

ISO Clean Room Classifications

Particle limits, pressure strategy and air changes - at a glance

ISO 1 = Most Stringent ➡ ISO 9 = Least Stringent

1 How ISO clean room classification works



PARTICLE CONCENTRATION
Maximum airborne particles
per cubic meter (m³)



PARTICLE SIZE
Thresholds are measured
in micrometers (µm)



CLEANLINESS LEVEL
ISO 1 is most stringent
ISO 9 is least stringent

2 ISO 14644-1 maximum particle concentrations

Values shown: particles per m³

ISO CLASS	≥0.1 µm	≥0.2 µm	≥0.3 µm	≥0.5 µm	≥1 µm	≥5 µm
ISO 1	10	—	—	—	—	—
ISO 2	100	24	10	—	—	—
ISO 3	1,000	237	102	35	—	—
ISO 4	10,000	2,370	1,020	352	83	—
ISO 5	100,000	23,700	10,200	3,520	832	—
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

Maximum allowable particles per m³ at or above each particle size.

Highlighted: ≥0.5 µm benchmark

3 Pressure and ventilation complete the picture

Pressure strategy

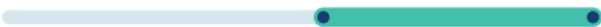
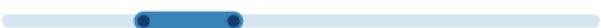


POSITIVE PRESSURE
Cleaned air moves in through HEPA filters; contaminants are filtered or vented out. Protects the process inside.



NEGATIVE PRESSURE
Airflow helps keep contaminants inside the controlled space. Supports containment.

Recommended air changes per hour

ISO 1–3		350–650
ISO 4		300–600
ISO 5		300–480
ISO 6		150–250
ISO 7		60–120
ISO 8		10–40
ISO 9		—

Actual ACH depends on people, processes, room activity and project requirements.

The right clean room class and ACH depend on:


PEOPLE


PROCESS


TRAFFIC