

ISO 14644-1 Cleanroom Standards

Class	maximum particles/m ³						FED STD 209E equivalent
	≥0.1 μm	≥0.2 μm	≥0.3 μm	≥0.5 μm	≥1 μm	≥5 μm	
ISO 1	10	2					
ISO 2	100	24	10	4			
ISO 3	1,000	237	102	35	8		Class 1
ISO 4	10,000	2,370	1,020	352	83		Class 10
ISO 5	100,000	23,700	10,200	3,520	832	29	Class 100
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293	Class 1000
ISO 7				352,000	83,200	2,930	Class 10,000
ISO 8				3,520,000	832,000	29,300	Class 100,000
ISO 9				35,200,000	8,320,000	293,000	Room air

Clean Room Classifications and Suggested Air Change Ratios

Class 10 / ISO Class 4

- 540 to 600 air changes per hour (85-90% ceiling coverage)
- HEPA filters 99.999% on 0.3 microns, with a raised floors
- 90%+ coverage with low wall returns
- Gasketed grids with negative plenums acceptable
- HEPA filters on makeup air

Class 100 / ISO Class 5

- 400 to 480 air changes per hour (60-80% ceiling coverage)
- 99.99% HEPA filters
- Raised floor assures optimal performance. Low wall returns work when they are no further than 12' from the center of the room. Rooms can be designed for laminar and non-laminar flow.
- Gasketed or Fluid Seal ceiling grid (2" Heavy Duty for optimal performance)

Class 1,000 / ISO Class 6

- 120 to 150 air changes per hour (40-50% ceiling coverage)
- 99.99% HEPA filters
- Gasketed ceiling grid
- Raised floor delivers best performance, but low wall returns are very common

Class 10,000 / ISO Class 7

- 45 to 60 air changes per hour (10-20% ceiling coverage)
- 99.99% HEPA filters
- Low wall or ceiling returns acceptable in most applications

Class 100,000 / ISO Class 8

- 20 to 30 air changes per hour (5% ceiling coverage)
- HEPA filters or 95% HEPA filters (95%+ ASHRAE Rated Filters)
- Heat load may require more air changes
- HEPA filters may require additional diffusers for proper air flow