



**Pusat Penyelidikan Teknologi Alam Sekitar**  
**Environmental Technology Research Centre**

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**RESULTS SUMMARY**

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Request : Analysis of paint samples

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**SAMPLE DESCRIPTION:**

Two (2) liquid samples were received on 10<sup>th</sup> April 2019 and labelled as below:

No.	Brand	Model	Lab code
1.	Bonshure	e-22	J 070-1/19
2.	Bonshure	e-3	J 070-2/19

**TEST METHOD:**

Refer to page 2.

**RESULT:**

Refer to page 3.

**INFERENCE:**

Not applicable.

*(The inferences expressed herein are outside the scope of accreditation)*

*The results contained in this report relate only to samples/ items received and analysed by SIRIM Environmental Technology Research Centre. This report shall not be reproduced except in full without the written approval of SIRIM Berhad.*

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## TEST METHOD

GC-MSD Qualitative Organic Analysis: -

### I. Sample Treatment

Approximately 5g of sample was heated at 40°C in the MARKES microchamber (TD100) for 10 minutes. Gas emissions were trapped using Tenax adsorbent.

### II. Analytical of gas desorption

The Tenax was desorbed into MARKES Thermal Desorber TD-100 using the following instrumental conditions:

- Duration: 20 minutes
- Temperature: 335 °C
- Trap split flow: 75 ml/min
- Flow path temperature: 180 °C

### III. Analytical of gas emission

The sample was injected into Agilent 7890A Gas Chromatograph with Agilent Technologies 5977A inert Mass Selective using the following instrumental conditions:

- Column size: 20m x 0.25 mm I.D x 0.25 um film thickness
- Column type: DB-VRX
- Carrier gas: Helium
- Injector temperature: 170 °C, Splitless mode
- Detector temperature: 170 °C
- Temperature programme: 40 °C for 4 min, rate 15 °C/min to 240 °C

IV. A blank run of empty chamber was also carried out under the exact conditions describe above.



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**Result:**

Table 1: Result of Volatile Organic Compounds (VOCs) emission

Volatile Organic Compounds (VOC)	Mass concentration of (mg/kg.m <sup>3</sup> )	
	e-22	e-3
Carbon tetrachloride	< 0.4	< 0.4
Benzene	< 0.4	< 0.4
1,2-Dichloropropane	< 0.4	< 0.4
Trichloroethylene	< 0.4	< 0.4
trans-1,3-Dichloropropane	28	16
cis-1,3-Dichloropropane	36	16
1,1,2-Trichloroethane	< 0.4	< 0.4
Toluene	8	< 0.4
1,3-Dichloropropane	< 0.4	< 0.4
Dibromochloromethane	< 0.4	< 0.4
1,2-Dibromoethane	< 0.4	< 0.4
Tetrachloroethylene	< 0.4	< 0.4
1, 1, 1, 2-Tetrachloroethane	< 0.4	< 0.4
Chlorobenzene	< 0.4	< 0.4
Ethylbenzene	36	16
1,3-Dimethylbenzene	72	44
Styrene	4	12
o,m,p-Xylene	< 0.4	< 0.4
1, 2, 3-Trichloropropane	1,312	964
Isopropylbenzene	204	168
Bromobenzene	68	52
Propylbenzene	176	140
2-Chlorotoluene	300	240
4-Chlorotoluene	296	236
1,2,4-Trimethylbenzene	< 0.4	< 0.4
tert-Butylbenzene	< 0.4	< 0.4
1,2,3-Trimethylbenzene	160	132
sec-Butylbenzene	28	16
1,3-Dichlorobenzene	< 0.4	< 0.4
p-Isopropyltoluene	< 0.4	< 0.4
n-Butylbenzene	< 0.4	< 0.4
1, 2-Dibromo-3-chloropropane	< 0.4	< 0.4
1,2,4-Trichlorobenzene	< 0.4	< 0.4
Naphthalene	12	12
Hexachlorobutadiene	132	132



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