

Test Report No. 7191122284-MEC15/2-YWA
dated 12 Oct 2015
(221406488)



PSB Singapore

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SUBJECT:

Fire propagation test on "CMAX" Mineral Fiber Ceiling material submitted by KW-JWEE Marketing Sdn Bhd on 16 Sep 2015.

TESTED FOR:

CNBM International Corporation
17th Floor, No. 4 Building
Zhuyu Business Center
Shouti South Road, Haidian District
100048 Beijing
China

DATE OF TEST:

05 Oct 2015

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-2007-0383-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.

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3 Science Park Drive, #04-01/05
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TUV®

DESCRIPTION OF SPECIMENS:

Six pieces of specimen, said to be "C MAX" (15mm thick x 280-320kg/m³) Mineral Fiber Ceiling Board material comprising of Mineral wool coated on one face with Acrylic coating (0.02mm thick), each of nominal test size of 225mm x 225mm were submitted. The overall thickness and bulk density of the specimen were found to be approximately 14.5mm and 310kg/m³ respectively.

TEST PROCEDURE:

Three specimens, backed with calcium silicate board, were tested with the Acrylic coating 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.



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	3.2	2.5	0.8	6.5
B	3.1	2.7	0.9	6.7
C	2.8	2.5	0.8	6.1

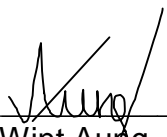
CONCLUSION:

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

Index of overall performance, I (Fire propagation index)	=	6.4
Sub-index, i ₁	=	3.0
Sub-index, i ₂	=	2.6
Sub-index, i ₃	=	0.8

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.


Ye Wint Aung
Associate Engineer


Ong Kian Huat
Senior Associate Engineer
(Fire Property)
Mechanical

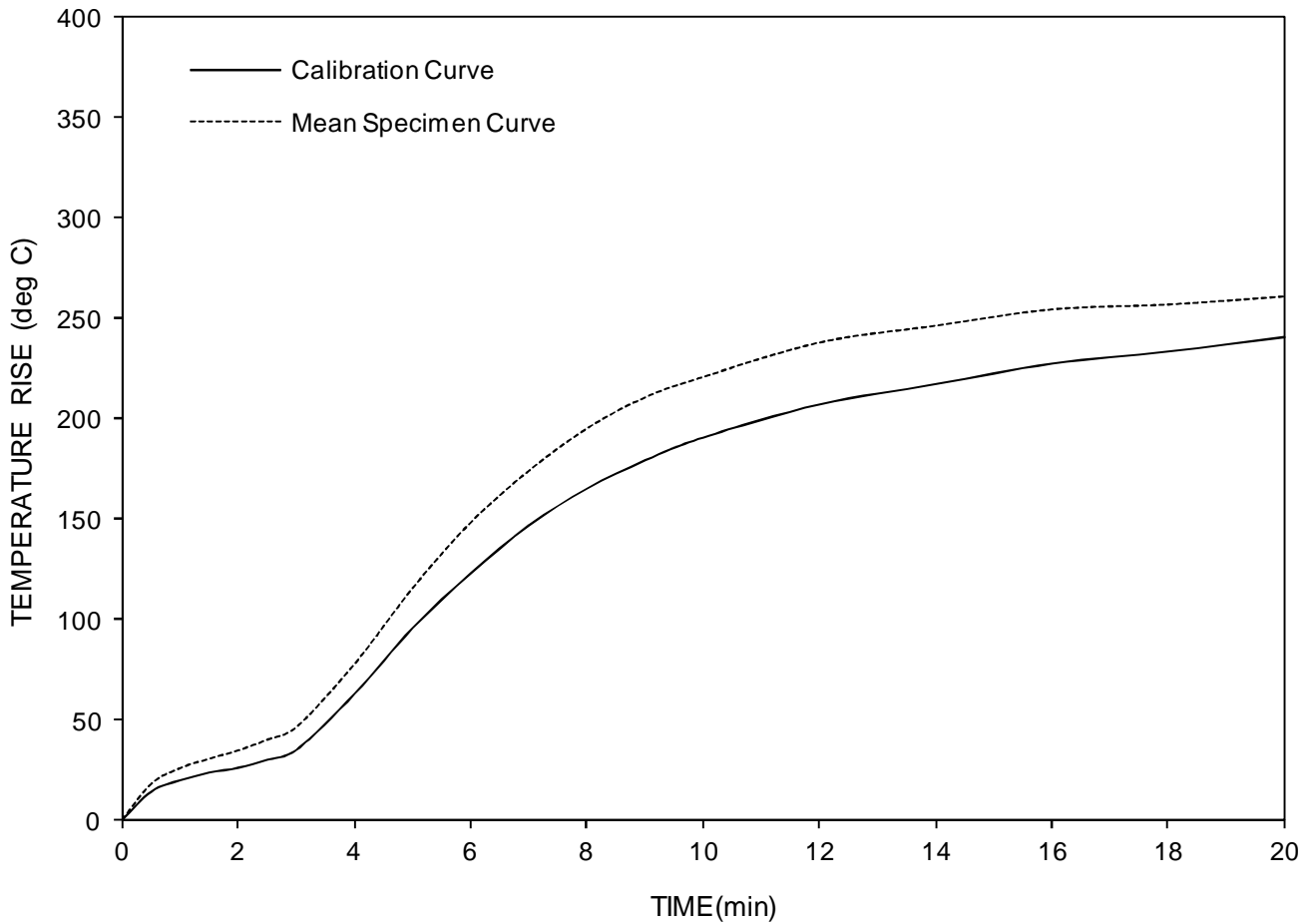


FIGURE 1 : COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES

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July 2011

