

MEDICAIR TEST REPORT

SCOPE OF WORK

VOC Reduction by FOZKYGB-04

REPORT NUMBER

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DRAFT TEST REPORT FOR MEDICAIR DENTAIR LTD

Report No.: 104675897GRR-001

Date: 27-December-2021

P.O.: N/A

SECTION 1

CLIENT INFORMATION

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SECTION 2

SUMMARY AND CONCLUSION

Date Received: 10-November-2021
Dates Tested: 13-December-2021

DESCRIPTION OF SAMPLES

Part Name: FOZKYGB-04
Model Number: Not Specified
Materials Submitted: One (1) Unit
Condition of Samples: Not Specified
Shipping Condition: Good Condition

WORK REQUESTED/APPLICABLE DOCUMENTS

VOC Reduction Testing: ISO 16000-3, ISO 16000-6 Referencing NRCC-54013
Intertek Quote: Qu-01163855-5

SAMPLE DISPOSITION

At the completion of testing, samples were returned to MedicAir Dentair LTD.

SECTION 3

ISO 16000-3, ISO 16000-6 REFERENCING NRCC-54013

Date Received: 10-November-2021
Dates Tested: 13-December-2021

DESCRIPTION OF SAMPLES:

Part Name: FOZKYGB-04
Model Number: Not Specified
Materials Submitted: One (1) Unit
Condition of Samples: Not Specified
Shipping Condition: Good Condition

TEST PROCEDURE:

Testing was performed referencing NRCC-54013 (April 2011): Method for Testing Portable Air Cleaners sections 3.2 and 5.1.2.

Natural system decay for the challenge chemicals is performed prior to the test. The unit was placed in the center of a chamber which was sealed and flushed with clean air for a minimum of one night. An additional enclosure fan was operated to ensure air mixing. The challenge chemical formaldehyde was injected and allowed to circulate for 15 minutes during which an air sample was taken. The system was then turned on using the highest fan speed beginning the test timing.

VOC samples were collected at 5, 10, 15, 20, 25, 30, 45, 60, 90, 120, 180, and 240 minutes after starting the system. Samples analyzed for formaldehyde were collected on cartridges treated with 2,4-dinitrophenylhydrazine (DNPH) and were analyzed using high performance liquid chromatography, HPLC. Individual VOCs were calculated using calibration curves based on pure standards.

TEST NOTES OR DEVIATIONS:

Testing performed without deviation unless noted below.

TEST PARAMETERS:

Table 1: Chamber Conditions During Test Period

PARAMETER	SYMBOL	VALUE	UNITS
Chamber Volume	V	30	m ³
Testing Duration	t	4	h
Test Conditions	Average Temperature (Range)	T 22.8 (22.2-24.1)	°C
	Average Humidity (Range)	RH 50.4 (40.6-55.9)	% RH

Table 2: Concentration of challenge chemical decay through test.

Time (min)	Formaldehyde (µg/m ³)
0	259
5	159
10	124
15	93.2
20	80.3
25	57.7
30	46.5
45	30.9
60	17.5
90	11.3
120	7.6
180	8.3
240	2.4

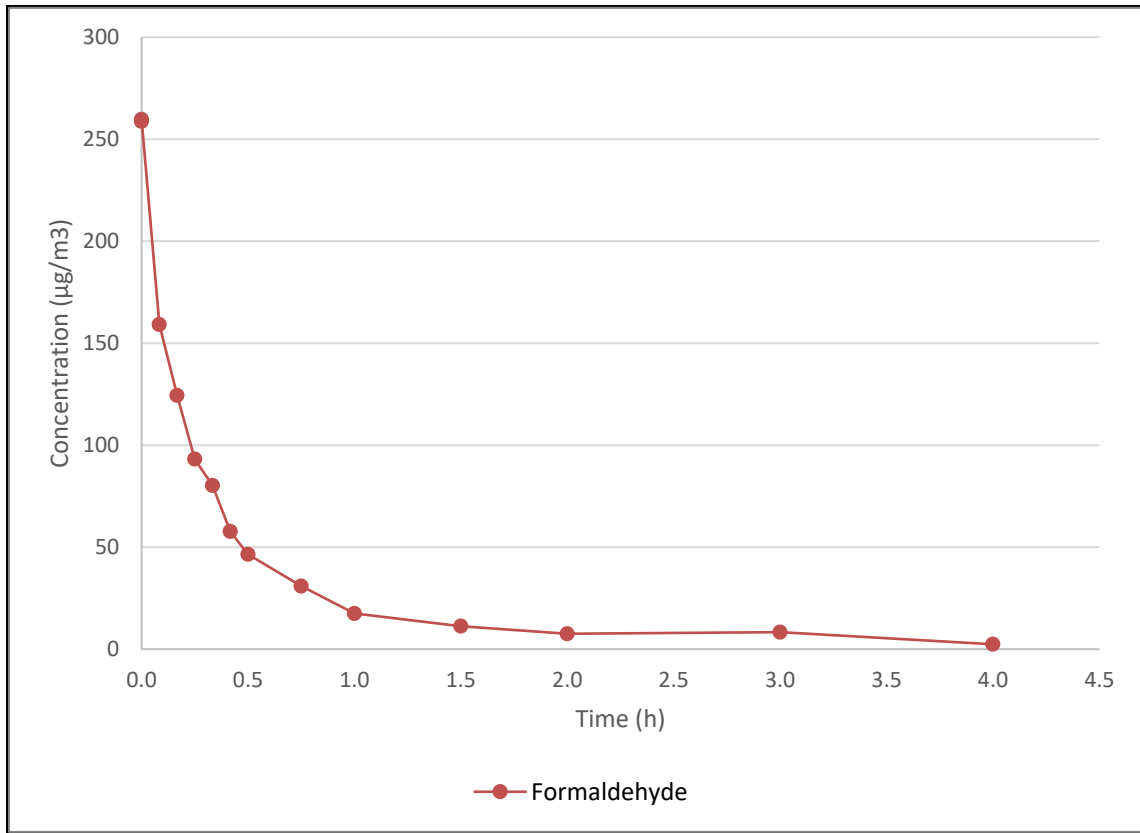


Figure 1: Concentration change throughout test for challenge chemicals

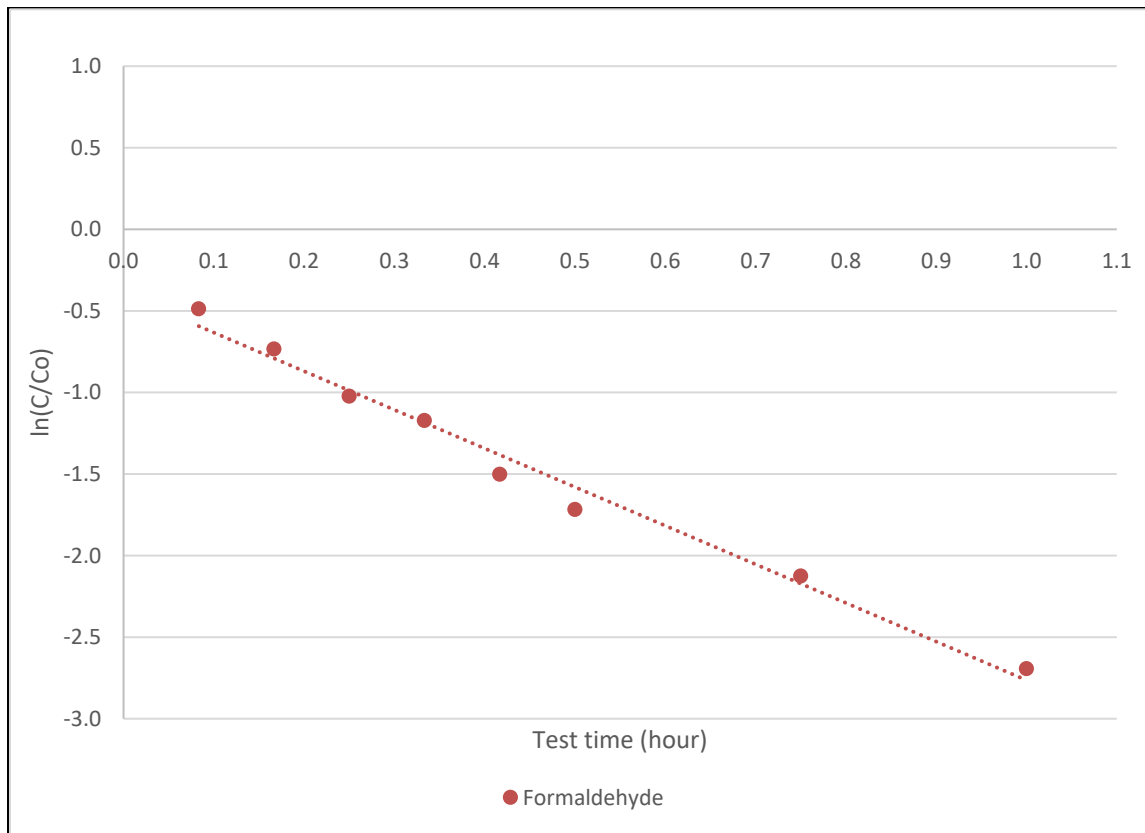


Figure 2: Removal rate of challenge chemicals.

The clean air delivery rate (CADR) is calculated according to equation 1:

$$\ln\left(\frac{C_t}{C_0}\right) = -\left(k_n + \frac{CADR}{V}\right)t \tag{Eq. 1}$$

where:

- C_t : chemical concentration at time t ($\mu\text{g}/\text{m}^3$)
- C_0 : chemical concentration at time t_0 ($\mu\text{g}/\text{m}^3$)
- V : volume of the test chamber (m^3)
- t : time (h)
- $CADR$: Clean Air Delivery Rate (m^3/h)
- k_n : constant obtained from the blank test. $k_n = 0$ if no adsorption/leaks are present.

Table 3: Purifier efficiency – calculation of clean air delivery rate and single pass efficiency.

VOC	CAS No.	CADR (m^3/h)
Formaldehyde	50-00-0	71

PHOTOGRAPHS:

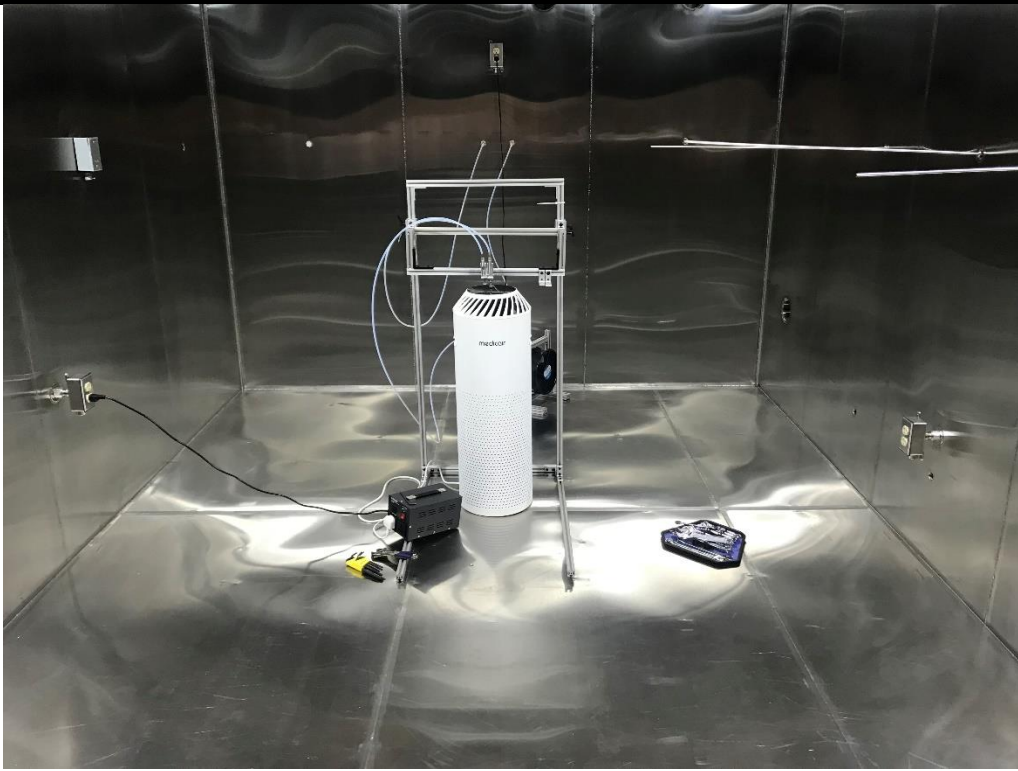


Figure 3: Photograph of sample as tested in environmental testing chamber.

SECTION 4

FACILITIES AND EQUIPMENT:

HPLC

INSTRUMENTATION USED:

Agilent 1260 Infinity Series

COLUMN USED:

Poroshell 120 EC-C18