

# Reinheitsklassen I Particulate air cleanliness classes

Maximum permissible particle concentration as per DIN EN ISO 14644-1						
DIN EN ISO 14644-1*	0.1 µm	0.2 µm	0.3 µm	0.5 µm	1 µm	5 µm
	/m <sup>3</sup>	/m <sup>3</sup>	/m <sup>3</sup>	/m <sup>3</sup>	/m <sup>3</sup>	/m <sup>3</sup>
Class 1	10	2				
Class 2	100	24	10	4		
Class 3	1 000	237	102	35	8	
Class 4	10 000	2 370	1 020	352	83	
Class 5 ***	100 000	23 700	10 200	3 520	832	29
Class 6	1 000 000	237 000	102 000	35 200	8 320	293
Class 7				352 000	83 200	2 930
Class 8				3 520 000	832 000	29 300
Class 9				35 200 000	8 320 000	293 000

US Federal Standard 209E (cancelled on 2001-11)												
US Fed. Std. 209E / SI *	0.1 µm		0.2 µm		0.3 µm		0.5 µm		1 µm		5 µm	
	/m <sup>3</sup>	/ft <sup>3</sup>	/m <sup>3</sup>	/ft <sup>3</sup>	/m <sup>3</sup>	/ft <sup>3</sup>	/m <sup>3</sup>	/ft <sup>3</sup>	/m <sup>3</sup>	/ft <sup>3</sup>	/m <sup>3</sup>	/ft <sup>3</sup>
(1)	M 1.5	1 240	35	265	7.5	106	3	35	1			
(10)	M 2.5	12 400	350	2 650	75	1 060	30	353	10	83	2	
*** (100)	M 3.5			26 500	750	10 600	300	3 530	100			
(1 000)	M 4.5							35 300	1 000			247
(10 000)	M 5.5							353 000	10 000			2 470
(100 000)	M 6.5							3 530 000	100 000			24 700

## EU - GMP Guideline

Class	Maximum permissible particle concentration					Recommended limits for microbial contamination (a)			
	At rest		In operation			Air sample cfu/m <sup>3</sup>	Settle plates (diameter 90 mm) cfu/4 hours (b)	Contact plates (diameter 55 mm) cfu/plate	Glove print 5 fingers cfu/glove
	≥ 0.5 µm	≥ 5 µm	≥ 0.5 µm	≥ 5 µm	≥ 5 µm				
A	3 520	20	3 520	20	< 1	< 1	< 1	< 1	
B	3 520	29	352 000	2 900	10	5	5	5	
C	352 000	2 900	3 520 000	29 000	100	25	-	-	
D	3 520 000	29 000	not specified	not specified	200	50	-	-	

\* Cleanroom state: 'at rest'

\*\* Volume in m<sup>3</sup>. Reference particle size: 0.1 µm

\*\*\* Volume in ft<sup>3</sup>. Reference particle size: 0.5 µm

a = average values

b = individual settle plate volumes may be exposed for less than 4 hours

**Note:** Cubic meter indications for DIN EN ISO 14644-1 and US Federal Standard 209E adopted from DIN 2083 Part 1. Cubic meter indications for ISO classification are multiplied by a factor of 0.028317 to obtain cubic foot indications (rounded to integer). GMP table derived from EU GMP guideline – Annex 1. Measurement volumes in cubic meters (m<sup>3</sup>).

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