

Air Cleaner Test Report

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TABLE OF CONTENT

1. Sample Description	3
2. Detail Description of the sample	4 – 5
3. Testing Environment	6
4. Testing Method of Removal Efficiency	7
5. Result of Removal Efficiency	8 – 9

1. Sample Description

Product	: Air Cleaner
Brand Name	: b-MOLA
Model No.	: BP50
No. of Sample Received	: 1
Test Date	: 20 May 2023 – 20 May 2023
Test Item(s)	: Pollutants Removal Efficiency
Test Requested	: Ethylbenzene
Test Reference(s)	: In-house method SOP200 (for VOC removal rate)
Test Equipment	: Honeywell instrument ppbRAE 3000
Equipment no.	: E002 – 002
Test Result	: See the attached sheets
Remark	: Client claimed that model BP50 same as IA20/BM50 in terms of power, parts, components and structures. Only different is the selling platform.

2. Detail Description of the sample



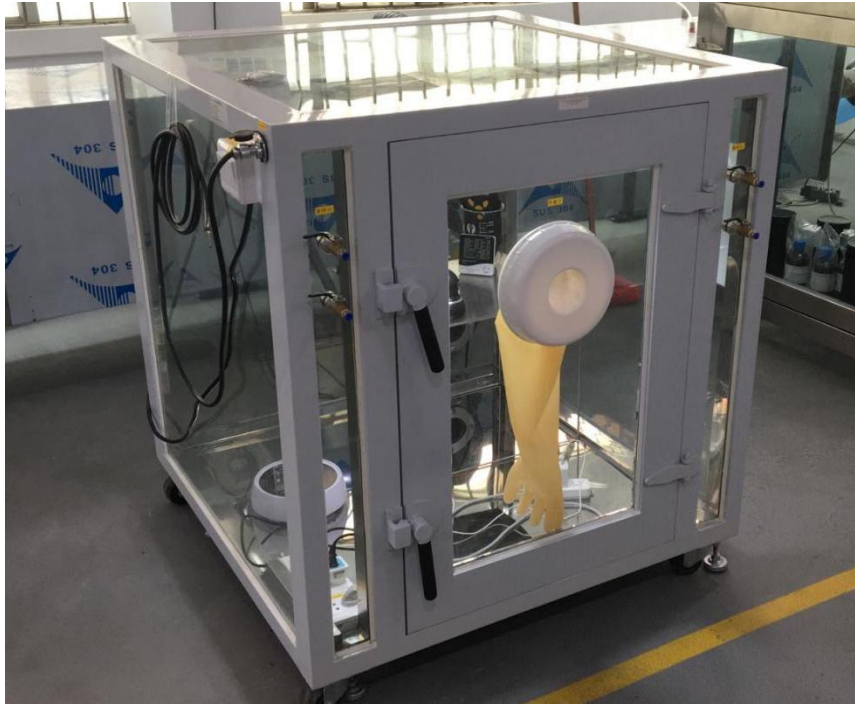
b-MOLA/BP50



NCCO Reactor (NA213020300) and Normal HEPA

3. Testing Environment

Temperature	: 24.5 °C
Relative Humidity	: 46 %
Testing Chamber	: 1m ³ Testing Chamber
Size (W × H × D) mm	: 1000 × 1000 × 1000



1m³ Testing Chamber

4. Testing Method of Removal Efficiency

In a 1m³ chamber, chemical was injected into the chamber by a syringe and evaporated by a hot plate. Internal circulation was turned on throughout the test to ensure the uniformity of chemical concentration inside the chamber. Initial concentration (C_0) of the chemical was recorded before switching on the air cleaner with a range of 100 (± 10) mg/m³. Then, the air cleaner is switched on for 60 minutes and the chemical concentration was recorded as C_{60} , the final concentration of chemical.

The test was repeated without the air cleaner to determine the natural decay of the chemical at the test chamber. Chemical was injected into the chamber by a syringe and evaporated by a hot plate with an initial concentration (C_{N0}). The final concentration (C_{N60}) was determined 60 minutes later

New filters and HEPA have been used for each chemical test.

5. Results of Removal Efficiency

Brand/ Model No.	Operation Mode	Test Chemical	Volume of use (mL)
b-MOLA/BP50	SS	Ethylbenzene	0.12

Initial Concentration (mg/m ³)	Natural Decay, k _n (min ⁻¹)	Total Decay, k _e (min ⁻¹)	Removal Efficiency (%)
92.91	0.005	0.054	>99

Remark: Initial concentration is set within 100±10mg/m³.

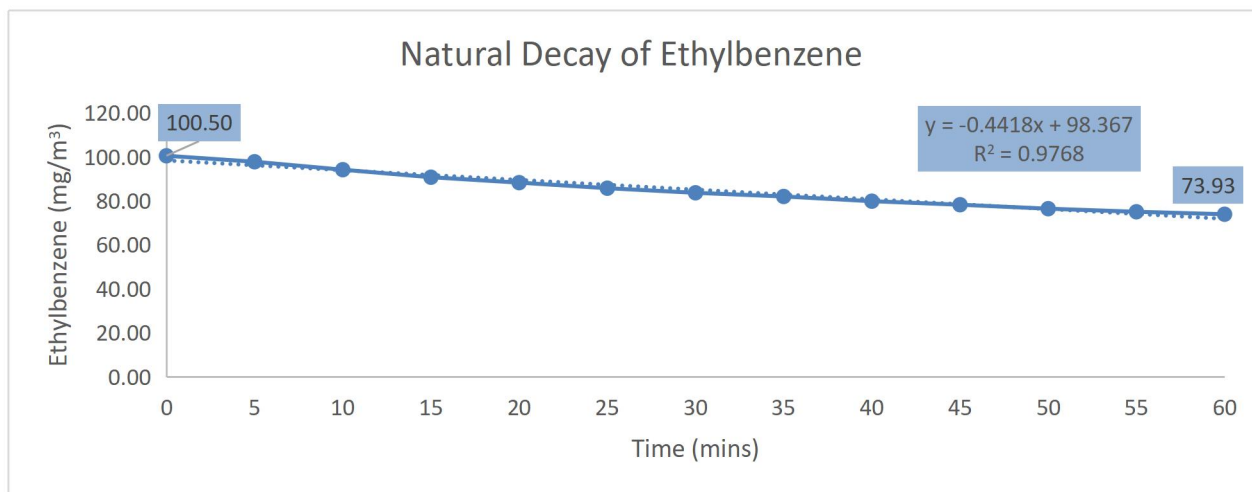


Figure a. Natural Decay of Ethylbenzene

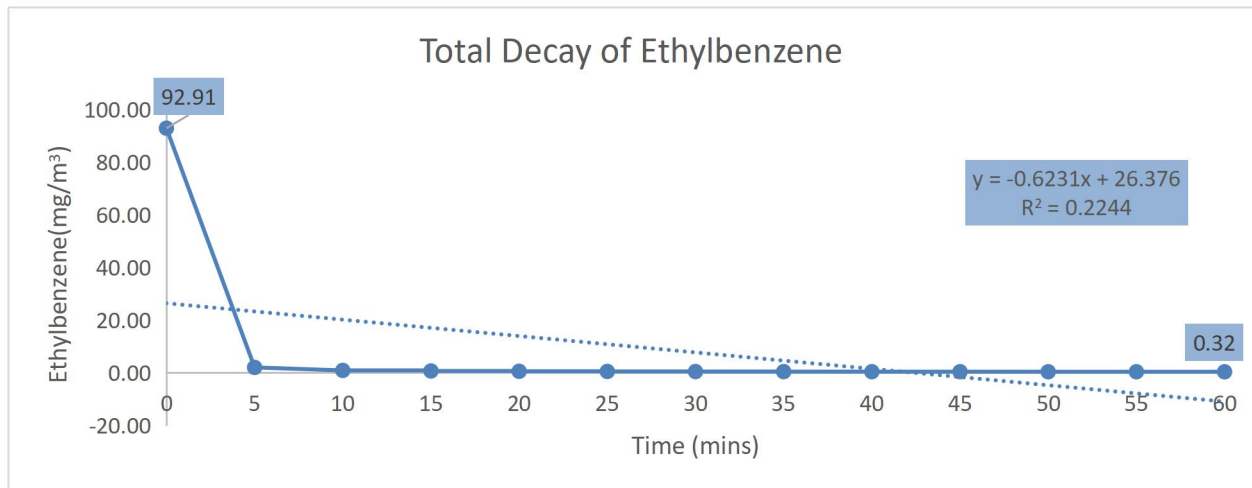


Figure b. Total Decay of Ethylbenzene

Calculation:

$$A_1 = \frac{C_0 - C_{60}}{C_0}$$

$$A_2 = \frac{C_{N0} - C_{N60}}{C_{N0}}$$

$$\text{Removal Efficiency} = \frac{C_0(1 - A_2) - C_{60}}{C_0(1 - A_2)}$$

A₁: Removal rate (%)

A₂: Natural decay rate (%)

C: Concentration of testing subject (mg/m³)

End of Report