

Test Report No. 7191141775-MEC16/2-JV
dated 14 Jul 2016



PSB Singapore

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SUBJECT:

Ignitability of product when subjected to direct flame impingement test on on 'MKS PIR100' MKS PIR sandwich insulation panel (nominally 100mm thick, 125kg/m³) with 0.5mm thick steel facings submitted by Munkong Steel Co., Ltd on 15 Jun 2016.

TESTED FOR:

Munkong Steel Co., Ltd
1/348 Soi.Onnuch 59/1, Sukhumvit 77 Rd
Prawet, Bangkok
Thailand 10250

DATE OF TEST:

04 Jul 2016

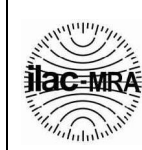
PURPOSE OF TEST:

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.



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 SPECIMEN:

Twenty pieces of specimen, said to be 'MKS PIR100' MKS PIR sandwich insulation panel (nominally 100mm thick, 125kg/m³) with 0.5mm thick steel facings, each of nominal size 250mm x 90mm x 60mm were received.

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

Product manufactured / supplied by :	
Company Address	Munkong Steel Co., Ltd 1/348 Soi.Onnuch 59/1, Sukhumvit 77 Rd Prawet, Prawet, Bangkok Thailand 10250
Brand & Model reference	MKS PIR100
Generic product name	MKS PIR Sandwich Insulation Panel
Material composition	Polyisocyanurate (PIR) Insulated Sandwich Panel
Nominal mass per unit area	12.5kg/m ²
Nominal thickness	100mm
Fire retardant	TCPP and TEP



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 –	Metal Sheet NS Blue Scope (Thailand) Limited 0.50mm (BMT) 4.26kg/m ² Off White -
Exterior face #2: Material – Manufacturer – Thickness – Mass per unit area – Color reference – Fire retardant –	Metal Sheet NS Blue Scope (Thailand) Limited 0.50mm (BMT) 4.26kg/m ² Off White -
Core material: Material – Manufacturer – Thickness – Mass per unit area – Color reference – Fire retardant –	Polyisocyanurate (Polyol Voratherm CN633 + Isocyanurate Voranate M600) Dow Chemical (Thailand) Limited 100mm 50kg/m ² Yellowish TCPP and TEP
Adhesive: Material – Manufacturer – Thickness – Mass per unit area – Color reference – Fire retardant –	Polyol Voracore CM938 + Isocyanate Voranate M600 Dow Chemical (Thailand) Limited - 80g/m ² Dark Brown/Yellowish



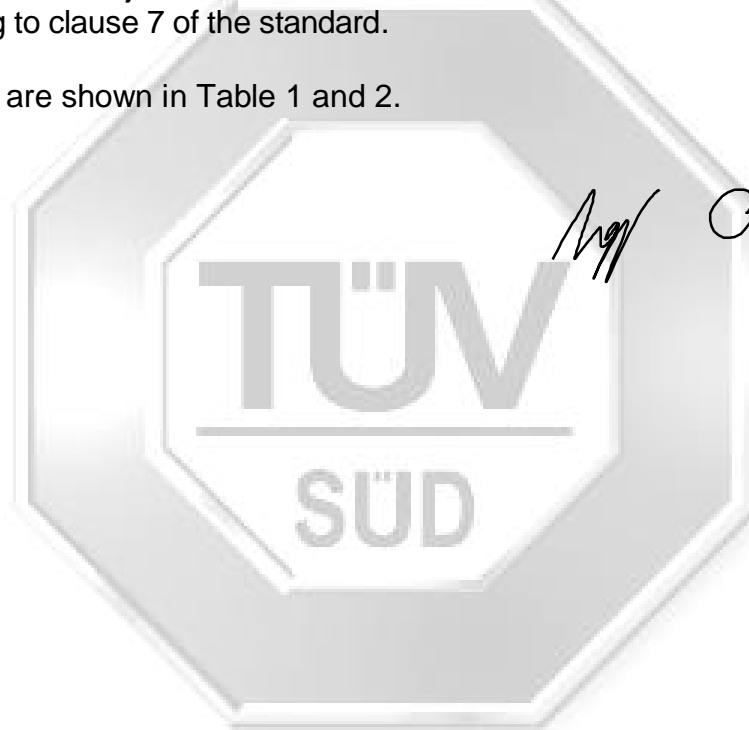
TEST PROCEDURE:

Prior to test, the specimens were prepared in accordance with clause 5 of the standard and conditioned at a temperature of $(23 \pm 2)^{\circ}\text{C}$ and relative humidity of $(50 \pm 5)\%$ 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.



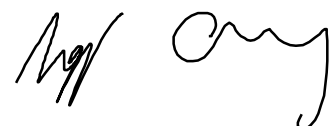
TEST RESULTS:

Table 1: Test Flame Surface Application Position

Temperature (°C)	23.5		R.H (%)	62.6		
Specimen thickness (mm)	60		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)	0	0	0	0	0	0
Flaming droplets presence (Y/N)	N	N	N	N	N	N
Filter paper ignited by flaming droplets / particles? (Y/N)	N	N	N	N	N	N

Table 1: Test Flame Edge Application Position

Temperature (°C)	23.5		R.H (%)	62.6		
Specimen thickness (mm)	60		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)	0	0	0	0	0	0
Flaming droplets presence (Y/N)	N	N	N	N	N	N
Filter paper ignited by flaming droplets / particles? (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.

WITNESSES:


The test was witnessed by the following representatives:

Munkong Steel Co., Ltd : Mr Jeerasak Jommongkol
Mr Thana Chaichanpankt

Dow Chemical (Thailand) Limited : Mr Narakan Puapan
Mr Kanmetha Nuamsiri



Leong Gene-Jhou
Senior Associate Engineer



Joseph Chng
Assistant Vice President
(Fire Property)
Mechanical



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July 2011

