

Test Report No. 7191094746-MEC14/2-YWA
dated 28 Aug 2014

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SUBJECT:

Fire propagation test on "Greenlam compact" General Purpose High Pressure Decorative Laminate (TYPE-S-CGS.) material submitted by Greenlam Asia Pacific Pte Ltd on 07 Aug 2014.

TESTED FOR:

Greenply Industries Limited
15-05, Narain Manzil
Barakhamba Road, Connought Place
New Delhi 110001
India

DATE OF TEST:

14 Aug 2014

PURPOSE OF TEST:

To determine the Index of Performance of the material when it is exposed to the conditions of the test specified in British Standard 476 : Part 6 : 1989 + A1 : 2009 "Method of test for fire propagation for products".

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



LA-2007-0380-A
LA-2007-0381-F
LA-2007-0382-B
LA-2007-0382-B-1
LA-2007-0383-G
LA-2007-0383-G-1

LA-2007-0384-G
LA-2007-0385-E
LA-2007-0386-C
LA-2010-0464-D
FFT-2013-0002-A

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.

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DESCRIPTION OF SPECIMENS:

Six pieces of specimen, said to be "Greenlam compact" (12mm thick x 1.4g/cm³) General Purpose High Pressure Decorative Laminate (TYPE-S-CGS.) material comprising of Phenolic Resin core sandwiched between top layer with melamine resin on both sides, each of nominal test size of 225mm x 225mm were submitted. As declared by test sponsor, TYPE-S-CGS. Standard grade decorative compact laminates is specified as HPL/EN438-4/CGS. The Fire Retardant used was said to be Ethanol Amine Group - Phosphoric Acid. The overall thickness and bulk density of the specimen were found to be approximately 12.5mm and 1404kg/m³ respectively.

TEST PROCEDURE:

Three specimens, backed with calcium silicate board, were tested with either face exposed to the specified heating conditions, in an apparatus conforming to paragraph 5 and illustrated in Figures 1 to 3 of the Standard.

The calibration and test procedures were as defined in paragraphs 8 and 9, respectively, of the specification. The apparatus was calibrated prior to test and the actual calibration curve obtained is shown in Figure 1 of this report.

The mean temperature rise above ambient obtained from three specimens is also shown in Figure 1 (i.e. with the actual calibration curve). The mean temperature readings for the material and the calibration curve were obtained at the following intervals from the start of the test: at 1/2 minute intervals up to 3 minutes, at 1 minute intervals from 4 to 10 minutes, and at 2 minutes intervals from 12 to 20 minutes.

Two handwritten signatures in black ink, one appearing to be 'Jap' and the other 'Kain', positioned below the main text.

From these readings, the index of performance for the material was determined as follows:

$$s_1 = \sum_{t=0.5}^{t=3} \frac{\Theta_s - \Theta_c}{10t}; \quad s_2 = \sum_{t=4}^{t=10} \frac{\Theta_s - \Theta_c}{10t}$$

and $s_3 = \sum_{t=12}^{t=20} \frac{\Theta_s - \Theta_c}{10t};$

$$S = s_1 + s_2 + s_3$$

where S = Index of performance for each of the specimens tested and s_1 , s_2 and s_3 are sub-indices

t = Time in minutes from the origin at which readings are taken.

Θ_s = Temperature rise in deg. C for the specimen at time, t

Θ_c = Temperature rise in deg. C for the calibration sheet at time, t

In computations only the positive value of $\frac{\Theta_s - \Theta_c}{10t}$ was used.





RESULTS OF TEST:

The following test results were obtained for each specimen tested:

Specimen	Sub-Indices			Index of Performance
	S ₁	S ₂	S ₃	S
A	0.6	11.5	4.8	16.9
B	1.2	11.9	5.0	18.1
C	1.0	10.8	4.8	16.6

CONCLUSION:

The test results obtained, as an average of the 3 samples tested are as follows:

Index of overall performance, I = 17.2
(Fire propagation index)


Sub-index, i₁ = 0.9

Sub-index, i₂ = 11.4

Sub-index, i₃ = 4.9

REMARKS:

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.


Ong Kian Huat
Senior Associate Engineer


Chan Lung Toa
Product Manager
(Fire Property)
Mechanical Centre

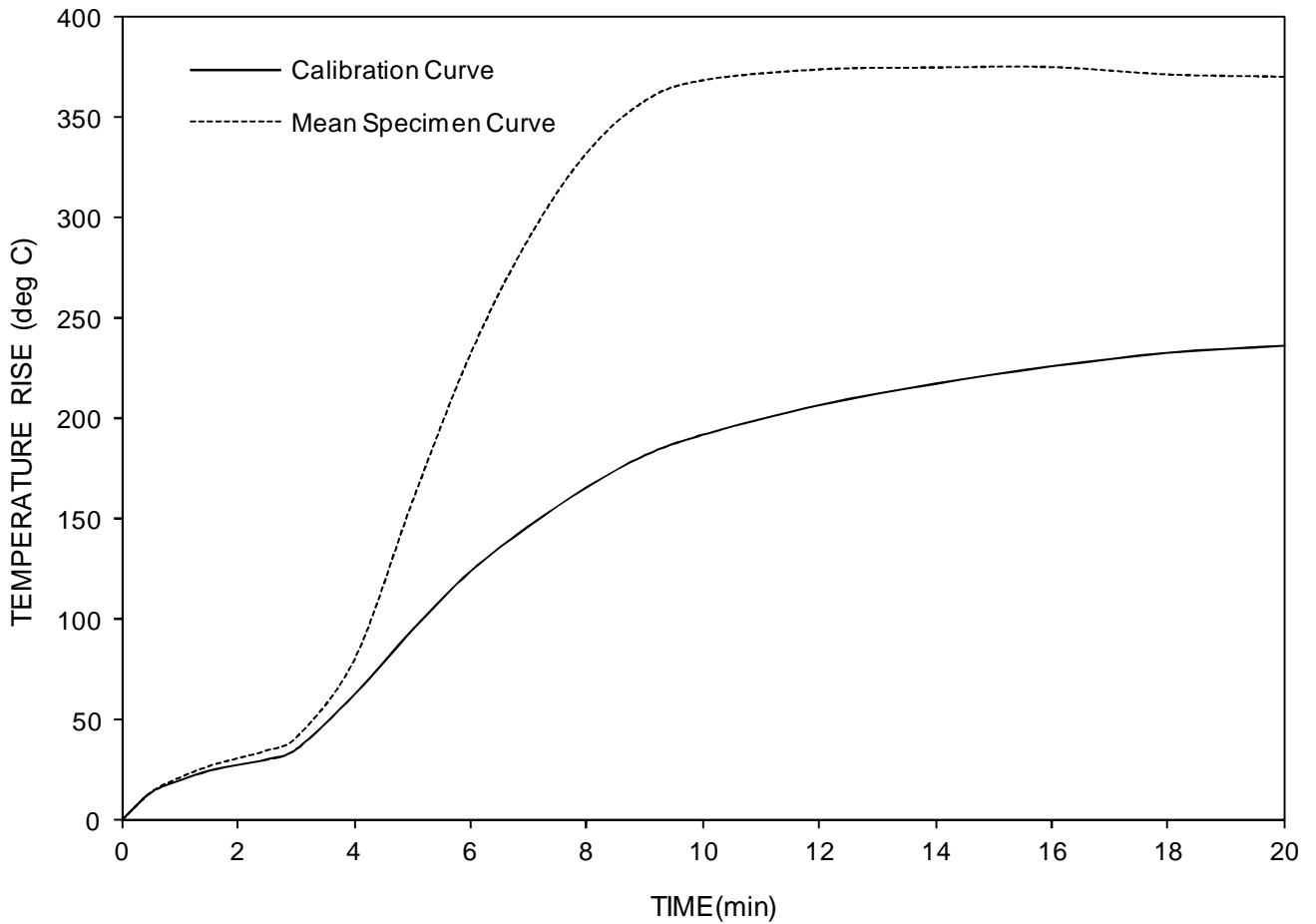


FIGURE 1 : COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES

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July 2011

