

**Test Report No. 7191266258-MEC21/A2-YWA**  
**dated 29 Nov 2021**



PSB Singapore

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Inspire trust.**

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**SUBJECT:**

Fire propagation test on Brand: "Delta Duct", Model: "Delta Duct XLPE" XLPE-Polyolefin Insulation material submitted by Delta Duct Airconditioning L.L.C on 20 Oct 2021.

**TESTED FOR:**

Delta Duct Airconditioning L.L.C  
P.O. Box:5389,Factory: 2,  
Saih Shuaib 4,  
Dubai Industrial City,  
Dubai,UAE

**DATE OF TEST:**

09 Nov 2021

**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.



		<p>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.</p>
		<p>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</p>

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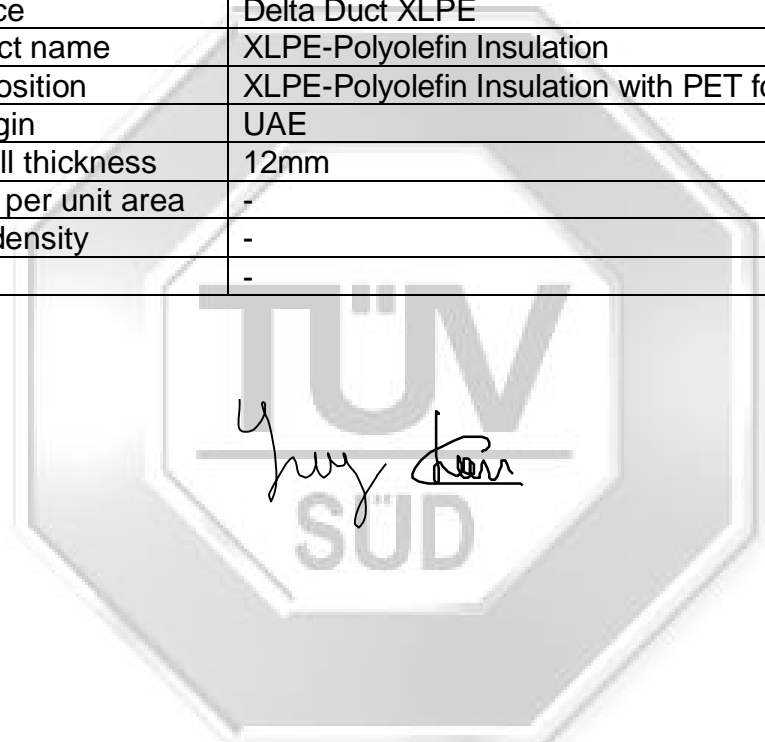


**DESCRIPTION OF SPECIMENS:**

Six pieces of specimen, said to be Brand: "Delta Duct", Model: "Delta Duct XLPE" XLPE-Polyolefin Insulation material, each of nominal test size of 225mm x 225mm were received. The overall thickness, mass per unit area and bulk density of the whole specimen were measured to be 12mm, 0.5kg/m<sup>2</sup> and 42kg/m<sup>3</sup> respectively.

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

Brand	Delta Duct
Model reference	Delta Duct XLPE
Generic product name	XLPE-Polyolefin Insulation
Material composition	XLPE-Polyolefin Insulation with PET foil facing
Country of Origin	UAE
Nominal overall thickness	12mm
Nominal mass per unit area	-
Nominal bulk density	-
Fire retardant	-





**Details of the product, as provided by the sponsor of test, are as follows: (Cont'd)**

<p>Exterior Face: (Fire side)</p> <p>Brand – Material – Country of Origin – Nominal thickness – Nominal mass per unit area – Nominal density – Color reference – Fire retardant –</p>	<p>- Heat Sealing PET Foil - 39 micron - - Silver -</p>
<p>Core Material</p> <p>Brand – Material – Country of Origin – Nominal thickness – Nominal mass per unit area – Nominal density – Color reference – Fire retardant –</p>	<p>- Crosslinked Polyethylene Foam - 12mm - - Grey -</p>
<p>Bonding Process</p>	<p>Heat Sealing PET Foil bonded over XLPE-Foam by Heat Lamination process</p>



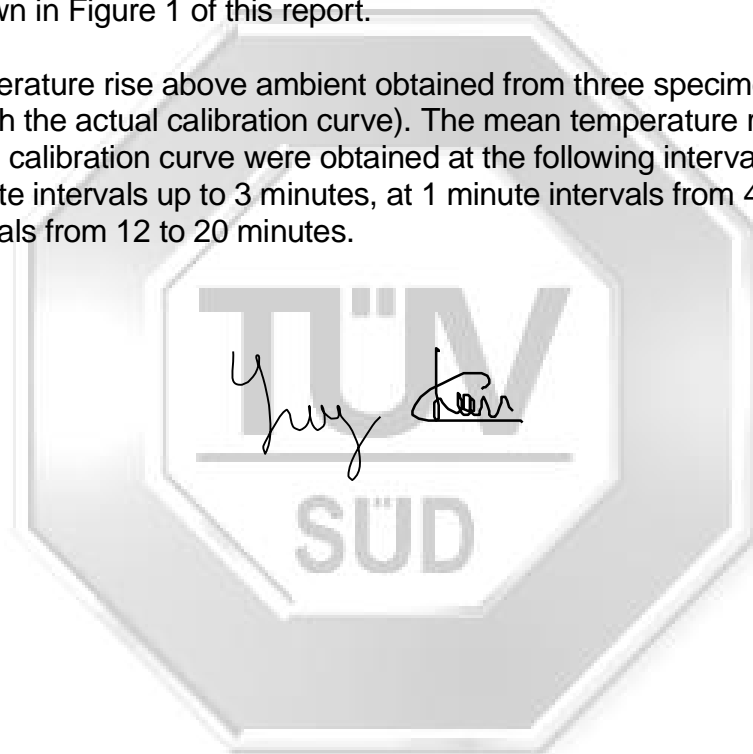
**TEST PROCEDURE:**

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 Heat Sealing PET 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	1.7	2.3	0.4	4.4
B	2.9	1.9	0.4	5.2
C	3.8	1.8	0.2	5.8

**CONCLUSION:**

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

Index of overall performance, I = 5.1  
(Fire propagation index)

Sub-index, i<sub>1</sub> = 2.8


Sub-index, i<sub>2</sub> = 2.0

Sub-index, i<sub>3</sub> = 0.3

**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. Photographs of specimen are shown in Plate 1.

  
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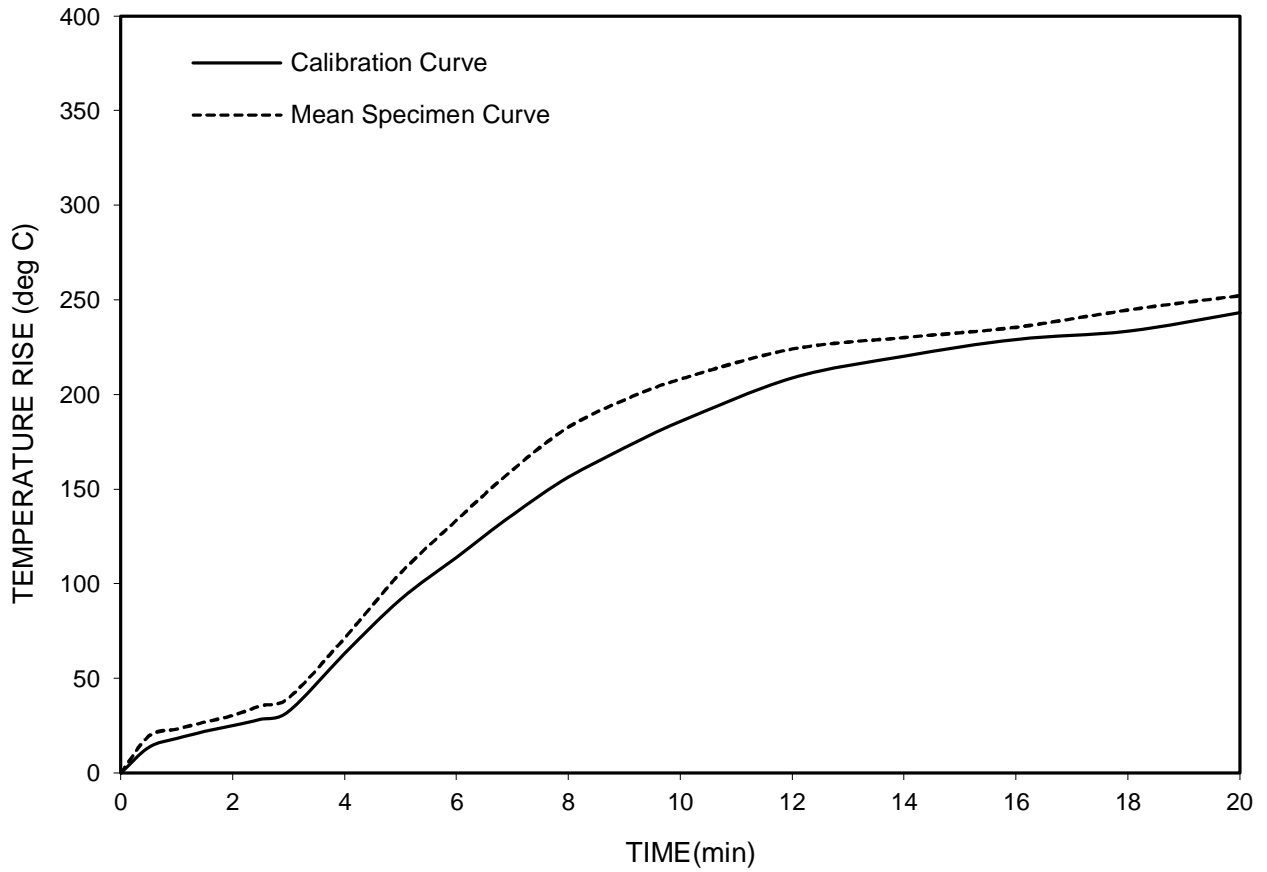


FIGURE 1 : COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES





**Plate 1: Photographs of specimen**

*Yue Han*



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PSB Singapore

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Effective 26 January 2021

