ISO 15900:2009-05 (E)

Determination of particle size distribution - Differential electrical mobility analysis for aerosol particles

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Terms and definitions 1

3 Symbols 4

4 General principle 5
4.1 Particle size classification with the DEMC 5
4.2 Relationship between electrical mobility and particle size 6
4.3 Measurement and data inversion 7
4.4 Transfer function of the DEMC 8
4.5 The charge distribution function 8

5 System and apparatus 9
5.1 General configuration 9
5.2 Components 10

6 Measurement procedures 11
6.1 Setup and preparation of the instrument 11
6.2 Pre-measurement checks 14
6.3 Measurement 14
6.4 Maintenance 15

7 Periodic tests and calibrations 16
7.1 Overview 16
7.2 Leak test 16
7.3 Zero tests 17
7.4 Flow meter calibration 17
7.5 Voltage calibration 17
7.6 Particle charge conditioner integrity test 18
7.7 Calibration for size measurement 18
7.8 Size resolution test 19
7.9 Number concentration calibration 20

8 Reporting of results 20

Annex A (informative) Particle charge conditioners and charge distributions 21

Annex B (informative) Particle detectors 29

Annex C (informative) Slip correction factor 33

Annex D (informative) Data inversion 37

Annex E (informative) Cylindrical DEMC 43

Annex F (informative) Size calibration of a DMAS with step-wise voltage change using particle size standards 49

Annex G (informative) Uncertainty 52

Bibliography 55