



Definition of the different Clean Room Classes

Former FED STD 209 E - overview (cancelled)

Class Name	0.1 micron	0.2 micron	0.3 micron	0.5 micron	5 micron
1	35	7	3	1	
10	350	75	30	10	
100		750	300	100	
1000				1,000	7
10000				10,000	70
100000				100,000	700

Fig. 1. US FED STD209E clean room class table overview (particles per ft³)

ISO 14644-1 classification

The US FED STD 209E was officially cancelled in November 2001. From that date the ISO 14644-1 standard became active. Please find below the ISO cleanroom class overview in maximum particles/m³.

Class	0.1 micron	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	1,000	237	102	35	8	
ISO 4	10,000	2,370	1,020	352	83	
ISO 5	100,000	23,700	10,200	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

Fig. 2. ISO 14644-1 clean room class table overview (particles per m³)

ISO 14644-1 vs. FED STD 209E comparison

The ISO and US FED standards are more or less compatible, but please note there are some minor differences in described statistics and standard testing methods.

ISO 14644-1	FED STD 209E
ISO 3	1
ISO 4	10
ISO 5	100
ISO 6	1,000
ISO 7	10,000
ISO 8	100,000

GMP guidelines

In addition to the ISO standard, also the Good Manufacturing Practice guidelines are applicable for pharmaceutical, food, cosmetic and medical applications. Among other additional requirements, these classes for example require CFU measurement and control. This has to be performed by the end-user itself, where Procleanroom only supplies solutions and performs accreditation according to the ISO standard itself.

GMP	A	B	C	D
ISO 14644-1	5	5/ 6	7	8
FED STD 209E	100	100/1000	10,000	100,000
Air Flow	Laminar flow at working area	Turbulent air flow	Turbulent air flow	Turbulent air flow
Colony Forming Units (per m ³)	1	10	100	200
Particles per m ³ when in rest	≥ 0,5µm: 3,500 ≥ 5µm: none	≥ 0,5µm: 3,500 ≥ 5µm: none	≥ 0,5µm: 350,000 ≥ 5µm: 2,000	≥ 0,5µm: 3,500,000 ≥ 5µm: 20,000

If you have any questions about how these standards reflect to your application, contact us any time!