

Our Ref : CO/1211/04/2010**Date : 28/04/2010****Digital Brew Pte Ltd**
12 Jalan Lembah Kallang
#06-00 Concorde Building
Singapore 339568**Attention: Ms Yoke Ching / Ms Rina Sandhu****Re: IAQ test at Room 312 @ Amara Sanctuary Sentosa**

We refer to the above test conducted at Room 312, Amara Sanctuary Sentosa. Pre and post test was conducted on the 13th April 2010 and 26 April 2010 respectively. Data for which is provided in the attached report.

TVOC: Volatile organic compounds are compounds with a carbon base that can cause health problems when inhaled at high levels. Examples of common VOCs are acetone, formaldehyde, benzene, xylene and ethylene. Health effects that can occur from VOCs exposure include headaches, lethargy, dizziness and potential asthma attacks.

TVOC were measured by using KD Air box. There is a significant amount of TVOC has been recovered from the room before and during smoking; range of 1700 and 2100 ppb respectively. After treatment with Nano-Yo TiO₂ the TVOC levels were measured 0ppb; indicates substantive reduction of TVOC concentration. The result shows that application of Nano-Yo TiO₂ in indoor surfaces may be an effective approach for reducing TVOCs in indoor environment.

Please do not hesitate to contact the undersigned at Tel: 6245 0109 should you need any further clarification.

Yours sincerely,

For IAQ Consultants Pte Ltd
Neil

H/p 9325 9325

TEST REPORT

(This report is issued subject to the terms & conditions set out below)

- Subject** : **Testing For Titanium Dioxide Efficacy**
- Tested for** : **Digital Brew Pte Ltd**
12 Jalan Lembah Kallang
#06-00 Concorde Building
Singapore 339568
- Jobsite** : **Room 312 @ Amara Sanctuary Sentosa**
- Attention** : **Ms Yoke Ching / Ms Rina Sandhu**
- Test Method** :
1. ASHRAE Standard 55-2004:Pt 100
2. Singapore Standard SS554-2009: Capacitive
3. Singapore Standard SS554-2009: Real Time Non-Dispersive Infra Red Sensor
4. Singapore Standard SS554-2009: Real Time electrochemical Sensor
5. Singapore Standard SS554-2009: Real-Time Photo Ionisation Detector (PID)
6. Singapore Standard SS554-2009: electrochemical Sensor

Terms & Condition:

- (1) The Report is prepared for the sole use of the Client and is prepared based upon the Item submitted, the Services required by the Client and the conditions under which the Services are performed by IAQ Consultants. The Report is not intended to be representative of similar or equivalent Services on similar or equivalent Items. The Report does not constitute an endorsement by IAQ Consultants of the Item.
- (2) IAQ Consultants agrees to use reasonable diligence in the performance of the Services but no warranties are given and none may be implied directly or indirectly relating to the Services, the Report or the facilities of IAQ Consultants.
- (3) The Report may not be used in any publicity material without the written consent of IAQ Consultant.
- (4) The Report may not be reproduced in part or in full unless approval in writing has been given by IAQ Consultants.
- (5) IAQ Consultants shall under no circumstances be liable to the Client or its agents, servants or representatives, in contract, tort (including negligence or breach of statutory duty) or otherwise for any direct or indirect loss or damage suffered by the Client, its agents, servants or representatives howsoever arising or whether connected with the Services provided by IAQ Consultants herein.



1st Test: Before Smoking
Date & Time: 13/4/2010 @ 10.20am

Location	Temperature (°C)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Total Volatile Organic Compound (ppb)	Ozone (ppb)
Room 312	26.9	66.4	1030	1.6	1700	0.0ppb
Singapore Standard SS554:2009; Code of Practice for Indoor Air Quality for Air-Conditioned Buildings	22.5 - 25.5	<70	700 above outdoor	9	3000	50

2nd Test: During Smoking
Date & Time: 13/4/2010 @ 10.40am

Location	Temperature (°C)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Total Volatile Organic Compound (ppb)	Ozone (ppb)
Room 312	26.7°C	65.1%	1294ppm	6.9ppm	2100	0.0ppb
Singapore Standard SS554:2009; Code of Practice for Indoor Air Quality for Air-Conditioned Buildings	22.5 - 25.5	<70	700 above outdoor	9	3000	50

3rd Test: After Application of Nano-Yo TiO₂

Date & Time: 13/4/2010 @ 11.00am

Location	Temperature (°C)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Total Volatile Organic Compound (ppb)	Ozone (ppb)
Room 312	26.0°C	62.9%	1132ppm	4.8ppm	0	0.0ppb
Singapore Standard SS554:2009; Code of Practice for Indoor Air Quality for Air-Conditioned Buildings	22.5 - 25.5	<70	700 above outdoor	9	3000	50

4th Test: After Application of Nano-Yo TiO₂

Date & Time: 13/4/2010 @ 12.30pm

Location	Temperature (°C)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Total Volatile Organic Compound (ppb)	Ozone (ppb)
Room 312	26.0°C	62.9%	1287ppm	1.3ppm	0	0.0ppb
Singapore Standard SS554:2009; Code of Practice for Indoor Air Quality for Air-Conditioned Buildings	22.5 - 25.5	<70	700 above outdoor	9	3000	50

5th Test: Post Testing After Application of Nano-Yo TiO₂
Date & Time: 26/4/2010 @ 1.30pm

Location	Temperature (°C)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Total Volatile Organic Compound (ppb)	Ozone (ppb)
Room 312	27.7°C	80.2%	543ppm	0.2ppm	0	0.0ppb
Singapore Standard SS554:2009; Code of Practice for Indoor Air Quality for Air-Conditioned Buildings	22.5 - 25.5	<70	700 above outdoor	9	3000	50

Prepared By:



Kasthuri Kalidhasan
 Environmental Technologist

Approved By:



S. Selva Kumar MSc.
 Technical Manager