


Basic guide to clean room design

 BASIC GUIDE TO CLEANROOM DESIGN						
Classes (Fed 209 D)	1	10	100	1000	10 000	100 000
Particles per m ³ > 0.5 micron	35.3	353	3 530	35 300	353 000	3 530 000
Air Changes Per Hour	600	500	500	40 - 120	20 - 40	Oct-20
Room Pressure	15 Pa	15 Pa	15 Pa	10 - 15 Pa	10 15 Pa	5 - 10 Pa
Clean air inlets Cover as % of ceiling area	100%	100%	90%	20 - 50 %	10 - 20 %	5 - 10 %
Clean air inlets Locations	Ceiling	Ceiling	Ceiling	Ceiling	Ceiling	Ceiling / High wall
Filter Location	Ceiling	Ceiling	Ceiling	Ceiling	Ceiling	Ceiling / AHU
Return Locations	Floor	Floor	Low Level or Floor	Low Level or Floor	Low Sidewall	Sidewall
Velocity at clean air inlets (m/s)	0.45	0.45	0.45	0.15 - 0.45	0.15 - 0.45	0.15 - 0.45
Velocity at return air (m/s)	n/a	n/a	n/a	0.5- 1	1 - 2.5	2.5
Airlock (required)	Yes	Yes	Yes	Yes	Yes	None
Area per occupant (m2)	40	40	30	20	10	5
Equipment in room	Minimum	Minimum	Minimum	Minimum	30% Floor	50% Floor
Room Height	n/a	n/a	n/a	Minimum 3	Minimum 2.75	Minimum 2.25
Comparison of Major Cleanroom Standards						
US 209 E 1992	M1.5	M2.5	M3.5	M4.5	M5.5	M6.5
ISO Class 14644-1 1999	3	4	5	6	7	8
EEC GGMP 1989	N/A	N/A	A & B	N/A	C	D
France AFNOR 1981	N/A	N/A	4000	N/A	400 000	4 000 000
Germany VDI 2083 1990	1	2	3	4	5	6
Britain BS 5295 1989	N/A	N/A	E or F	G or H	J	K
Japan JACA 1989	3	4	5	6	7	N/A