

CLASSIFICATION OF REACTION TO FIRE PERFORMANCE IN ACCORDANCE WITH BS EN 13501-1:2018

Test Sponsor:

Alstone Manufacturing Pvt. Ltd.
15th Floor, Vijaya Building
Barakhamba Road, Connaught Place
New Delhi - 110001, India
T: +91 011 41232400
Website: www.alstoneindia.com

Test Material:

25mm thick Alstone Honeycomb Panel



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INTERNATIONAL CONSULTANTS**

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Memberships

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1. INTRODUCTION

This classification report defines the classification assigned to 25mm thick Alstone Honeycomb Panel in accordance with the procedures given in BS EN 13501-1:2018: Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests.

2. SPONSOR

Name: Alstone Manufacturing Pvt. Ltd.
Address: 15th Floor, Vijaya Building
Barakhamba Road, Connaught Place
New Delhi - 110001, India
T: +91 011 41232400
Website: www.alstoneindia.com

3. MANUFACTURER

Name: Alstone Manufacturing Pvt. Ltd.
Address: Khasra No: 1393, Langha Road Industrial Area
Village Chharba, P.O. Sahaspur, Dehradun 248197
Uttarakhand, India

4. TESTING LABORATORY

Name: Thomas Bell-Wright International Consultants (TBWIC)
Address: Corner of 46th and 47th Streets,
Jebel Ali Industrial Area 1
Dubai, UAE
T +971 (0)4 821 5777
Website: www.bell-wright.com

5. DETAILS OF CLASSIFIED PRODUCT

Note: The testing laboratory does not hold any responsibility for the information that has been provided by the test sponsor which could not be verified by the testing laboratory, as this could affect the validity of the test result. All information that could not be verified will be indicated by an asterisk () mark.*

Product Description		25mm thick metal honeycomb sandwich panel	
Product Reference		Alstone Honeycomb Panel*	
Manufacturer		Alstone Manufacturing Pvt. Ltd. *	
Thickness		24.8mm (measured by TBWIC)	
Area Weight		4.3 kg/m ² (measured by TBWIC)	
Product Details	Top coat (Fire Side)	Material	PVDF*
		Reference	Kynar 500 PVDF*
		Manufacturer	Deju*
		Colours Tested	White (observed by TBWIC)
		Dry Film Thickness	20µm* (stated)



		Area Weight	0.032 kg/m ² * (stated)		
		Dry Density	1610 kg/m ³ * (stated)		
	Primer	Material	Polyester*		
		Manufacturer	Deju*		
		Dry Film Thickness	5µm* (stated)		
		Area Weight	0.008 kg/m ² * (stated)		
		Dry Density	1610 kg/m ³ * (stated)		
	Metal top skin	Material	Aluminium*		
		Alloy Grade	AA3003*		
		Thickness	0.7mm*		
		Density	2710 kg/m ³ *		
	Adhesive	Material	Polyfine film*		
		Manufacturer	Ecoplast*		
		Dry Film Thickness	80µm* (stated)		
		Area Weight	0.074 kg/m ² * (stated)		
		Dry Density	930 kg/m ³ * (stated)		
	Honeycomb core	Material	Aluminium Honeycomb*		
		Reference	Honeycomb Cell (Hexagonal)*		
		Manufacturer	Suzhou Bee Core Honeycomb Materials Co.*		
		Alloy Grade	AA3003*		
		Thickness	Metal Sheet	0.05mm* (stated)	
			Layer	23.8mm* (stated)	
		Area Weight	1.3 kg/m ² @ 25mm* (stated)		
	Adhesive	Material	Polyfine film*		
		Manufacturer	Ecoplast*		
		Dry Film Thickness	80µm* (stated)		
		Area Weight	0.074 kg/m ² * (stated)		
Dry Density		930 kg/m ³ * (stated)			
Metal bottom skin	Material	Aluminium*			
	Alloy Grade	AA3003*			
	Thickness	0.5mm*			
	Density	2710 kg/m ³ *			
Back coat	Material	Polyester*			
	Manufacturer	Deju*			
	Dry Film Thickness	5µm* (stated)			
	Area Weight	0.008 kg/m ² * (stated)			
	Dry Density	1610 kg/m ³ * (stated)			



6. SPECIMEN VERIFICATION

The choice, design and definition of the specimen have been made by Alstone Manufacturing Pvt. Ltd., and TBWIC Testing Laboratory has not been involved in the selection or design of the specimen. The results apply to the samples as received.

Note: There are contexts where information has been provided by the sponsor and verification of information has been done through either technical datasheet or other document submission, or as indicated directly by the sponsor. For this reason, materials have been tested in an as-received condition and TBWIC bears no liability for the legitimacy of the submitted information.

7. REPORT & TEST RESULTS IN SUPPORT OF THIS CLASSIFICATION

7.1. Reports

Name of Laboratory	Test Sponsor	Test Report No.	Test Method/Field of Application Rules
Thomas Bell-Wright International Consultants (TBWIC)	Alstone Manufacturing Pvt. Ltd.	WH174-1	BS EN ISO 1716:2018
		WH174-2	BS EN 13823:2020

7.2. Results

Test Method	TEST PARAMETERS	No. of tests	TEST RESULTS	
			Continuous parameter-mean (m)	Compliance parameters
BS EN 13823:2020	FIGRA _{0.2} MJ ≤ 120 W/s	3	76	Compliant
	THR _{600s} ≤ 7.5 MJ	3	3.6	Compliant
	Lateral Flame Spread < Edge of Specimen	3	< Edge of Specimen	Compliant
	CRITERIA for subclass "s1"			
	SMOGR _A ≤ 30 m ² /s ² <i>Note 1</i>	3	3	Compliant
	TSP _{600s} ≤ 50 m ² <i>Note 1</i>	3	26	Compliant
	CRITERIA for subclass "d0"			
	Flaming droplets/particles within 600s	3	Nil	Compliant

Note 1: Corrected value as per Annex A, Clause A.6.1.2 of BS EN 13823:2020.



Test Method	TEST PARAMETERS		No. of tests	TEST RESULTS		
				Continuous parameter-mean (m)		Compliance parameters
BS EN ISO 1716:2018	PCS ≤ 4.0 MJ/m ² (for External Non-substantial components)	Topcoat	3	0.4	0.5	Compliant
		Primer		0.1		
		Service coat		0.1		
	PCS ≤ 4.0 MJ/m ² (for Internal Non-substantial components)	Adhesive	3	3.3		Compliant
	PCS ≤ 3.0 MJ/kg (for Substantial components)	Aluminium Topskin	0	0.0		Compliant
		Aluminium Bottom skin	0	0.0		
		Aluminium Honeycomb core	0	0.0		
PCS ≤ 3.0 MJ/kg (for Product as a Whole)				1.7		Compliant

8. CLASSIFICATION & FIELD OF APPLICATION

8.1. Reference of classification

This classification has been carried out in accordance with Clause 8 of EN 13501-1:2018.

8.2. Classification

The product, 25mm thick Alstone Honeycomb Panel in relation to its reaction to fire behavior are classified;

Fire behavior		Smoke production				Flaming droplets	
A2	-	s	1	,	d	0	

Reaction to fire classification: A2 – s1, d0

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

8.3. Field of application

This classification is valid for the following end use applications:

- i. Construction applications

This classification is also valid for the following product parameters:

Overall product thickness	No variation allowed
Product density	No variation allowed
Product composition	No variation allowed



Product construction	No variation allowed
Colour	No variation allowed
Joints	Valid for panels with or without horizontal and vertical joints $\leq 15\text{mm}$

9. LIMITATIONS

This document does not represent type approval or certification of the product. Similarly, the fire tests and related work which are a subject of this classification report have been conducted under Thomas Bell-Wright International Consultant's ISO 17025 UKAS accreditation scheme and quality management system. However, pursuant to UKAS Technical Bulletin *BS EN 13501 & BR 135 Classification Documents (Dated 02-Feb-2022)*, classification documents are completed on an unaccredited basis because they are not themselves test procedures. As such, this document is prepared on an unaccredited basis. This report and all records of the test to which it relates may be not be retained by TBWIC further than 5 years from the date of testing.

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This test report is respectfully submitted by: Thomas Bell-Wright International Consultants

Prepared by:

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Reviewed & Authorized by:

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Manager - Reaction to Fire



Report Revision Tracking		
Revision No.	Date Issued	Notes & Amendments
Rev. 00	17-Oct-22	This is the first issue of the report. No revisions are included.



10. ANNEXURE 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	$\Delta T \leq 30 \text{ }^\circ\text{C}$; and $\Delta m \leq 50 \%$; and $t_f = 0$ (i.e. no sustained flaming)	-
	EN ISO 1716	$PCS \leq 2,0 \text{ MJ/kg}^a$ and $PCS \leq 2,0 \text{ MJ/kg}^{b,c}$ and $PCS \leq 1,4 \text{ MJ/m}^2^d$ and $PCS \leq 2,0 \text{ MJ/kg}^e$	-
A2	EN ISO 1182 ^a or	$\Delta T \leq 50 \text{ }^\circ\text{C}$; and $\Delta m \leq 50 \%$; and $t_f \leq 20 \text{ s}$	-
	EN ISO 1716 and	$PCS \leq 3,0 \text{ MJ/kg}^a$ and $PCS \leq 4,0 \text{ MJ/m}^2^b$ and $PCS \leq 4,0 \text{ MJ/m}^2^d$ and $PCS \leq 3,0 \text{ MJ/kg}^e$	-
	EN 13823	$FIGRA \leq 120 \text{ W/s}$ and $LFS < \text{edge of specimen}$ and $THR_{600s} \leq 7,5 \text{ MJ}$	Smoke production ^f and Flaming droplets/particles ^g
B	EN 13823 and	$FIGRA \leq 120 \text{ W/s}$ and $LFS < \text{edge of specimen}$ and $THR_{600s} \leq 7,5 \text{ MJ}$	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ : Exposure = 30 s	$F_s \leq 150 \text{ mm}$ within 60 s	
C	EN 13823 and	$FIGRA \leq 250 \text{ W/s}$ and $LFS < \text{edge of specimen}$ and $THR_{600s} \leq 15 \text{ MJ}$	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ : Exposure = 30 s	$F_s \leq 150 \text{ mm}$ within 60 s	
D	EN 13823 and	$FIGRA \leq 750 \text{ W/s}$	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ : Exposure = 30 s	$F_s \leq 150 \text{ mm}$ within 60 s	
E	EN ISO 11925-2 ⁱ : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	Flaming droplets/particles ^h
F	EN ISO 11925-2 ⁱ : Exposure = 15 s	$F_s > 150 \text{ mm}$ 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 $PCS \leq 2,0 \text{ MJ/m}^2$, provided that the product satisfies the following criteria of EN 13823: $FIGRA \leq 20 \text{ W/s}$, and $LFS < \text{edge of specimen}$, and $THR_{600s} \leq 4,0 \text{ MJ}$, and s_1 , and d_0 .

^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.

---- End of Classification Report ----