

---

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

*Détermination de la distribution granulométrique — Analyse de mobilité  
électrique différentielle pour les particules d'aérosol*



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 0111  
Fax + 41 22 749 0947  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# 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