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Particle characterization of particulate systems — Vocabulary



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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.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

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 define terms that are relevant to the characterization of particles and particulate systems. This document includes such fields as the representation of results of particle size analysis, the descriptive and quantitative representation of particle shape and morphology, sample preparation, specific surface area and porosity characterization and such measurement methods as sedimentation, classification, acoustic methods, laser diffraction, dynamic light scattering, single particle light interaction methods, differential electrical mobility analysis, image analysis and others in a size scale from nanometre to millimetre.

This document is identical to, and has been reproduced from, ISO 26824:2022, *Particle characterization of particulate systems — Vocabulary.*

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Contents

Page

Preface ..... **v**
Foreword ..... **vii**
Introduction ..... **viii**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
3.1 Terms related to representation of size and classification analysis data 1
3.2 Terms related to representation of particle shape 8
3.3 Terms related to pore size distribution, porosity and surface area analysis 11
3.4 Terms related to gravity or centrifugal sedimentation methods 17
3.5 Terms related to electrical sensing zone methods 20
3.6 Terms related to laser diffraction methods 21
3.7 Terms related to dynamic light scattering 24
3.8 Terms related to image analysis methods 25
3.9 Terms related to single particle light interaction methods 29
3.10 Terms related to small angle X-ray scattering 32
3.11 Terms related to sample preparation and reference materials 32
3.12 Terms related to electrical mobility and number concentration analysis for aerosol particles 34
3.13 Terms related to electrical charge conditioning 38
3.14 Terms related to acoustic methods 40
3.15 Terms related to focused beam method 43
3.16 Terms related to characterisation of particle dispersion in liquids 43
3.17 Terms related to methods for zeta potential determination 46
Bibliography **53**

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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 documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 26824:2013), which has been technically revised.

The main changes are as follows:

— All definition clauses have been rearranged as subclauses in Clause 3 and all terms and clauses have been renumbered.

— Latest revisions and documents from ISO/TC 24/SC 4 have been incorporated, as well as harmonization with ISO/TC 229 general definitions.

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

Since the last revision of this document in 2013, about 24 ISO standards have been published by ISO/TC 24/SC 4 and about 15 projects are currently under construction together with the 5-year revision of the existing standards. Therefore, terms and definitions of each standard, which are relevant for other standards should be collected and adjusted to a uniform nomenclature.

Especially the interdisciplinary application fields of particle and particulate systems characterization - from mining and construction industry, pharmaceutical and food industry, medicine and life sciences, chemical industry, microelectronics and nanotechnology - need transparency and unambiguous terminology. The development of international trade not only of measurement devices for particle characterization, but also of process equipment for the production and treatment of particulate systems need the comparability of quality and performance parameters as well as international health, safety and environmental protection regulations.

The structuring and presentation rules applied to the terminological entries are based on a clause structure, which represents the methods of sample preparation, measurement results presentation and the analysis methods, starting with more general terms in each clause.

The clause headlines address "Terms related to" technical fields, which are understood as a kind of domain with validity of the definitions limited to the indicated field.

The following particle properties are covered in the clauses given in brackets:

— particle size (3.1, 3.4 to 3.10, 3.12 to 3.15)

— particle shape (3.2, 3.8)

— particle number concentration (3.5, 3.9 and 3.12)

— pore size, pore volume (3.3)

— surface area (3.3, 3.10)

— electrical charge in aerosols (3.13)

— zeta potential in liquid dispersion (3.17)

— particle dispersion in liquids (3.16).

Data uncertainty related definitions are given in 3.1 and 3.11

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Particle characterization of particulate systems — Vocabulary

1 Scope

This document defines terms that are relevant to the characterization of particles and particulate systems. This document includes such fields as the representation of results of particle size analysis, the descriptive and quantitative representation of particle shape and morphology, sample preparation, specific surface area and porosity characterization and such measurement methods as sedimentation, classification, acoustic methods, laser diffraction, dynamic light scattering, single particle light interaction methods, differential electrical mobility analysis, image analysis and others in a size scale from nanometre to millimetre.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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 Terms related to representation of size and classification analysis data

3.1.1
particle
minute piece of matter with defined physical boundaries

Note 1 to entry: A physical boundary can also be described as an interface.

Note 2 to entry: A particle can move as a unit.

Note 3 to entry: This general particle definition applies to *nano-objects* (3.1.7).

[SOURCE: ISO 26824:2013, 1.1]

3.1.2
agglomerate
collection of weakly or medium strongly bound *particles* (3.1.1) where the resulting external surface area is similar to the sum of the surface areas of the individual components

Note 1 to entry: The forces holding an agglomerate together are weak forces, for example van der Waals forces or simple physical entanglement.

Note 2 to entry: Agglomerates are also termed secondary particles and the original source particles are termed *primary particles* (3.1.4).

[SOURCE: ISO 26824:2013, 1.2]

3.1.3
aggregate
particle (3.1.1) comprising strongly bonded or fused particles where the resulting external surface area is significantly smaller than the sum of surface areas of the individual components

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