

ISO 16000-42:2023-08 (E)

Indoor air - Part 42: Measurement of the particle number concentration by condensation particle counters

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Abbreviated terms	3
5	Sources of airborne particles	4
5.1	General	4
5.2	Combustion of organic material	5
5.3	Smoking	5
5.4	Cooking	5
5.5	Particle formation – Formation of secondary organic aerosol	5
5.6	Outdoor air	5
5.7	Other sources	5
6	Dynamicsof ultrafine particles indoors	6
6.1	General	6
6.2	Infiltration and exfiltration	7
6.3	Deposition	7
6.4	Particle formation, phase transition and coagulation	7
7	Principle of measurement	8
7.1	General	8
7.2	Working fluid	8
7.3	Minimal detection size	10
7.3.1	General	10
7.3.2	Optical detection after enlargement	10
7.3.3	Particle size distribution	11
7.4	CPC minimal requirement	11
7.5	General sampling requirements and recommendations	13
8	Measurement strategy	13
8.1	General	13
8.2	Average room concentration	14
8.2.1	General	14
8.2.2	Resting state without activity	15
8.2.3	Resting state with equipment activity	15
8.2.4	Active state	15
8.3	Source investigation/identification	15
8.4	Infiltration from outdoor or connecting rooms	16
8.5	Measurement in vehicle cabins	17
8.6	Success of control and mitigation measures	17
9	Quality assurance and uncertainty evaluation	17
9.1	General	17

9.2	Instrument parameters	18
9.3	CPC's settings check	18
9.4	Performance check, zero check or leak check	18
9.5	Uncertainty	19
10	Evaluation and reporting of the results	19
Annex A (informative)	Examples of particle number concentrations encountered during room user activities	21
Annex B (informative)	Determination of the particle number size distribution of indoor aerosol using a differential mobility aerosol spectrometer	22
Annex C (informative)	Water-CPCs	25
Annex D (informative)	Checklist to collect information useful for interpreting indoor measurement of particle number concentration	27
Bibliography	31