CERTIFICATION SERVICES INCORPORATED

Controlled Environment Testing Report

Client: Lissner

Services Conducted: Product Testing

Report ID#: BEN02152013

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The final approval of this document before its release to the client is the responsibility of the following personnel at CPS Certification Services, Inc. In signing this cover sheet, these individuals acknowledge the accuracy of the data and activities reported herein:

Date: 02/22/13

Stefan Hocom
Project Manager

Reviewed and Approved by:

Date: 02/22/13

Stephanie Hocom, ASQ CQA
President

1.0 Introduction

The purpose of this report is to present the data and conclusions derived by CPS Certification Services, Inc. during the testing of three (3) cleanroom chairs designed and built by BenchPro, Inc. located at 23949 Tecate Mission Road, Tecate, Ca.

This testing conducted on the date of February 15, 2013 consisted of the following:

- Airborne particle concentrations

This report includes the following:

- Test data results
- Testing diagrams[1]
- Observations
- Equipment calibration documents

[1]**Diagrams are not to scale**.

1.1 References

- ISO 14644-1 – Classification of Air Cleanliness
- ISO 14644-3 – Test Methods
- IES-RP-CC006.2 – Testing Cleanrooms

If you have any questions as to the contents of this report please contact us at (831) 662-2760.

2.0 Airborne Particle Concentration Test

2.1. Purpose

Airborne Particle Concentration Testing is conducted to verify a products ability to maintain proper particle concentration limits within a classified cleanroom environment.

2.2. Equipment

2.2.1. Met-One laser particle counter with 0.1 micron capability
2.2.2. Shortridge microprocessor based thermal anemometer
2.2.3. Shortridge microprocessor based manometer
2.2.4. 4' x 4' x 8' ISO class 3 test chamber with perforated raised floor

2.3. Methodology

Certification of the test chamber was conducted prior to product testing to verify ISO class 3 status.

Results are as follows:

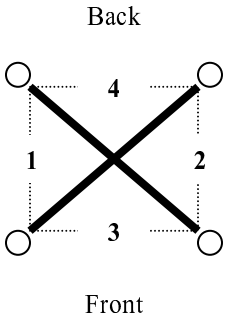
- Average ULPA filter velocity = 105 FPM (feet per minute)
- Differential pressure = 0.0480 to ISO class 4 vestibule
- ULPA filter leaks = No leaks detected at 0.1 micron
- Particle concentration level = 0 particles at 0.1 micron

Once the ISO class 3 chamber status was verified each chair was micro-cleaned with 70/30 DI water/alcohol and cleanroom wipes. The chairs were tested individually according the testing procedures developed for these products. All test data was recorded at the time of testing and transferred to this report. Refer to the section "Airborne Particle Count Record" for all test data.

2.3.1. Test locations

2.3.1.1. Testing was conducted at four (4) sample locations for each chair (see Figure 1). The sample probe was placed at each location at an approximate height of 8" above the perforated floor.

Figure 1 - Sample locations



2.3.2. Test Descriptions

2.3.2.1. Static Test 1 (single person only)

A single gowned individual standing directly over the sample probe. Probe is positioned directly between the right and left foot of the individual. This test reflects the particle contribution that can be expected from a motionless person.

2.3.2.2. Walking Test (single person only)

A single gowned individual who is walking in place at a normal pace (not marching). Probe is positioned directly between the right and left foot of the individual. This test reflects the particle contribution that can be expected from a person in normal motion.

2.3.2.3. Static Test 2 (chair only)

Chair is placed alone in chamber. This test reflects the particle contribution that can be expected from a motionless chair.

2.3.2.4. Static Test 3 (chair and person approximately 170 pounds)

Chair is placed in chamber with a single gowned person sitting motionless. This test reflects the particle contribution that can be expected from a motionless chair and person.

2.3.2.5. Engagement Test (chair and person approximately 170 pounds)

Chair is placed in chamber and a single gowned individual sits upon the chair from a standing position, then stands and sits again. This action is repeated 10 times within 1 minute.

2.3.2.6. Mimic Test (chair and person approximately 170 pounds)

Chair is placed in chamber with a single gowned individual in the sitting position. The individual mimic's assembly work by constant arm motion and chair rotation. This motion is continuous for the entire sample cycle.

2.3.2.7. Adjustment Test (chair and person approximately 170 pounds)

Chair is placed in chamber with a single gowned individual in the sitting position. Chair is consistently adjusted with the adjustment levers for the duration of each test sample. The individual cycles from one lever to the next in order to give each lever equal time.

2.3.2.8. Recovery Test (chair and person approximately 170 pounds)

Recovery testing is conducted to determine if the particle generation from a product is reduced over a period of time. The particle counter was set to take a sample every six (6) seconds for the duration of one (1) minute. A person weighing approximately 170 pounds sat down in the chair just as the particle counter began to conduct a sample and then sat motionless while the chamber recovered to original levels. A quick recovery is ideal.

2.4. ISO 14644-1 Classification Comparison and Recommendation

Currently there is no standard that allows for a cleanroom chair to acquire an ISO cleanroom classification or even a comparable rating. It is recommended that when promoting a product as clean enough for a specific ISO class cleanroom, that airborne particle concentration levels revealed during testing fall below the ISO 14644-1 particle concentration limits for that corresponding class.

2.4.1. ISO 14644-1:1999(E) Classification Table

ISO Class	Particle concentration limits in cubic meters (m^3)					
	0.1µ	0.2µ	0.3µ	0.5µ	1.0µ	5.0µ
ISO 1	10	2				
ISO 2	100	24	10	4		
ISO 3	1,000	237	102	35	8	
ISO 4	10,000	2,370	1,020	352	83	
ISO 5	100,000	23,700	10,2000	3,520	832	29
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293
ISO 7				352,000	83,200	2,930
ISO 8				3,520,000	832,000	29,300
ISO 9				35,200,000	8,320,000	293,000

RESULTS

Lissner

Airborne Particle Count Record

Chair: LNT-UC
Technician: Stefan Hocom
Testing Date: 2/15/2013

Test: Engagement
Sample Volume: 1 ft³

		Cumulative Counts/ft³					Cumulative Counts/m³				
Location #	**Time**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**
1	15:49:44	1249	901	751	549	397	**44090**	**31805**	**26510**	**19380**	**14014**
2	15:50:58	1519	1079	850	565	399	**53621**	**38089**	**30005**	**19945**	**14085**
3	15:52:14	812	627	504	349	255	**28664**	**22133**	**17791**	**12320**	**9002**
4	15:53:29	2398	1641	1327	898	667	**84649**	**57927**	**46843**	**31699**	**23545**

Remarks: Indicates ISO class 6 compliance at 0.5 micron.

Chair: LNT-UC
Technician: Stefan Hocom
Testing Date: 2/15/2013

Test: Static 2
Sample Volume: 1 ft³

		Cumulative Counts/ft³					Cumulative Counts/m³				
Location #	**Time**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**
1	15:37:46	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**
2	15:39:01	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**
3	15:40:16	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**
4	15:41:31	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**

Remarks: Passed ISO Class 3 compliance at 0.1 micron

Chair: LNT-UC
Technician: Stefan Hocom
Testing Date: 2/15/2013

Test: Adjustment
Sample Volume: 1 ft³

		Cumulative Counts/ft³					Cumulative Counts/m³				
Location #	**Time**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**
1	15:54:52	2406	1760	1416	1023	748	**84932**	**62128**	**49985**	**36112**	**26404**
2	15:56:07	487	327	271	183	139	**17191**	**11543**	**9566**	**6460**	**4907**
3	15:57:22	369	251	188	137	106	**13026**	**8860**	**6636**	**4836**	**3742**
4	15:58:37	466	327	261	173	121	**16450**	**11543**	**9213**	**6107**	**4271**

Remarks: Indicates ISO class 6 compliance at 0.5 micron when control concentrations are removed (walking test).

RESULTS

Lissner

Airborne Particle Count Record

Chair: LNT-UC
Technician: Stefan Hocom
Testing Date: 2/15/2013

Test: Mimic
Sample Volume: 1 ft^3

		Cumulative Counts/ft^3					Cumulative Counts/m^3				
Location #	**Time**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**
1	16:01:33	81	53	44	26	16	**2859**	**1871**	**1553**	**918**	**565**
2	16:02:48	94	47	35	19	14	**3318**	**1659**	**1236**	**671**	**494**
3	16:04:03	84	54	37	18	12	**2965**	**1906**	**1306**	**635**	**424**
4	16:05:18	55	33	23	12	9	**1942**	**1165**	**812**	**424**	**318**

Remarks: Indicates ISO class 3 compliance at 0.5 micron when control concentrations are removed (walking test).

Chair: LNT-UC
Technician: Stefan Hocom
Testing Date: 2/15/2013

Test: Recovery
Sample Volume: 1 ft^3

		Cumulative Counts/ft^3					Cumulative Counts/m^3				
Location #	**Time**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**	**0.1µm**	**0.2µm**	**0.3µm**	**0.5µm**	**1.0µm**
1	16:06:28	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**
	16:06:34	13	12	5	2	2	**459**	**424**	**177**	**71**	**71**
	16:06:40	174	145	120	89	66	**6142**	**5119**	**4236**	**3142**	**2330**
	16:06:46	56	38	29	22	14	**1977**	**1341**	**1024**	**777**	**494**
	16:06:52	23	19	14	11	9	**812**	**671**	**494**	**388**	**318**
	16:06:58	5	2	2	2	0	**177**	**71**	**71**	**71**	**0**
	16:07:04	5	4	2	1	0	**177**	**141**	**71**	**35**	**0**
	16:07:10	1	0	0	0	0	**35**	**0**	**0**	**0**	**0**
	16:07:16	8	5	2	1	0	**282**	**177**	**71**	**35**	**0**
	16:07:22	5	4	3	2	0	**177**	**141**	**106**	**71**	**0**
	16:07:28	16	13	13	9	6	**565**	**459**	**459**	**318**	**212**
	16:07:34	3	1	1	0	0	**106**	**35**	**35**	**0**	**0**
	16:07:40	1	0	0	0	0	**35**	**0**	**0**	**0**	**0**

Remarks: Recovered.

Lissner

Airborne Particle Count Record

Area: Test Chamber
Technician: Stefan Hocom
Testing Date: 2/15/2013

Test: Certification
Sample Volume: 1 ft³

		Cumulative Counts/ft³					Cumulative Counts/m³				
Location #	Time	0.1µm	0.2µm	0.3µm	0.5µm	1.0µm	0.1µm	0.2µm	0.3µm	0.5µm	1.0µm
1	13:27:25	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**
2	13:28:26	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**
3	13:29:27	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**

Remarks: Passed ISO Class 3 @ 0.1 micron

Area: Test Chamber
Technician: Stefan Hocom
Testing Date: 2/15/2013

Test: Static Test 1
Sample Volume: 1 ft³

		Cumulative Counts/ft³					Cumulative Counts/m³				
Location #	Time	0.1µm	0.2µm	0.3µm	0.5µm	1.0µm	0.1µm	0.2µm	0.3µm	0.5µm	1.0µm
1	13:33:30	17	2	0	0	0	**600**	**71**	**0**	**0**	**0**
2	13:34:40	10	5	1	0	0	**353**	**177**	**35**	**0**	**0**
3	13:37:00	13	4	2	1	1	**459**	**141**	**71**	**35**	**35**

Remarks: Passed ISO Class 3 @ 0.1 micron

Area: Test Chamber
Technician: Stefan Hocom
Testing Date: 2/15/2013

Test: Walking Test
Sample Volume: 1 ft³

		Cumulative Counts/ft³					Cumulative Counts/m³				
Location #	Time	0.1µm	0.2µm	0.3µm	0.5µm	1.0µm	0.1µm	0.2µm	0.3µm	0.5µm	1.0µm
1	13:33:30	17	2	0	0	0	**600**	**71**	**0**	**0**	**0**
2	13:34:40	10	5	1	0	0	**353**	**177**	**35**	**0**	**0**
3	13:37:00	13	4	2	1	1	**459**	**141**	**71**	**35**	**35**

Remarks: Passed ISO Class 5 @ 0.5 micron