Test Report No. 7191087533-MEC14/2-JV
dated 06 Jan 2015

PSB Singapore

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SUBJECT:

Ignitability of product when subjected to direct flame impingement test on 'Greenlam Exterior Grade Compact Laminate' Greenlam Clads™ submitted by Greenlam Industries Limited on 15 Jul 2014.

TESTED FOR:

Greenlam Industries Ltd
1501-1505, Narain Manzil
23, Barakhamba Road
New Delhi-110001, India

DATE OF TEST:

27 Aug 2014

PURPOSE OF TEST:

To determine the ignitability of the product when subjected to direct impingement of flame according to EN ISO 11925-2 : 2010 Part 2: Single-flame source test (BS EN ISO 11925-2:2010).

The test was conducted at TÜV SÜD PSB fire test laboratory located at No. 10 Tuas Avenue 10, Singapore 639134.

TÜV SÜD PSB

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LA-2007-0381-F
LA-2007-0382-B
LA-2007-0383-G
LA-2007-0384-G
LA-2007-0385-E
LA-2007-0386-C
LA-2010-0464-D

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests/Calibrations marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

Laboratory:
TÜV SÜD PSB Pte. Ltd.
No.1 Science Park Drive
Singapore 118221

Phone : +65-6885 1333
Fax : +65-6776 8670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg : 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/05
The Franklin, Singapore 118223

DESCRIPTION OF SPECIMEN:

Twenty pieces of specimen, said to be 'Greenlam Exterior Grade Compact Laminate' Greenlam Clads™, each of nominal size 250mm x 90mm were received. The overall nominal bulk density and thickness of the specimen were found to be 1396kg/m^3 and 6mm respectively.

Details of the product, as provided by the sponsor of test, are as follows:

Product manufacturer: Company Address	Greenlam Industries Ltd Vill. Paterh Bhonku, PO Panjehra, Teh. Nalagarh, Dist. Solan Himachal Pradesh -174101, India
Brand & Model reference	Greenlam Exterior Grade Compact Laminate
Generic product name	Greenlam Clads™
Material composition	Product is made up of multiple layers of kraft paper impregnated with flame retardant grade phenolic thermosetting resin, with both side exterior grade decorative paper surface, impregnated with melamine thermosetting resins, along with special protective polymeric film layer on top & bottom
Nominal mass per unit area (kg/m^2)	1.39 g/cm^3
Nominal thickness (mm)	6.0mm
Flame retardant	Phosphoric Acid & Mono Ethanol Amine

Details of the product, as provided by the sponsor of test, are as follows: (Cont'd)

Exterior face #1: Material – Manufacturer – Thickness – Mass per unit area – Color reference – Fire retardant –	Design decorative paper with melamine treated surface Decorative paper N.A N.A N.A Various N.A
Interior face #2: Material – Manufacturer – Thickness – Mass per unit area – Color reference – Fire retardant –	Design decorative paper with melamine treated surface Decorative paper N.A N.A N.A Various N.A
Core material: Material – Manufacturer – Thickness – Mass per unit area – Color reference – Fire retardant –	Core with kraft paper flame retardant phenolic resin impregnated Kraft paper N.A N.A N.A N.A Phosphoric acid & mono ethanol amine
Adhesive: Material – Manufacturer – Thickness – Mass per unit area – Color reference – Fire retardant –	Phenolic & melamine adhesive used for impregnating both kraft & design decorative paper respectively N.A N.A N.A N.A N.A Phosphoric acid & mono ethanol amine

TEST PROCEDURE:

Prior to test, the specimens were prepared in accordance with clause 5 of the standard and conditioned at a temperature of (23 ±2)°C and relative humidity of (50 ±5)% for a minimum period of 48 hours.

The apparatus was constructed in accordance to clause 4 of the standard.

The specimens were subjected to the test environment as described in clause 4.1 and tested according to clause 7 of the standard.

The test results are shown in Table 1 and 2.

TEST RESULTS:

Table 1: Test Flame Surface Application Position

Temperature (°C)	24.0		R.H (%)	64.7		
Specimen thickness (mm)	6.0		Flame application time (sec)	30		
Specimen no.	1	2	3	4	5	6
Airflow velocity (m/s)	0.7	0.7	0.7	0.7	0.7	0.7
Ignition (Y/N)	N	N	N	N	N	N
Time for flame tip to reach 150mm (sec)	-	-	-	-	-	-
Maximum flame height (mm)	35	35	30	35	40	35
Maximum length of damage / charring (mm)	20	15	15	15	20	15
Flaming droplets presence (Y/N)	N	N	N	N	N	N

REMARKS:

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.

Leong Gene-Jhou
Senior Associate Engineer

Joseph Chng
Assistant Vice President
(Fire Property)
Mechanical Centre

PSB Singapore

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July 2011