SLOVENSKI STANDARD
SIST-TS CEN ISO/TS 21357:2023

01-maj-2023

Nanotehnologije - Vrednotenje srednje velikosti nanoobjektov v tekočih disperzijah s statičnim večkratnim sipanjem svetlobe (SMLS) (ISO/TS 21357:2022)

Nanotechnologies - Evaluation of the mean size of nano-objects in liquid dispersions by static multiple light scattering (SMLS) (ISO/TS 21357:2022)

Nanotechnologies - Évaluation de la taille moyenne des nano-objets dans les dispersions liquides par diffusion statique multiple de la lumière (DSML) (ISO/TS 21357:2022)

Ta slovenski standard je istoveten z: **CEN ISO/TS 21357:2023**

ICS:

07.120	Nanotehnologije	Nanotechnologies

SIST-TS CEN ISO/TS 21357:2023 **en,fr,de**

TECHNICAL SPECIFICATION

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CEN ISO/TS 21357

March 2023

ICS 07.120

English Version

Nanotechnologies - Evaluation of the mean size of nano-objects in liquid dispersions by static multiple light scattering (SMLS) (ISO/TS 21357:2022)

Nanotechnologies - Évaluation de la taille moyenne des nano-objets dans les dispersions liquides par diffusion statique multiple de la lumière (DSML) (ISO/TS 21357:2022)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

The text of ISO/TS 21357:2022 has been prepared by Technical Committee ISO/TC 229 "Nanotechnologies" of the International Organization for Standardization (ISO) and has been taken over as CEN ISO/TS 21357:2023 by Technical Committee CEN/TC 352 "Nanotechnologies" the secretariat of which is held by AFNOR.

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Endorsement notice

The text of ISO/TS 21357:2022 has been approved by CEN as CEN ISO/TS 21357:2023 without any modification.

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Nanotechnologies — Evaluation of the mean size of nano-objects in liquid dispersions by static multiple light scattering (SMLS)

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Foreword

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This document was prepared by Technical Committee ISO/TC 229, *Nanotechnologies*.

This corrected version of ISO/TS 21357:2022 incorporates the following correction:

— the IEC logo has been removed from the cover page.

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Introduction

Dispersions of nanoparticles in liquids are widely used in industry. Nanoparticles dispersed in liquids interact via a variety of weak and strong forces, which can lead to aggregation or agglomeration of objects (primary particles, agglomerates, aggregates, etc.). As a result, the dispersion state and the apparent mean particle size and size distribution can differ from those determined during product manufacturing, storage, and processing, particularly when using measurements requiring sample dilution or extensive preparation. Sample preparation can result in breaking or formation of aggregates or agglomerates and in some cases can also affect morphology of primary particles. Industrial stakeholders require analytical methods that are applicable to dispersions in their native state for reasons of product development, quality control and regulatory compliance.

While many methods exist for characterization of nanoparticle properties, in particular their size and size distribution, these methods typically require a specific and frequently complex sample preparation (e.g. dilution, stirring, shearing or pumping) and, therefore, do not yield characteristics specific to as-received dispersions. In addition, some experiments do not require measurement of a full particle size distribution with the mean particle size being the main measurand. Using the mean particle size measurement, it is possible to monitor other dispersion parameters of the system such as the state of agglomeration, aggregation or dissolution.

Static multiple light scattering (SMLS) based methods do not require sample preparation allowing, within limitations outlined in this document, direct measurement of the mean equivalent particle diameter in the native (as-received) state of dispersion. In addition, and beyond the scope of this document, SMLS is capable in some cases of monitoring in real time the temporal evolution of mean equivalent particle diameter due to agglomeration or aggregation processes.

This document describes a standardized method for evaluating the mean equivalent particle diameter in various sample types (including as-received samples) having a wide range of concentrations using the SMLS based method.