

DIN EN 16913:2017-09 (E)

Ambient air - Standard method for measurement of NO<(Index)3><(hoch)->, SO<(Index)4><(hoch)2->, Cl<(hoch)->, NH<(Index)4><(hoch)+>, Na<(hoch)+>, K<(hoch)+>, Mg<(hoch)2+>, Ca<(hoch)2+> in PM_{2,5} as deposited on filters

Contents

	Page
European foreword	4
Introduction	5
1 Scope	6
2 Normative references	7
3 Terms and definitions	7
4 Symbols and abbreviations	7
5 Principle	8
6 Equipment	8
7 Sampling	9
8 Transport and storage	10
9 Analysis	10
10 Calculation of results	12
11 Quality control	14
12 Measurement uncertainty	17
13 Artefacts and interferences	18
14 Data recording	19
Annex A (informative) Statistical analysis of anion and cation concentrations collected on filters from field validation exercise	20
A.1 General	20
A.2 Analysis methodology	20
A.2.1 General	20
A.2.2 Calculating between- and within-laboratory variability	20
A.2.2.1 Notation	20
A.2.2.2 Data processing	21
A.2.2.3 Outlier rejection	21
A.2.2.4 Data normalization	22
A.2.2.5 Analysis of variance	22
A.2.2.6 Calculation of standard deviations	23
A.2.3 Calculating between-sampler variability	23
A.2.3.1 Notation	23
A.2.3.2 Data processing	24
A.2.4 Combined standard uncertainty	25

A.3	Remarks	25
A.4	Results	25
A.4.1	Data set 1 - Between laboratory and internal laboratory variability	25
A.4.2	Data set 2 - Between sampler variability	26
A.4.3	Data set 3 - Uncertainty over the measured concentration range	27
A.4.4	Detection limit	31
A.4.5	Field Blanks	31
Annex B (informative) Uncertainty budget		33
Annex C (informative) Reagents		36
C.1	General	36
C.2	Anion determination by ion chromatography	36
C.3	Cation determination by ion chromatography	37
C.4	Cation determination by inductively coupled plasma optical emission spectrometry (ICP-OES)	38
C.5	Ammonium determination by photometry	39
Annex D (informative) Other analysis methods used in the validation programme		41
D.1	Inductively coupled plasma optical emission spectrometer system (ICP-OES)	41
D.2	Conductometry	41
D.3	Photometry	42
D.3.1	Equipment	42
D.3.2	Preparation of calibration curve	42
D.3.3	Analytical procedure	42
Annex E (informative) Preparation of stock standard solution		43
Annex F (informative) Sampling artefacts		44
F.1	General	44
F.2	Ammonium nitrate	44
F.3	Chloride	45
Bibliography		46