Jiangsu Xiecheng Science & Deve.Co., Ltd
Industrial Zone, Jinhu county Jiangsu, China

SAMPLE EVALUATED:
4 mm fire resistant aluminium composite panel

EVALUATION PROPERTY
Reaction to Fire

Report of 4 mm fire resistant aluminium composite panel for compliance with the applicable requirements of the following criteria:
EN 13501-1: 2007+A1:2009

1 Table of Contents

2 Introduction

Intertek Testing Services has conducted testing for Jiangsu Xiecheng Science & Deve.Co., Ltd on fire resistant aluminium composite panel, to evaluate reaction to fire. The testing was conducted at the external approved facility. The classification was in accordance with the procedures given in EN 13501-1: 2002+A1: 2009. This evaluation began on December 27, 2010 and was completed on January 21, 2011.

3 Test Samples

3.1. SAMPLE SELECTION

Samples were submitted to Intertek directly from the client. Samples were not independently selected for testing. Samples were received at the Evaluation Center on December 24, 2010.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The samples were identified as fire resistant aluminium composite panel and photographs were presented in Appendix A.

The description of the samples given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description		A composite comprising an inorganic core surrounded by coated aluminium facings
Product trade name		ALMINE
Overall thickness		4mm
Overall density / weight per unit area		8.12kg/m^2 (4mm,alu 0.5mmX0.5mm)
Facing	Product reference	PVDF coating
	Generic type	Polyvinylidene Fluoride (PVDF) Coating
	Name of manufacturer	PPG
	Density / weight per unit area	0.93 g/cm^3
	Thickness	26*10^{-6}m
	Colour	Flash silver
	Application rate per coat	24.18g/m^2
Aluminium Substrate	Generic type	Aluminium
	Product reference	3003 H16 Alloy Aluminium
	Name of manufacturer	OPTION 1
	Thickness	0.5mm
	Colour	White

	Density	2.7g/cm^3
Adhesive	Product reference	High Molecular Adhesive Film
	Generic type	PE
	Name of manufacturer	OPTION 1
	Application rate	0.58%
	Application method	High temperature melt
Core	Generic type	inorganic
	Product reference	AL(OH)3
	Name of manufacturer	Jiangsu Xiecheng Science & Deve.Co., Ltd
	Thickness	3mm
	Colour	White
	Density	1.79g/cm^3
Adhesive	Product reference	High Molecular Adhesive Film
	Generic type	PE
	Name of manufacturer	OPTION 1
	Application rate	0.58%
	Application method	High temperature melt
Aluminium Substrate	Generic type	Aluminium
	Product reference	3003 H16 Alloy Aluminium
	Name of manufacturer	OPTION 1
	Thickness	0.5mm
	Colour	White
	Density	2.7g/cm^3

Note: OPTION 1 - The sponsor was unwilling to provide this information.

4 Testing and Evaluation Methods

4.1. HEAT OF COMBUSTION TEST

The test was conducted in accordance with EN ISO 1716. In this test, the test specimen of specified mass is burned under standardized conditions, at constant volume, in an atmosphere of oxygen, in a bomb calorimeter. The heat of combustion determined under the specified conditions is calculated on the basis of the observed temperature rise, taking account of heat loss and the latent heat of vaporization of water.

4.2. SINGLE BURNING ITEM TEST

The test was conducted in accordance with EN 13823. This test evaluates the potential contribution of a product to the development of a fire, under a fire situation simulating a single burning item near to the product.

4.3. CLASSIFICATION CRITERIA

The classification was determined in accordance with EN 13501-1: 2002+A1: 2009. The classes A2 with their corresponding fire performance are given in the table below.

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

Class	Test Method(s)	Classification criteria	Additional classifications
A2	EN ISO 1716 and	PCS ≤ 3,0 MJ/Kg[a] and PCS ≤ 4,0 MJ/m^2 [b] PCS ≤ 4,0 MJ/m^2 [c] and PCS ≤ 3,0 MJ/Kg [d]	-
	EN 13823	FIGRA ≤ 120 W/s and LFS < edge of specimen and THR_{600s} ≤ 7,5 MJ	Smoke production [e] and Flaming droplets/particles [f]

Note:

a. For homogeneous products and substantial components of non-homogeneous products.

b. For any external non-substantial component of non-homogeneous products.

c. For any internal non-substantial component of non-homogeneous products.

d. For the product as a whole.

e. 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

f. 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 600s;
d2 = not d0 or d1.
Ignition of the paper in EN ISO 11925-2 results in a d2 classification.

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

The test results were shown in Table below.

Method	Parameter		Result
EN ISO 1716	PCS	Facing, MJ/m2	0.5
		Aluminium Substrate, MJ/kg	0.0
		Adhesive, MJ/m2	2.1
		Core, MJ/kg	2.0
		Adhesive, MJ/m2	2.1
		Aluminium Substrate, MJ/kg	0.0
		the whole product, MJ/kg	1.9
EN 13823	FIGRA , W/s		0.0
	THR_{600s} , MJ		0.0
	LFS		<Edge of Specimen
	SMOGRA		1
	TSP_{600s}		34
	Flaming Droplets/ Particles		No flaming droplets/ particles occur within 600s

5.1.1. Statement of Measurement Uncertainty

When determining the test result, measurement uncertainty has been considered.

5.2. CLASSIFICATION

The classification has been carried out in accordance with EN 13501-1.

Fire behaviour		Smoke production			Flaming Droplets	
A2	-	s	1	-	d	0

Reaction to fire classification: *A2-s1-d0*

6 Conclusion

The product identified and evaluated in this report has been tested in accordance with EN 13501-1: 2007+A1:2009. The results are presented in Section 5 of this test report and the classification of the sample is as below.

Reaction to fire classification: *A2-s1-d0*

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK

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7 Appendix A: Sample Photograph

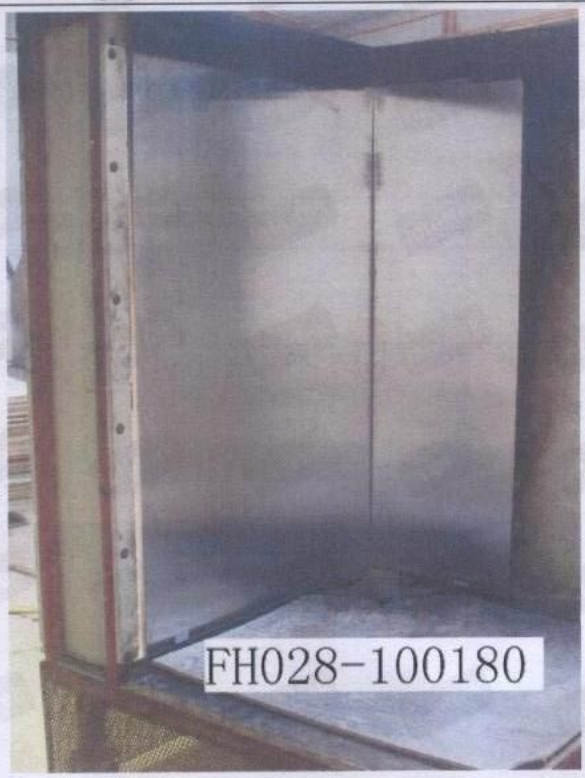

Fig. 1 Before SBI Test

Fig. 2 Before SBI Test

Fig. 3 After SBI Test

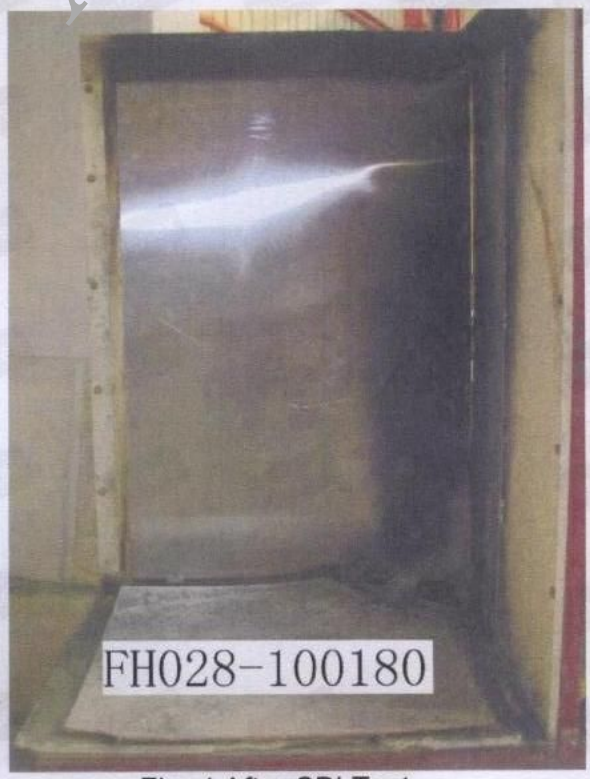

Fig. 4 After SBI Test

8 Revision Page

Revision No.	Date	Changes	Author	Reviewer
0	January 28, 2011	First issue	Harrison Li	Sun Sun

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