AS ISO 13099.2:2026
ISO 13099-2:2025

Colloidal systems — Methods for zeta-potential determination

Part 2: Optical methods



AS ISO 13099.2:2026

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How to read this Standard

This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

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Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee NT-001, Nanotechnologies.

The objective of this document is to specify two methods of measurement of the electrophoretic mobility of particles suspended in a liquid: video microscopy and electrophoretic light-scattering.

NOTE Estimation of surface charge and determination of zeta-potential can be achieved from measured electrophoretic mobility using proper theoretical models, which are described in detail in AS ISO 13099.1:2026.

This document is identical to, and has been reproduced from, ISO 13099-2:2025, *Colloidal systems — Methods for zeta-potential determination — Part 2: Optical methods*.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 24, *Particle characterization including sieving*, Subcommittee SC 4, *Particle characterization*.

This second edition cancels and replaces the first edition (ISO 13099-2:2012), which has been technically revised.

The main changes are as follows:

— addition of new terms and definitions;

— revision of Figure 3, illustrating instrument configuration;

— removal of section on cross-beam optics;

— revision of the description of phase analysis light scattering (PALS);

— addition of information on cell constant.

A list of all parts in the ISO 13099 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Zeta-potential is a parameter that can be used to predict the long-term stability of suspensions and emulsions and to study surface morphology and adsorption on particles and other surfaces in contact with a liquid. Zeta-potential is not a directly measurable parameter. It can be determined using appropriate theoretical models from experimentally determined parameters, such as electrophoretic mobility.

Optical methods, especially electrophoretic light scattering, have been widely used to determine electrophoretic mobility of particles or macromolecules in suspension or in solution. The purpose of this document is to provide methods for measuring electrophoretic mobility using optical means and for calculating zeta-potential.

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Colloidal systems — Methods for zeta-potential determination

Part 2: Optical methods

IMPORTANT This document is to be read in conjunction with ISO 13099-1, which gives a comprehensive overview of the theory.

1 Scope

This document specifies two methods of measurement of the electrophoretic mobility of particles suspended in a liquid: video microscopy and electrophoretic light-scattering.

NOTE Estimation of surface charge and determination of zeta-potential can be achieved from measured electrophoretic mobility using proper theoretical models, which are described in detail in ISO 13099-1.

2 Normative references

There are no normative references for this document.

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
Brownian motion
random movement of particles suspended in a liquid caused by thermal movement of medium molecules

3.1.2
cell constant
proportional constant between the applied electric field, either in a constant voltage or a constant current, and the electric field strength in the measurement zone of the sample cell, which is unique for each cell and can be obtained by measuring a medium with known conductivity

3.1.3
Doppler shift
change in frequency and wavelength of a wave for an observer moving relative to the source of the wave

3.1.4
zeta-potential
electrokinetic potential
ζ-potential
ζ
difference in electric potential between that at the slipping plane and that of the bulk liquid

Note 1 to entry: Zeta-potential is expressed in volts.

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