Class 1 Air

WHEN THOSE UNDER YOUR CARE REQUIRE THE CLEANEST AIR

Gillware, Inc.

1802 Wright Street
Madison, WI 53704

Test Reports

May, 2017

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Milwaukee, WI 53209
Phone: (414) 228-1213 Fax: (414) 228-9626

Class 1 Air

Gillware, Inc.

1802 Wright Street
Madison, WI 53704

Laminar s/n: 9811024 - Hood #1

Purpose: To determine if the cleanzone meets ISO Class 5 in the "at rest" mode in accordance with ISO 14644.1:2015

Procedure: A zone classification of ISO Class 5 is desired in this area. The air being supplied to this area is of a non-unidirectional pattern. The minimum number of sample locations required for classification was determined by the area and Table A.1.

$$A = \frac{6.000}{10.76}\ ft^2 = 0.558\ m^2$$

Table A.1: 1 Location(s)

No fewer than one location shall be sampled and at least three samples shall be taken for any cleanzone. Sample locations shall be uniformly spaced except as limited by equipment within the cleanzone. Sample volume will be taken at a minimum of two liters and a minimum sample time of one minute.

Statistical Analysis: 0.5µ particle size/m^3

Average Particle Concentrations:
Location #: 1) 18
2) 0

Mean of the Averages: 9

Standard Deviation: 12

Compliance Determination: Since the average particle concentration at each location is less than 3,520 particles per m^3, the air sample is verified as complying with airborne cleanliness ISO Class 5 at 0.5µ in accordance with ISO 14644.1:2015

Testing Technician(s): Erik Thompson Date: 5/24/2017

Particle Counter: Met-One Model #: 3313LL Serial #: 070101022 Cal. Date: 10/16

Gillware, Inc.
1802 Wright Street
Madison, WI 53704

Laminar s/n: 9811024 - Hood #1

S/N 070101022
LOCATION=1 13:39:38 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	35	0
0.5µm	35	35
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=2 13:42:08 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	0	0
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=1 13:40:43 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	0	0
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=2 13:43:13 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	0	0
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

Class 1 Air

Gillware, Inc.

1802 Wright Street
Madison, WI 53704

Laminar s/n: 204670538 - Hood #2

Purpose: To determine if the cleanzone meets ISO Class 5 in the "at rest" mode in accordance with ISO 14644.1:2015

Procedure: A zone classification of ISO Class 5 is desired in this area. The air being supplied to this area is of a non-unidirectional pattern. The minimum number of sample locations required for classification was determined by the area and Table A.1.

$$A = \frac{6.000}{10.76}\ ft^2 = 0.558\ m^2$$

Table A.1: 1 Location(s)

No fewer than one location shall be sampled and at least three samples shall be taken for any cleanzone. Sample locations shall be uniformly spaced except as limited by equipment within the cleanzone. Sample volume will be taken at a minimum of two liters and a minimum sample time of one minute.

Statistical Analysis: 0.5µ particle size/m^3

Average Particle Concentrations:
Location #: 1) 0
2) 71

Mean of the Averages: **35**

Standard Deviation: **50**

Compliance Determination: Since the average particle concentration at each location is less than 3,520 particles per m^3, the air sample is verified as complying with airborne cleanliness ISO Class 5 at 0.5µ in accordance with ISO 14644.1:2015

Testing Technician(s): Erik Thompson Date: 5/24/2017

Particle Counter: Met-One Model #: 3313LL Serial #: 070101022 Cal. Date: 10/16

Gillware, Inc.

1802 Wright Street
Madison, WI 53704

Laminar s/n: 204670538 - Hood #2

S/N 070101022
LOCATION=1 13:45:43 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	0	0
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=2 13:48:08 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	0	0
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=1 13:46:48 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	0	0
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=2 13:49:13 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	141	0
0.5µm	141	106
1.0µm	35	35
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

Class 1 Air

Gillware, Inc.

1802 Wright Street
Madison, WI 53704

Laminar - Hood #3

Purpose: To determine if the cleanzone meets ISO Class 5 in the "at rest" mode in accordance with ISO 14644.1:2015

Procedure: A zone classification of ISO Class 5 is desired in this area. The air being supplied to this area is of a non-unidirectional pattern. The minimum number of sample locations required for classification was determined by the area and Table A.1.

$$A = \frac{22.430}{10.76}\ ft^2 = 2.085\ m^2$$

Table A.1: 1 Location(s)

No fewer than one location shall be sampled and at least three samples shall be taken for any cleanzone. Sample locations shall be uniformly spaced except as limited by equipment within the cleanzone. Sample volume will be taken at a minimum of two liters and a minimum sample time of one minute.

Statistical Analysis: 0.5µ particle size/m^3

Average Particle Concentrations:
Location #: 1) 18
2) 0

Mean of the Averages: 9

Standard Deviation: 12

Compliance Determination: Since the average particle concentration at each location is less than 3,520 particles per m^3, the air sample is verified as complying with airborne cleanliness ISO Class 5 at 0.5µ in accordance with ISO 14644.1:2015

Testing Technician(s): Erik Thompson Date: 5/24/2017

Particle Counter: Met-One Model #: 3313LL Serial #: 070101022 Cal. Date: 10/16

Gillware, Inc.
1802 Wright Street
Madison, WI 53704

Laminar - Hood #3

S/N 070101022
LOCATION=1 13:32:43 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	0	0
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=2 13:35:40 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	0	0
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=1 13:33:48 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	106	71
0.5µm	35	35
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0

S/N 070101022
LOCATION=2 13:36:45 MAY 24,2017
2 CYCLES Flowrate=28.32 LPM
PERIOD=00:01:00 /CU M

SIZE	CUMULATIVE	DIFFERENTIAL
0.3µm	71	71
0.5µm	0	0
1.0µm	0	0
3.0µm	0	0
5.0µm	0	0
10.0µm	0	0