

## TEST REPORT: 7191102160-CHM14-MA

Date: 19 DEC 2014

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Client's Ref:

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### SUBJECT

Emission Rate Evaluation of Panel Boards with reference to Singapore Green Labelling Scheme (SGLS), Category 41: Panel Board

### CLIENT

APLUS Pacific Pte Ltd  
11 Greenwood Lane  
Singapore 287001

Attn : Ms. Justina Chua

### DESCRIPTION OF SAMPLE

Four pieces of board labelled as follow were received on 19 Nov 2014:

Product Name: INDOGYPS STANDARD GYPSUM BOARD

### DATE OF TEST

26 Nov 2013 – 19 Dec 2014



Laboratory:  
TÜV SÜD PSB Pte. Ltd.  
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## METHOD OF TEST

### 1. Emission Test

The following emission tests were conducted according to ASTM D5116-10 – *Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials / Products*, as reference.

- 1) Total Volatile Organic Compounds (TVOC) Emission Rate
- 2) Formaldehyde Emission Rate

### Emission Test Condition

- 1) Chamber Volume: about 1m<sup>3</sup>
- 2) Temperature: 23°C
- 3) Relative Humidity: 50%
- 4) Air Exchange Rate: n=1 (air change rate per hour in the chamber)
- 5) Chamber Loading Ratio: 0.4-1.0 m<sup>2</sup>/m<sup>3</sup> (total exposed surface area of the test specimen divided by the net air volume of the emission test chamber)
- 6) Air Velocity: 0.1 m/s to 0.3 m/s (over the surface of the test specimen)

## REMARKS

Product Loading Ratio for the "INDOGYPS STANDARD GYPSUM BOARD" sample was 0.41.

### 2. Analysis of Hazardous Substances

- 1) **Elemental Analysis of Antimony (Sb), Copper (Cu), Selenium (Se), Tin (Sn), Mercury (Hg), Lead (Pb), Cadmium (Cd), Chromium (Cr), and Arsenic (As)**

The sample was digested by inorganic acid, followed by analysis using Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES).



**RESULTS**

**Table 1. Total Volatile Organic Compounds (TVOC) Emission Rate Test Result**

Sample	Test Result (After 24 hours)	Criteria for Singapore Green Label Category 41	Inferred Result
INDOGYPS STANDARD GYPSUM BOARD	< 0.3 mg per m <sup>2</sup> per hour	< 0.5 mg per m <sup>2</sup> per hour	Pass

<sup>a</sup> TVOC is the sum of volatile organic compounds sampled on the sorbent tube between n-hexane (C6) and n-hexadecane (C16), and quantified by converting the total area of the chromatogram in that region to Toluene concentration equivalent.

**Table 2. Formaldehyde Emission Rate Test Result**

Sample	Test Result (After 48 hours)	Criteria for Singapore Green Label Category 41	Inferred Result
INDOGYPS STANDARD GYPSUM BOARD	< 0.05 mg per m <sup>2</sup> per hour	< 0.1 mg per m <sup>2</sup> per hour	Pass

**Table 3. The elemental analytical results for the sample.**

Test	Result
Antimony, Sb	Not Detected <sup>b</sup>
Copper, Cu	Not Detected <sup>b</sup>
Selenium, Se	Not Detected <sup>b</sup>
Tin, Sn	Not Detected <sup>b</sup>
Mercury, Hg	Not Detected <sup>b</sup>
Lead, Pb	Not Detected <sup>b</sup>
Cadmium, Cd	Not Detected <sup>b</sup>
Chromium, Cr	Not Detected <sup>b</sup>
Arsenic, As	Not Detected <sup>b</sup>

<sup>b</sup> The method detection limit was 50 ppm

**MS MARIANA AHMAD**  
CHEMIST

**DR XIAO ZHOU**  
PRODUCT MANAGER  
MICROCONTAMINATION DIAGNOSIS  
CHEMICAL & MATERIALS

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July 2011

