

**Test Report No. 7191034331-MEC12/2-YWA**  
dated 11 Aug 2012



PSB Singapore

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**SUBJECT:**

Fire propagation test on "FireSafe<sup>TM</sup>" FireSafe Isophenic (IPN) sandwich insulating panel material submitted by Izopoli Yapi Elemanlari Taahhut Sanayi ve Ticaret A.S. on 18 Jul 2012.

**TESTED FOR:**

Izopoli Yapi Elemanlari Taahhut Sanayi ve Ticaret A.S.  
CIRAGAN CADDESİ No 97  
34347 ORTAKOY  
ISTANBUL  
TURKEY

Attn: Deniz OZAY

**DATE OF TEST:**

02 Aug 2012

**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.



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



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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TUV®



### **DESCRIPTION OF SPECIMENS:**

Six pieces of specimen, said to be "FireSafe™" FireSafe Isophenic (IPN) sandwich insulating panel material comprising of 0.5mm thick metal skin coated with Ral 9002 Polyester paint / Isophenic foam ( $40\text{kg/m}^3 \pm 2\text{kg/m}^3$ ) / 0.5mm thick metal skin coated with Ral 9002 Polyester paint, each of nominal test size of 225mm x 225mm were submitted. The Additives and Fire Retardant used were said to be Integral to material. The overall thickness and bulk density of the specimen were found to be approximately 52mm and  $173\text{kg/m}^3$  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 on the left and one on the right, 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.

$\Theta_s$  = Temperature rise in deg. C for the specimen at time,  $t$

$\Theta_c$  = 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 <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S
A	0.9	3.2	0.6	4.7
B	0.6	3.0	0.9	4.5
C	0.7	3.8	1.3	5.8

**CONCLUSION:**

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

Index of overall performance, I = 5.0  
(Fire propagation index)

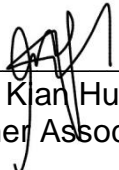
Sub-index, i<sub>1</sub> = 0.7

Sub-index, i<sub>2</sub> = 3.3

Sub-index, i<sub>3</sub> = 0.9

**REMARKS:**

1. 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.
2. The test was witnessed by Dr Tay C H for Izopoli Kingspan.

  
Ong Kian Huat  
Higher Associate Engineer

  
Chan Lung Toa  
Product Manager  
(Fire Property)  
Mechanical Centre

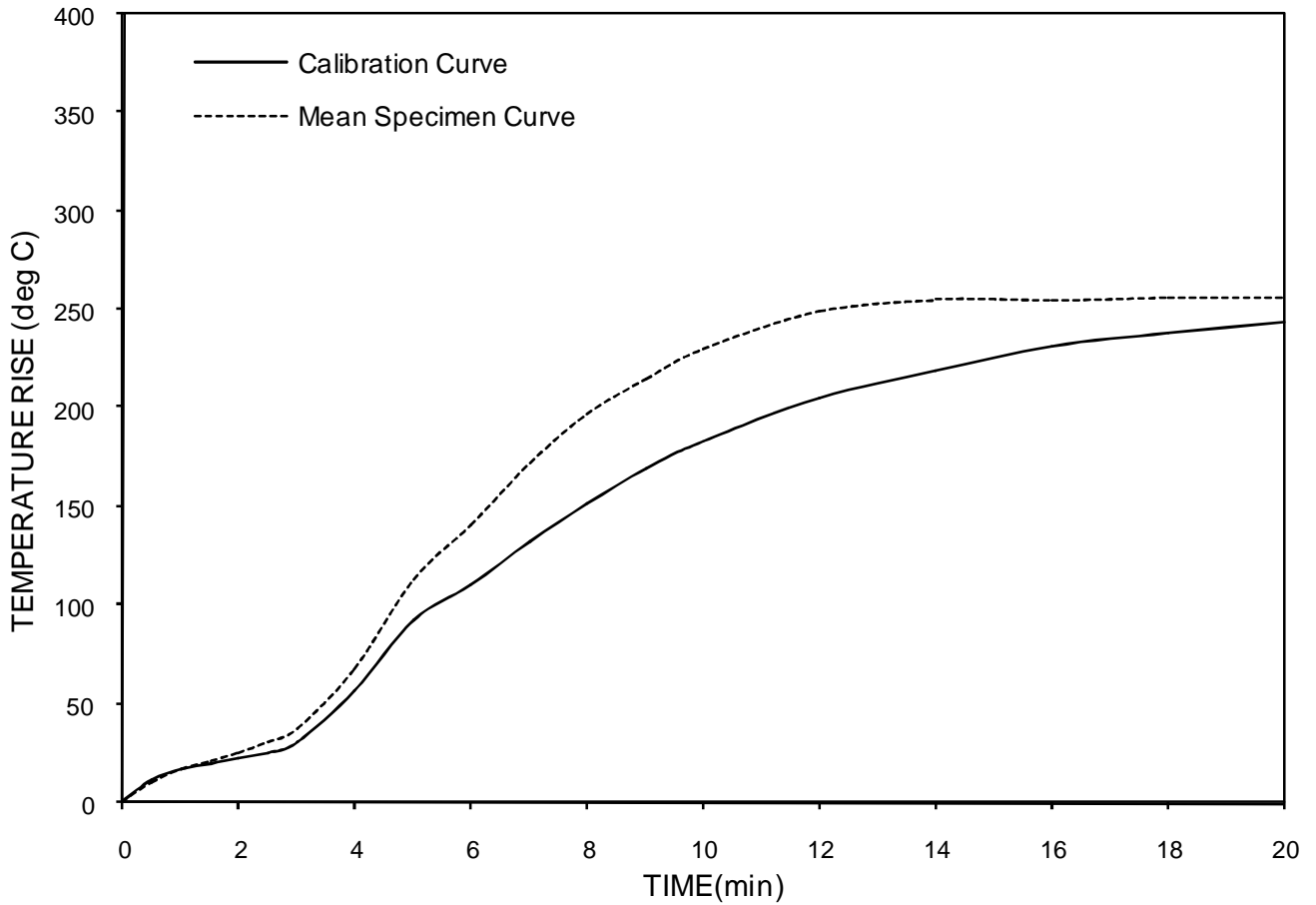


FIGURE 1 : COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES

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July 2011

