



A clean room is a dedicated facility that is typically utilized for a specialized industrial production or scientific research, including the manufacture of pharmaceutical items, integrated circuits, CRT, LCD, OLED and microLED displays. Clean rooms are also used for food processing and packaging, to reduce the contamination of foods and packaging. Clean rooms are classified by how clean the air is, according to the quantity and size of particles per volume of air. The cleanroom classification table below shows the maximum concentration limit (particles/m<sup>3</sup> of air) for particles equal to or larger than the sizes shown. Different clean room applications require different ISO ratings.

Class	FED STD 209E Comparable	Maximum concentration limits(particles/m <sup>3</sup> of air) for particles equal to equal to and larger than size isted in chart					
		0.1micron	0.2 micron	0.3 micron	0.5 micron	1 micron	5 micron
ISO 1		10	2				
ISO 2		100	24	10	4		
ISO 3	1	1,000	237	102	35	8	
ISO 4	10	10,000	2,370	1,020	352	83	
ISO 5	100	100,000	23,700	10,200	3,520	832	29
ISO 6	1,000		237,000	102,000	35,200	8,320	293
ISO 7	10,000				352,000	83,200	2,930
ISO 8	100,000				3,520,000	832,000	29,300
ISO 9						8,320,000	293,000

Correct clean room standards for a new product or business requires balancing many aspects. These can include process requirements, cost, construction, and performance. The following clean room classifications provide the recommended air changes per hour, per class of clean room:

**ISO Class 1** - The “cleanest” clean room is ISO 1, typically used in industries such as life sciences and electronics that require nanotechnology or ultra-fine particulate processing. The recommended air changes per hour for an ISO class 1 clean room is 500-750, and the ceiling coverage should be 80–100%.

**ISO Class 2** - 500-750 air changes per hour, with a ceiling coverage of 80-100%.

**ISO Class 3** - 500-750 air changes per hour, with a ceiling coverage of 60-100%.

**ISO Class 4** - 400-750 air changes per hour, with a ceiling coverage of 50-90%.

**ISO Class 5** - 240-600 air changes per hour, with a ceiling coverage of 35-70%.

**ISO Class 6** - 150-240 air changes per hour, with a ceiling coverage of 25-40%.

**ISO Class 7** - 60-150 air changes per hour, with a ceiling coverage of 15-25%.

**ISO Class 8** - 5-60 air changes per hour, with a ceiling coverage of 5-15%.

Clean room lighting is essential, and fixtures are engineered to be completely sealed to prevent particles from accessing the room. Light fixtures typically have a high IP6X rating. AEL offers an extensive catalog of clean room fixtures, from the go-to standard - the CLD/CLDF, to the CLP top access troffer.