



# HealthAer Testing Report

**Product Name:** HealthAer

**Product Description:** Personal ozone air purifier

**Model Number:** HealthAer

**Serial Number:** 0003

**Objective:**

The objective of these tests is to gather ozone concentration data as the HealthAer product is operated in several different volumetric spaces. In gathering this data, a comprehensive ozone concentration profile will be created. Most importantly, it is desired to record the conditions in which the HealthAer product may operate in compliance of OSHA defined exposure limits when the space is occupied by humans and/or animals.

**Method:**

Five separate tests were conducted. The first in a closed system car with an estimated volume of 95 cubic feet. The second in small room with minimal air exchange and volume of 332.5 cubic feet. The third in a small/medium sized room with minimal air exchange and a volume of 650 cubic feet. The fourth in a medium sized room with minimal air exchange and a volume of 720 cubic feet. The fifth in a large, open room with high air exchange rate and volume of 4950 cubic feet.

In each test, the HealthAer system was placed in the center of the test area. The monitor was placed at face level (approx. 5 feet off the ground) and no less than 3 feet from the output vent of the HealthAer system. The ambient ozone levels were recorded prior to turning on the HealthAer system, about every half an hour after turning on the HealthAer system, and immediately and frequently following turning off the HealthAer system.

The monitor used in this testing is GasSensing Aeroqual Series 500. The length of each test varied depending on ozone levels recorded.

**Results:**

Test 1: Car

Date: 4/1/19

Volume of Area: 95 cbf.

Outside Temp: 40 F

Air Exchange Rate: Very low

Weather: Sunny

Time	Time Elapsed (minutes)	Ozone Level (ppm)	Notes
12:23	0	0.00	
12:53	30	0.09	Monitor approx. 6 in. from output of HealthAer vent
13:02	39	0.11	Monitor moved and placed on dashboard at face level, approx. 3 feet from vent output
13:23	60	0.12	
13:53	90	0.44	Slight shortness of breath
14:24	121	0.39	
14:54	151	0.38	
15:23	180	0.45	
			Turned off HealthAer
15:33	190	0.00	

Remarks:

1. Monitor moved shortly after beginning of test
2. Closed system except for brief opening of car door to read monitor, this action was kept to a minimum

Test 2: Small Room

Date: 4/4/19

Volume of Area: 332.5 cbf.

Interior Temp: 72 F

Air Exchange Rate: Low

Time	Time Elapsed (minutes)	Ozone Level (ppm)	Notes
10:15	0	0.00	
10:45	30	0.00	
11:15	60	0.28	
11:45	90	0.29	
12:15	120	0.34	
12:45	150	0.34	
13:15	180	0.37	
13:45	210	0.40	

14:15	240	0.46	
14:45	270	0.40	
15:15	300	0.51	
15:45	330	0.51	
16:15	360	0.25	Ventilation system activated
16:45	390	0.46	
			Turned off HealthAer
16:50	395	0.38	
16:55	400	0.26	
17:00	405	0.11	
17:05	410	0.09	
17:10	415	0.05	
17:15	420	0.03	
17:20	425	0.01	
17:25	430	0.00	

Remarks:

1. Ventilation system in room was intentionally inactivated, briefly came on at 16:15
2. This was the second trial at this test, first trial had too much variation due to ventilation system in room turning on and off

Test 3: Small/Medium Room

Date: 4/25/19

Volume of Area: 650 cbf.

Interior Temp: 69 F

Air Exchange Rate: Low

Time	Time Elapsed (minutes)	Ozone Level (ppm)	Notes
10:24	0	0	
10:54	30	0.08	
11:24	60	0.10	
11:54	90	0.09	
12:24	120	0.10	
12:54	150	0.14	
13:24	180	0.21	
13:54	210	0.19	
14:24	240	0.15	
14:54	270	0.19	
15:24	300	0.17	

15:54	330	0.14	
16:24	360	0.16	
17:00	396	0.15	
			Turned off HealthAer
17:05	401	0.11	
17:10	406	0.04	
17:15	411	0.02	
17:20	416	0.00	

Test 4: Medium Room

Date: 4/11/19

Volume of Area: 720 cbf.

Interior Temp: 72 F

Air Exchange Rate: Low

Time	Time Elapsed (minutes)	Ozone Level (ppm)	Notes
10:05	0	0.00	
10:35	30	0.00	
11:05	60	0.00	
11:35	90	0.00	
12:05	120	0.00	
12:35	150	0.00	
13:05	180	0.00	
13:35	210	0.00	
14:05	240	0.00	
14:35	270	0.00	
15:05	300	0.00	
			Turned off HealthAer
15:35	330	0.00	

Remarks:

1. Turned off after five hours due to undetectable ozone levels

Test 5: Large, Open Room

Date: 4/10/19

Volume of Area: 4950 cbf.

Interior Temp: 72 F

Air Exchange Rate: Very high

Time	Time Elapsed (minutes)	Ozone Level (ppm)	Notes
11:45	0	0.00	
12:15	30	0.00	
12:45	60	0.00	
13:15	90	0.00	
13:45	120	0.00	
14:15	150	0.00	
14:45	180	0.00	
15:15	210	0.00	
15:45	240	0.00	
16:15	270	0.00	
			Turned off HealthAer
16:45	300	0.00	

Remarks:

1. Turned off after 4.5 hours due to undetectable ozone levels

**Recommendations:**

The OSHA exposure limits of ozone are defined as an 8-hour, time-weighted average (TWA) value of 0.1 ppm and a 2-hour, short-term exposure limit (STEL) of 0.3 ppm.

Based on our testing, the recommendations of occupying a space while HealthAer is running is as follows:

1. < 350 cbf. of volume do not occupy without significant ventilation.
2. 351-650 cbf. of volume do not occupy for more than two hours without significant ventilation.
3. 651-720 cbf. of volume do not occupy for more than eight hours without significant ventilation.
4. > 721 cbf. of volume occupy with ventilation.