ISO 10882-2:2024-04 (E)

Health and safety in welding and allied processes - Sampling of airborne particles and gases in the operator's breathing zone - Part 2: Sampling of gases

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 2

3 Termsanddefinitions 2
3.1 General terms 2
3.2 Measurement terms 2
3.3 Welding terms 4
3.4 Analytical terms 4

4 Description of measurement methods 5
4.1 General 5
4.2 Direct reading electrical apparatus 6
4.2.1 Applicability 6
4.2.2 Operating principles 6
4.2.3 Availability 6
4.3 Detector tubes 6
4.3.1 Applicability 6
4.3.2 Pumped detector tubes 6
4.3.3 Diffusive detector tubes 7
4.4 Indirect methods involving laboratory analysis 7
4.4.1 Applicability 7
4.4.2 Pumped sampler methods 7
4.4.3 Diffusive sampler methods 8

5 Requirements 8

6 Assessment strategy 8

7 Measurement strategy 9
7.1 General 9
7.2 Personal exposure measurements 9
7.3 Fixed-point measurements 9
7.4 Selection of measurement conditions and measurement pattern 9
7.4.1 General 9
7.4.2 Screening measurements of time-weighted average concentration and worst- case measurements 9
7.4.3 Measurements for comparison with occupational exposure limit values and periodic measurements 10

8 Sampling 10
8.1 Sampling position 10
8.1.1 Personal sampling 10
8.1.2 Fixed-point sampling 11
8.2 Sampling equipment 11
8.2.1 Direct reading electrical apparatus 11
8.2.2 Detector tubes 11

8.2.3 Pumped sorbent tubes 11
8.2.4 Diffusive samplers 11
8.2.5 Construction materials 11
8.3 Sample filtration 11
8.4 Multiple sampling 11
8.5 Volume of sampling line 12
8.6 Flow rate 12
8.7 Handling of temperature, pressure and humidity data 12

9 Measurement of individual gases and vapours 12

9.1 General 12
9.2 Ozone (0,01 ppm to 3 ppm) 12
9.2.1 Special sampling requirements 12
9.2.2 Direct reading electrical apparatus 12
9.2.3 Detector tubes 13
9.2.4 Indirect methods involving laboratory analysis 13
9.3 Carbon monoxide (3 ppm to 500 ppm) 13
9.3.1 Direct reading electrical apparatus 13
9.3.2 Detector tubes 13
9.3.3 Indirect methods involving laboratory analysis 13
9.4 Carbon dioxide (500 ppm to 100 000 ppm) 13
9.4.1 Origin 13
9.4.2 Direct reading electrical apparatus 13
9.4.3 Detector tubes 14
9.4.4 Indirect methods involving laboratory analysis 14
9.5 Nitric oxide (1 ppm to 100 ppm) and nitrogen dioxide (0,3 ppm to 250 ppm) 14
9.5.1 General 14
9.5.2 Direct reading electrical apparatus 14
9.5.3 Detector tubes 14
9.5.4 Indirect methods involving laboratory analysis 14
9.6 Vapours 15
9.6.1 General 15
9.6.2 Direct reading electrical apparatus 15
9.6.3 Detector tubes 15
9.6.4 Indirect methods involving laboratory analysis 15

10 Recording of test data and presentation of results 15

Annex A (informative) Measurement of individual gases and vapours 17

Annex B (informative) Example of a test report 18

Bibliography 21