

# DIN EN 13205-2:2014-09 (E)

## Workplace exposure - Assessment of sampler performance for measurement of airborne particle concentrations - Part 2: Laboratory performance test based on determination of sampling efficiency

---

<b>Contents</b>		<b>Page</b>
Foreword .....		4
Introduction .....		6
1	Scope .....	7
2	Normative references .....	7
3	Terms and definitions .....	7
4	Symbols and abbreviations .....	8
4.1	Symbols .....	8
4.1.1	Latin .....	8
4.1.2	Greek .....	10
4.2	Enumerating subscripts .....	10
4.3	Abbreviations .....	11
5	Principle .....	11
6	Test method .....	11
6.1	General .....	11
6.2	Test conditions .....	11
6.3	Test variables .....	12
6.3.1	General .....	12
6.3.2	Particle size .....	14
6.3.3	Wind speed .....	14
6.3.4	Wind direction .....	14
6.3.5	Aerosol composition .....	14
6.3.6	Sampled or internally separated mass .....	14
6.3.7	Aerosol charge .....	14
6.3.8	Specimen variability .....	15
6.3.9	Excursion from the nominal flow rate .....	15
6.3.10	Surface treatments .....	15
7	Experimental requirements .....	15
8	Calculation of sampler bias and expanded uncertainty .....	17
8.1	General .....	17
8.2	Determination of the sampling efficiency .....	18
8.3	Calculation of sampler bias .....	18
8.3.1	Calculation of the sampled aerosol concentration .....	18
8.3.2	Calculation of the ideal sampled aerosol concentration .....	20
8.3.3	Calculation of the sampler bias .....	21
8.4	Calculation of the expanded uncertainty of the sampler .....	21
8.4.1	General .....	21
8.4.2	Calibration of sampler test system .....	22
8.4.3	Estimation of sampled concentration .....	23
8.4.4	Bias relative to the sampling convention .....	23
8.4.5	Individual sampler variability .....	24

8.4.6	Excursion from the nominal flow rate .....	24
8.4.7	Combined uncertainty (of measurement) .....	28
8.4.8	Expanded uncertainty .....	31
9	Test report .....	31
9.1	General .....	31
9.2	Testing laboratory details and sponsoring organisation .....	31
9.3	Description of the candidate sampler .....	31
9.4	Critical review of sampling process .....	32
9.5	Laboratory methods used .....	32
9.6	Details of experimental design .....	33
9.7	Presentation of experimental results .....	33
9.8	Data analysis .....	33
9.9	Candidate sampler performance .....	33
9.10	Report of workplace comparison .....	33
9.11	Summary and information for the user of the sampler .....	33
	Bibliography .....	36