ISO 29462:2022-07 (E)

Field testing of general ventilation filtration devices and systems for in situ removal efficiency by particle size and resistance to airflow

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms, definitions, and abbreviated terms 1
3.1 Terms and definitions 1
3.2 Abbreviated terms 3

4 Test equipment and setup 4
4.1 Particle counter 4
4.2 Diluter 4
4.3 Pump 4
4.4 Sampling system 4
4.4.1 General 4
4.4.2 Sampling probes 5
4.4.3 Sampling lines 5
4.4.4 Sampling locations 5
4.4.5 Valve (manual or automatic) 6
4.4.6 Isoaxial sampling nozzle 6
4.4.7 Flow meter 7
4.5 Air velocity measurement instrument 7
4.6 Relative humidity (RH) measurement instrument 7
4.7 Temperature measurement instrument 7
4.8 Resistance to airflow measurement instrument 7
4.9 Test equipment maintenance and calibration 7

5 Site evaluation 8
5.1 General 8
5.2 Filter installation pre-testing inspection 8
5.3 Approval for testing 8

6 Test procedure 8
6.1 Air velocity 8
6.2 Relative humidity (RH) 9
6.3 Temperature 9
6.4 Resistance to airflow 9
6.5 Removal efficiency 10
6.5.1 Removal efficiency tests 10
6.5.2 Sampling method 10
6.6 Sampling probes 14
6.6.1 Location of sampling probes 14
6.6.2 Location of upstream sampling probes 14
6.6.3 Location of downstream sampling probes -- Filter efficiency test 14
6.6.4 Location of downstream sampling probes -- System efficiency test 14

7 Expression of results 14
7.1 General information 14

7.2 Data collection 16

8 Errors and data analyses 17
8.1 General 17
8.2 Relative humidity (RH) 17
8.3 Air temperature 17
8.4 Aerosol composition 17
8.5 Uniformity of aerosol concentration 17
8.6 Coincidence errors -- Particle counter 18

8.7 Particle losses 18

9 Calculation of results 18
9.1 Calculation of removal efficiency 18
9.1.1 General 18
9.1.2 Dataset sample average 18
9.1.3 Minimum upstream concentration 19
9.1.4 Particle size range efficiency 20
9.1.5 Average efficiency by particle size 20
9.2 Calculation of uncertainty 20
9.2.1 General 20
9.2.2 95 % confidence limit 20
9.3 Coefficient of variation (Cv) 21

10 Optional enhanced test system 22
10.1 Application of enhanced test system 22
10.2 Principle of the enhanced test system 22
10.3 Determination of the corrected particle size 23
10.4 Presentation of results 24

Annex A (informative) Filter installation pre-testing inspection form 25

Annex B (informative) Approval for testing form 27

Annex C (informative) Example of how to complete testing 28

Bibliography 42