

ICS 19.120
CCS A 28



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 44552-2024

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

粒度分布的测定 气溶胶颗粒差分电迁移率分析法

(English Translation)

Issued on: September 29, 2024

Implemented on: April 1, 2025

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is equivalent to ISO 15900:2020 "Determination of particle size distribution - Aerosol particle differential mobility analysis method".

Introduction

The differential mobility classification and analysis method of aerosol particles has been widely used in the classification of various aerosol particles from nanometer to micrometer scale.

At the same time, the electrical mobility classification of charged particles can obtain

monodisperse particles with known particle size and can be used to calibrate other instruments.

Based on simple physical principles, it has become an important means of research and application in the field of aerosol technology, and has been widely used in aerosol instruments, aerosol-based materials, and other fields.

It has been widely used in the fields of production, semiconductor industry production clean environment control, atmospheric aerosol science, and engineering nanoparticle characterization.

However, in order to accurately use the electrical mobility classification and analysis method, full attention should be paid to the following issues. slip correction coefficient, ion-aerosol adhesion coefficient, Size-dependent aerosol particle charge distribution and a method to invert the measured mobility distribution into aerosol size distribution.

Therefore, it is necessary to establish a standard for classifying aerosol particles using differential mobility analysis, which is based on the particle size and number concentration.

The measurement of accuracy provides an appropriate method of quality control.

Determination of particle size distribution of aerosol particles Differential mobility analysis

1 Scope

This document specifies the method and requirements for determining the size distribution of aerosol particles by analyzing their electrical mobility, commonly referred to as aerosol particle size distribution.

Electrochemical mobility analysis method.

This document is applicable to the measurement of particles with a size range of 1nm~1μm.

This document applies to the calculation of uncertainty but does not cover specific instrument designs or particle size distribution measurements with special requirements.

In this document, the complete system for performing differential electrical mobility analysis is referred to as a differential mobility analysis system (DMAS).

A component that sorts particles according to their electrical mobility is called a differential mobility classifier (DEMC).

NOTE: This document does not apply to technical requirements and specifications for DMAS applications defined in specific standards or guidelines, such as road vehicle applications (ISO/TC22), Environmental measurement (ISO/TC146) or nanotechnology (ISO/TC229).

2 Normative references

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

aerosol

A relatively stable suspension system of liquid and/or solid particles in the atmosphere.

Attachment probability of ions and aerosol particles.

Bipolar charging

The process of giving aerosol particles positive or negative charges and adjusting the charge distribution.

A device that gives aerosol particles positive or negative charges and adjusts the charge distribution.

Charging

The process by which aerosol particles are given a specific distribution of monopolar or bipolar charges that is dependent on the particle size.

Charge conditioner

On the aerosol particles passing therethrough, a device or differential mobility analysis system with known, size-dependent charge distribution is established.

Components of the DMAS.