# Test Report No. 7191195614-MEC18-JV
**dated 22 October 2018**

PSB Singapore

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## SUBJECT:

Determination of the toxic fume generated by 'EchoPanel®' 100% PET (60% recycled) panel submitted by Woven Image on 12 Oct 2018.

## TESTED FOR:

Woven Image
37-39 Chard Road
Brookvale
NSW 2100
Australia

## DATE OF TEST:

19 Oct 2018

## PURPOSE OF TEST:

To determine the toxic fume generated from materials or products of thickness not exceeding 25.4mm when mounted in the horizontal position and tested in according to test method references T11.01 of BS EN 45545-2 : 2013 +A1 : 2015 Annex C, Method 1 (smoke chamber).

This test was conducted in accordance with the procedures specified in BS EN 45545-2:2013 +A1 : 2015 Annex C and using the apparatus and procedures specified in ISO 5659-2 : 2017.

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

TÜV SÜD PSB

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## DESCRIPTION OF SAMPLES:

Six pieces of specimen, said to be 'EchoPanel®' 100% PET (60% recycled) panel, each of nominal size of 75mm x 75mm were received. The nominal thickness and area density of the specimen were 24mm and 3.1kg/$m^2$ respectively.

## Photograph of specimen:

## TEST PROCEDURES:

The test was conducted using the ISO 5659-2 smoke chamber (Asset No. 191010483) in conjunction with a FTIR Analyzer (Serial No. AFS-B2-C-1716) with their respective spreadsheets. Both systems, operating at the same time, were dedicated for the acquisition and analysis of opacity of the smoke and the qualitative and quantitative analysis of gases emitted during the test.

Prior to test, the specimens were prepared and conditioned in accordance to annex C.5 of BS EN 45545-2.

The test specimens were exposed to the specified test conditions according to Method T11.01 for the toxic fume for 10 minutes.

The gas data of the specimen were calculated according to annex C.9 and the CIT value was calculated according to annex C.16 of the standard.

## TEST RESULTS:

| Test Parameters | Specimen 1 | Specimen 2 | Specimen 3 | Average |
|---|---|---|---|---|
| Time of ignition (sec) | 5 | 5 | 5 | 5 |
| Initial Mass (gm) | 266.81 | 275.39 | 273.31 | 271.84 |
| Final Mass (gm) | 259.32 | 246.61 | 253.34 | 253.09 |
| Mass Loss (gm) | 7.49 | 28.78 | 19.97 | 18.75 |
| Observations | 1) Smoke emission started at 5 seconds of test for all specimens.<br>2) Flaming started at between 105 to 198 seconds of test. | | | |

The concentration of each gas sampled at 240s of test is as follows:

| Gas | | Specimen 1 | | Specimen 2 | | Specimen 3 | | Average | |
|---|---|---|---|---|---|---|---|---|---|
| | | ppm | $Kg/m^3$ | ppm | $Kg/m^3$ | ppm | $Kg/m^3$ | ppm | $Kg/m^3$ |
| Carbon Dioxide ($CO_2$) | | 10802.81 | 0.01 | 999.69 | 0.00 | 10972.15 | 0.01 | 7591.55 | 0.01 |
| Carbon Monoxide (CO) | | 327.59 | 0.00 | 202.78 | 0.00 | 346.74 | 0.00 | 292.37 | 0.00 |
| Nitrogen Oxide ($NO_x$) | NO | ND | ND | ND | ND | ND | ND | ND | ND |
| | $NO_2$ | ND | ND | ND | ND | ND | ND | ND | ND |
| Sulphur Dioxide ($SO_2$) | | 20.95 | 0.00 | 87.58 | 0.00 | 49.46 | 0.00 | 52.66 | 0.00 |
| Hydrogen Chloride (HCl) | | 0.24 | 0.00 | ND | ND | ND | ND | 0.24 | 0.00 |
| Hydrogen Bromide (HBr) | | ND | ND | ND | ND | ND | ND | ND | ND |
| Hydrogen Fluoride (HF) | | ND | ND | ND | ND | ND | ND | ND | ND |
| Hydrogen Cyanide (HCN) | | ND | ND | ND | ND | ND | ND | ND | ND |
| $CIT_G$ | | 0.00 | | 0.00 | | 0.01 | | 0.00 | |

*ND – Not Detected

## TEST RESULTS (cont'd):

The concentration of each gas sampled at 480s of test is as follows:

| Gas | | Specimen 1 | | Specimen 2 | | Specimen 3 | | Average | |
|---|---|---|---|---|---|---|---|---|---|
| | | ppm | $Kg/m^3$ | ppm | $Kg/m^3$ | ppm | $Kg/m^3$ | ppm | $Kg/m^3$ |
| Carbon Dioxide ($CO_2$) | | 24327.23 | 0.02 | 24496.93 | 0.02 | 28921.85 | 0.02 | 25915.33 | 0.02 |
| Carbon Monoxide (CO) | | 435.17 | 0.00 | 654.25 | 0.00 | 939.94 | 0.00 | 676.45 | 0.00 |
| Nitrogen Oxide ($NO_x$) | NO | ND | ND | ND | ND | ND | ND | ND | ND |
| | $NO_2$ | ND | ND | ND | ND | ND | ND | ND | ND |
| Sulphur Dioxide ($SO_2$) | | 20.64 | 0.00 | 103.24 | 0.00 | 52.63 | 0.00 | 58.84 | 0.00 |
| Hydrogen Chloride (HCl) | | 0.14 | 0.00 | ND | ND | ND | ND | 0.14 | 0.00 |
| Hydrogen Bromide (HBr) | | ND | ND | 0.34 | 0.00 | 0.17 | 0.00 | 0.25 | 0.00 |
| Hydrogen Fluoride (HF) | | ND | ND | ND | ND | ND | ND | ND | ND |
| Hydrogen Cyanide (HCN) | | ND | ND | ND | ND | ND | ND | ND | ND |
| $CIT_G$ | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |

*ND – Not Detected

## CONCLUSION:

In accordance to test method references T11.01 of BS EN 45545-2 : 2013 +A1 : 2015 Annex C, Method 1 (smoke chamber) method, **'EchoPanel®' 100% PET (60% recycled) panel**, achieved the following average values:

**$CIT_G$ at 240 sec : 0.00**
**$CIT_G$ at 480 sec : 0.00**

## 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.

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Higher Associate Engineer

Leong Gene-Jhou
Engineer
(Fire Property)
Mechanical

PSB Singapore

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July 2011