

Standard Operating Procedure Operational Procedure for Particle Counts – ISO 14644-1	SOP No. 8.062
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1 Purpose

- 1.1 To establish a standard procedure for verifying airborne particle counts in the static (empty shell): as-built, at-rest, or operating facility modes is within the limits of Class concentrations of airborne particles per ISO 14644-1 standard.

2 Scope

- 2.1 This procedure applies to the airborne optical particle counters, which are used to measure the actual particle count level, temperature and relative humidity.

3 References

- 3.1 ISO 14644-1: Cleanrooms and Associated Controlled Environments – Classification of air cleanliness, 1999.
- 3.2 NEBB Procedural Standards for Certified Testing of Cleanrooms, Second Edition, 1996.

4 Definition

4.1 As-Built Facility

- 4.1.1 A cleanroom that is complete and operating, with all services connected and functioning, but has no production equipment or operating personnel within the facility.

4.2 At-Rest Facility

- 4.2.1 A cleanroom that is complete and has the production equipment installed, but has no personnel within the facility.

4.3 Operating Facility

- 4.3.1 A cleanroom in normal operation.

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5 Responsibility

- 5.1 TAB technicians shall record all test readings on Form FN 8.016.1 (Particle Count Readings) and Form FN 8.016.2 (Certification of Cleanroom Compliance).
- 5.2 TAB technicians shall save all test reports in files located in the TAB Department of Therma.
- 5.3 All test equipment utilized shall be in calibration in accordance with NEBB Standards and traceable to the National Institute of Standards and Technology (NIST).

6 Materials Requirement

- 6.1 None

7 Test Equipment

- 7.1 Airborne Optical Particle Counter

8 Procedures

- 8.1 Verify that all aspects of the cleanroom system which contribute to its operation integrity (air handling, filtration systems, walls, ceilings, floors, etc.) are complete and functioning. Verify room pressure relationship differentials are correct.
- 8.2 Determine the class of the tested room or work zone area from the supplied documentation.
- 8.3 Using ISO 14644-1 procedures, divide the room or work zone into the appropriate number of sampling location points, no less than ten.
- 8.4 Identify the location of the sampling points.
- 8.5 Use the particle counter to measure the particle count at each location at the specified particle sizes which range from 0.1 μm to 5.0 μm . (Refer to user manual for correct operation of particle counter.)
- 8.6 Record the particle count, temperature, and relative humidity at each location when the readings are stabilized.

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- 8.7 Calculate the mean particle count at each grid location and record on the Form FN 8.016.1 (Particle Count Readings) and FN 8.016.2 (Certification of Cleanroom Compliance).
- 8.8 Check the mean values of the particle count with Diagram A (Acceptance Criteria of Class Limits).
- 8.9 Record any specified environmental conditions at the time of testing.

9 Review and Approval

- 9.1 Return the Forms FN 8.016.1 (Particle Count Readings) and FN 8.016.2 (Certification of Cleanroom Compliance) to the TAB Department for review.

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Diagram A

ISO classification number (N)	Acceptance Criteria Class Limits (particles/m ³ of air)					
	0.1µm	0.2µm	0.3µm	0.5µm	1.0µm	5.0µm
ISO Class 1	10	2				
ISO Class 2	100	24	10	4		
ISO Class 3	1000	237	102	35	8	
ISO Class 4	10000	2370	1020	352	83	
ISO Class 5	100000	23700	10200	3520	832	29
ISO Class 6	1000000	237000	102000	35200	8320	293
ISO Class 7				352000	83200	2930
ISO Class 8				3520000	832000	29300
ISO Class 9				35200000	8320000	293000


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Document Approval


 General Foreman

8.17.09
 Date


 Engineering Manager

8.17.09
 Date


 Quality Assurance Manager

8-18-09
 Date

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