

Test Report No. S09MEC03629/2/YWA
dated 19 Jun 2009



PSB Singapore

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SUBJECT:

Fire propagation test on "ALMINE" Fire Resistant Aluminium Composite Panel material submitted by Jiangsu Xiecheng Science and Technology Development Company, Ltd on 11 May 2009.

TESTED FOR:

Jiangsu Xiecheng Science and Technology Development Company, Ltd
West side of South part of Lishi Road
Jinhu county, Industrial zone
Huaian city, Jiangsu province
China.

Attn: Mr Chen Jianming

DATE OF TEST:

15 Jun 2009

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 "Method of test for fire propagation for products".

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



Laboratory:
TÜV SÜD PSB Pte. Ltd.
Testing Services
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



LA-2007-0380-A
LA-2007-0380-A-1
LA-2007-0381-F
LA-2007-0382-B
LA-2007-0383-G
LA-2007-0384-G
LA-2007-0385-E
LA-2007-0386-C

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.

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

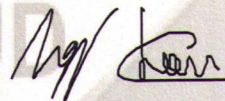
Six pieces of specimen, said to be "ALMINE" (4mm thick x 7.53kg/m²) Fire Resistant Aluminium Composite Panel material comprising of inorganic core material laminated on both sides with 0.5mm thick PVDF coated aluminium, each of nominal size of 225mm x 225mm were received. The adhesive used was said to be EVA.

TEST PROCEDURE:

Three specimens, backed with 25mm air gap calcium silicate spacer, were tested with the PVDF 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, and appendix B clause (b) 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:

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

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

$$S = s_1 + s_2 + s_3$$

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	0.0	0.0	0.0	0.0
B	0.0	0.0	0.0	0.0
C	0.0	0.0	0.0	0.0

CONCLUSION:

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

Index of overall performance, I = 0.0
(Fire propagation index)

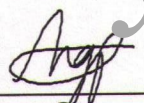
Sub-index, i₁ = 0.0

Sub-index, i₂ = 0.0

Sub-index, i₃ = 0.0

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.



Leong Gene-Jhou
Associate Engineer



Chan Lung Toa
Product Manager
(Fire Safety & Security Products)
Mechanical Centre

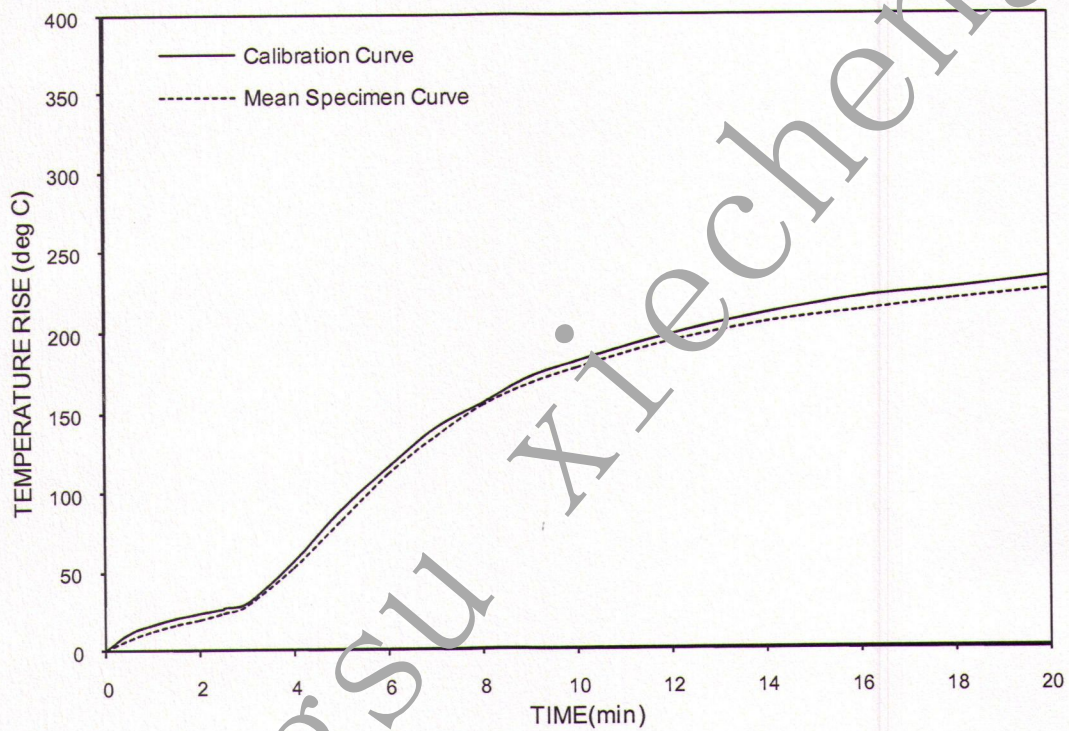


FIGURE 1: COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES





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March 2009