ISO 16258-2:2015-09 (E)

Workplace air - Analysis of respirable crystalline silica by X-ray diffraction - Part 2: Method by indirect analysis

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1
3.1 General definitions 1
3.2 Sampling definitions 2
3.3 Analytical definitions 3
3.4 Statistical terms 4

4 Principle 5

5 Sampling 5
5.1 Sampling equipment 5
5.1.1 Samplers 5
5.1.2 Collection substrates 6
5.1.3 Sampling pumps 7
5.1.4 Flow meters 7
5.1.5 Other equipment required 8
5.2 Sample collection 8
5.3 Transport 9

6 Analytical procedure 10
6.1 Apparatus and equipment 10
6.1.1 Instrument 10
6.1.2 Balance 10
6.1.3 Laboratory equipment 10
6.1.4 Equipment to recover dust from the air sample filter 10
6.1.5 Standard reference materials 10
6.1.6 Reagents 10
6.1.7 Drift correction sample 11
6.2 Gravimetric analysis for respirable dust 11
6.3 X-ray diffraction analysis 11
6.3.1 Instrumental parameters 11
6.3.2 Scan parameters 11
6.4 Calibration curve 11
6.5 Sample treatment of collection substrate 13
6.5.1 PVC and MCE filters 13
6.5.2 Cellulose nitrate filters 14
6.5.3 Polyurethane foams 14
6.6 Redeposition onto analysis filter 15
6.6.1 Crucibles from the furnace 15
6.6.2 Bottles or beakers from a plasma asher 15
6.7 Sample analysis 15

7 Calculation 16
7.1 Gravimetric analysis 16

7.2 X-ray diffraction analysis 16
7.3 Concentration of RCS 17

8 Performance characteristics 17
8.1 Limit of detection 17
8.2 Minimum detectable value 18
8.3 Limits of quantification 18
8.4 Uncertainty 18
8.5 Differences between samplers 18

8.6 Differences between analytical approaches 19

9 Test report 19

Annex A (normative) Sample treatment strategies 20

Annex B (informative) Example instrumental conditions 22

Annex C (informative) Data collection parameters 23

Annex D (normative) Correction for absorption 24

Annex E (informative) Range of typical detection limits 26

Annex F (informative) Typical expanded uncertainty of the indirect method 27

Annex G (informative) Differences between samplers 28

Bibliography 29