Workplace atmospheres - Characterization of ultrafine aerosols/nanoaerosols - Determination of the size distribution and number concentration using differential electrical mobility analysing systems (ISO 28439:2011)

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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 28439:2011 sisaldab Euroopa standardi EN ISO 28439:2011 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 28439:2011 consists of the English text of the European standard EN ISO 28439:2011.
Standard on kinnitatud Eesti Standardikeskuse 30.04.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 30.04.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.04.2011.	Date of Availability of the European standard text 01.04.2011.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

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English Version

Workplace atmospheres - Characterization of ultrafine aerosols/nanoaerosols - Determination of the size distribution and number concentration using differential electrical mobility analysing systems (ISO 28439:2011)

Air des lieux de travail - Caractérisation des aérosols ultrafins/nanoaérosols - Détermination de la distribution granulométrique et de la concentration en nombre à l'aide de systèmes d'analyse différentielle de mobilité électrique (ISO 28439:2011)

Arbeitsplatzatmosphäre - Charakterisierung ultrafeiner Aerosole/Nanoaerosole - Bestimmung der Größenverteilung und Anzahlkonzentration mit differentiellen elektrischen Mobilitätsanalysesystemen (ISO 28439:2011)

This European Standard was approved by CEN on 10 March 2011.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN ISO 28439:2011) has been prepared by Technical Committee CEN/TC 137 “Assessment of workplace exposure to chemical and biological agents”, the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 146 "Air quality".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2011, and conflicting national standards shall be withdrawn at the latest by October 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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1 Scope

This International Standard provides guidelines for the determination of the number concentration and size distribution of ultrafine aerosols and nanoaerosols by use of mobility particle sizers (also called differential mobility analysers). Only the particle fraction of the aerosol is considered. For ultrafine aerosols and nanoaerosols, exposure metrics such as the number and surface area concentration are important.

This International Standard also gives guidelines for the determination of workplace exposure to ultrafine aerosols and nanoaerosols.

Specifically, the differential mobility analysing system (DMAS), now available from several vendors, is discussed. Principles of operation, problems of sampling in the workplace environment, calibration, equipment maintenance, measurement uncertainty, and reporting of measurement results are covered.

Potential problems and limitations are described, which need to be addressed when limit values are fixed and compliance measurements carried out.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TR 27628, *Workplace atmospheres — Ultrafine, nanoparticle and nano-structured aerosols — Inhalation exposure characterization and assessment*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TR 27628 and the following apply.

3.1
critical electrical mobility
Z_{crit}
electrical mobility of particles that in the differential electrical mobility classifier are transferred from the sample air flow to the exiting monodisperse aerosol flow

NOTE Due to the finiteness of the DEMC, the exiting monodisperse flow is not strictly monodisperse, but corresponds to a range of electrical mobilities for each voltage.