

**Test Report No. 7191346257-MEC24/2-YWA**  
dated 07 Jan 2025



**Add value.  
Inspire trust.**

**Note:** This report is issued subject to the Testing, Certification, Validation and Verification Regulations (TCVVR) of the TÜV SÜD Group and the General Terms and Conditions of Business of TÜV SÜD PSB Pte Ltd. In addition, this report is governed by the terms set out within this report.

**SUBJECT:**

Fire propagation test on Brand: "TOILON", Model: "Thermotech IXPE FR Class O", Crosslinked Polyolefin foam faced with the reinforced aluminium foil for insulation submitted by PT. TOILON INDONESIA on 04 Nov 2024.

**TESTED FOR:**

PT. TOILON INDONESIA  
Jl. Raya Serang Km. 16,8, Talaga, Cikupa,  
Tangerang Regency  
Banten 15710, Indonesia

**DATE OF TEST:**

06 Jan 2025

**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-2007-0386-C  
LA-2007-0381-F LA-2010-0464-D  
LA-2007-0382-B LA-2018-0702-B  
LA-2007-0383-G LA-2018-0703-G  
LA-2007-0384-G LA-2020-0747-L  
LA-2007-0385-E

The results reported herein have been performed in accordance with the terms of accreditation under the Singapore Accreditation Council. Inspections/Calibrations/Tests marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our inspection body/laboratory.

Laboratory:  
TÜV SÜD PSB Pte. Ltd.  
15 International Business Park  
TÜV SÜD @ IBP  
Singapore 609937

Phone : +65-6778 7777  
E-mail: info.sg@tuvsud.com  
<https://www.tuvsud.com/en-sg>  
Co. Reg : 199002667R

Regional Head Office:  
TÜV SÜD Asia Pacific Pte. Ltd.  
15 International Business Park  
TÜV SÜD @ IBP  
Singapore 609937  
TUV®



**DESCRIPTION OF SPECIMENS:**

Six pieces of specimen, said to be Brand: "TOILON", Model: "Thermotech IXPE FR Class O", Crosslinked Polyolefin foam faced with the reinforced aluminium foil for insulation, each of nominal size of 885mm x 270mm were received. The overall thickness, mass per unit area and bulk density of the specimen (reinforced aluminium foil with polyolefin foam) were measured to be 16mm, 1.76kg/m<sup>2</sup> and 110kg/m<sup>3</sup> respectively.

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

Brand	TOILON
Model	Thermotech IXPE FR Class O
Generic product name	Crosslinked Polyolefin foam
Material composition	Crosslinked Polyolefin foam faced with the reinforced aluminium foil
Country of Origin	Indonesia
Nominal thickness	15mm
Nominal density	25kg/m <sup>3</sup> (Foam only)
Nominal bulk density	110kg/m <sup>3</sup> (Reinforced aluminium foil with polyolefin foam)
Nominal mass per unit area	N/A
Fire retardant	N/A

A handwritten signature in black ink, appearing to read 'Yury Khan', is written over a large, faint, grey watermark of the TÜV SÜD logo in the background.



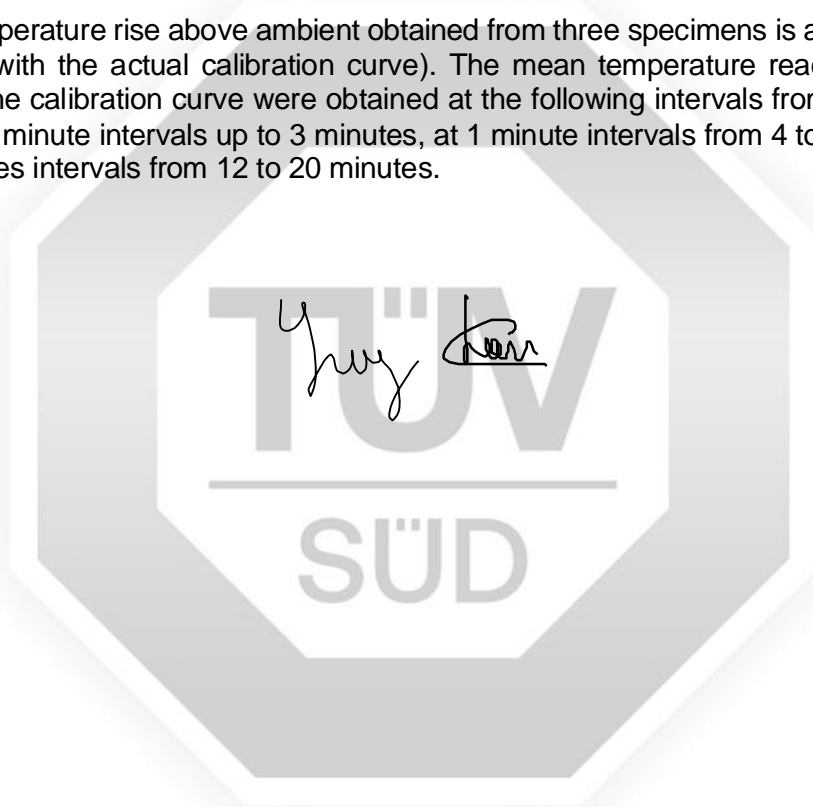
**TEST PROCEDURE:**

Prior to test, the specimens were prepared and conditioned in accordance with paragraph 4.4 of the standard.

Three specimens, backed with non-combustible board, were tested with the reinforced aluminium foil 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.

$\Theta_s$  = 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	4.0	4.6	1.5	10.1
B	4.1	3.5	2.0	9.6
C	4.2	4.5	1.9	10.6

**CONCLUSION:**

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

Index of overall performance, I = 10.1  
(Fire propagation index)

Sub-index, i<sub>1</sub> = 4.1

Sub-index, i<sub>2</sub> = 4.2

Sub-index, i<sub>3</sub> = 1.8

**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.

Ye Wint Aung  
Senior Associate Engineer

Chan Lung Toa  
Assistant Vice President  
Fire Testing  
Mechanical Centre

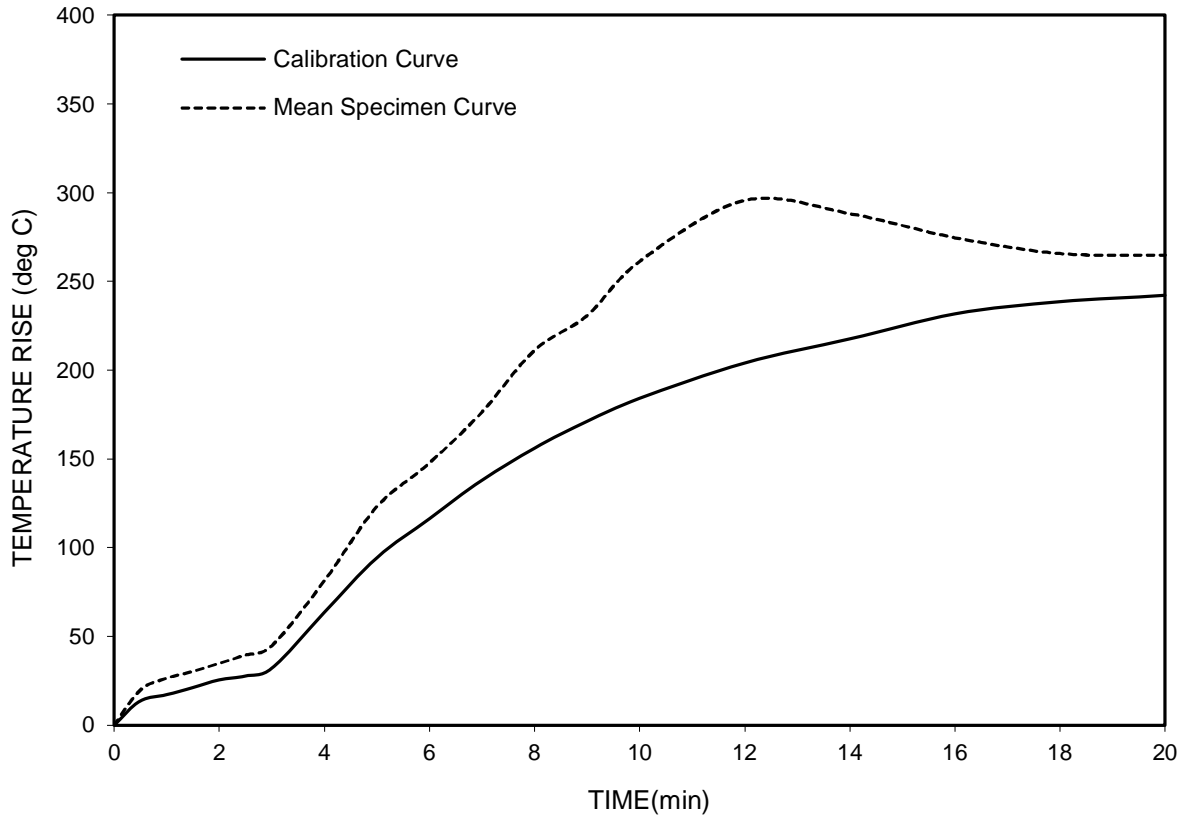


FIGURE 1 : COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES



Please note that this Report is issued under the following terms :

1. This report applies to the sample of the specific product/equipment given at the time of its testing/calibration. The results are not used to indicate or imply that they are applicable to other similar items. In addition, such results must not be used to indicate or imply that TÜV SÜD PSB approves, recommends or endorses the manufacturer, supplier or user of such product/equipment, or that TÜV SÜD PSB in any way "guarantees" the later performance of the product/equipment. Unless otherwise stated in this report, no tests were conducted to determine long term effects of using the specific product/equipment.
2. The sample/s mentioned in this report is/are submitted/supplied/manufactured by the Client. TÜV SÜD PSB therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.
3. Nothing in this report shall be interpreted to mean that TÜV SÜD PSB has verified or ascertained any endorsement or marks from any other testing authority or bodies that may be found on that sample.
4. This report shall not be reproduced wholly or in parts and no reference shall be made by the Client to TÜV SÜD PSB or to the report or results furnished by TÜV SÜD PSB in any advertisements or sales promotion.
5. Unless otherwise stated, the tests were carried out in TÜV SÜD PSB Pte Ltd, 15 International Business Park TÜV SÜD @ IBP Singapore 609937.
6. The tests carried out by TÜV SÜD PSB and this report are subject to TÜV SÜD PSB's General Terms and Conditions of Business and the Testing, Certification, Validation and Verification Regulations (TCVVR) of the TÜV SÜD Group.

Effective 27 March 2024

