Irish Standard
I.S. EN ISO 17200:2020

Nanotechnology - Nanoparticles in powder form - Characteristics and measurements (ISO 17200:2020)

I.S. EN ISO 17200:2020

Incorporating amendments/corrigenda/National Annexes issued since publication:

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This document is based on:	*Published:*
EN ISO 17200:2020	2020-09-23

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2020-10-29	07.120
	NOTE: If blank see CEN/CENELEC cover page

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National Foreword

I.S. EN ISO 17200:2020 is the adopted Irish version of the European Document EN ISO 17200:2020, Nanotechnology - Nanoparticles in powder form - Characteristics and measurements (ISO 17200:2020)

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 17200

September 2020

ICS 07.120

Supersedes CEN ISO/TS 17200:2015

English Version

Nanotechnology - Nanoparticles in powder form - Characteristics and measurements (ISO 17200:2020)

Nanotechnologies - Nanoparticules sous forme de poudre - Caractéristiques et mesurages (ISO 17200:2020)

Nanotechnologien - Nanopartikel in Pulverform - Eigenschaften und Messung (ISO 17200:2020)

This European Standard was approved by CEN on 25 August 2020.

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European foreword

This document (EN ISO 17200:2020) has been prepared by Technical Committee ISO/TC 229 "Nanotechnologies" in collaboration with Technical Committee CEN/TC 352 “Nanotechnologies” the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

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

This document supersedes CEN ISO/TS 17200:2015.

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The text of ISO 17200:2020 has been approved by CEN as EN ISO 17200:2020 without any modification.

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I.S. EN ISO 17200:2020

INTERNATIONAL STANDARD

ISO 17200

First edition
2020-09

Nanotechnology — Nanoparticles in powder form — Characteristics and measurements

Nanotechnologies — Nanoparticules sous forme de poudre — Caractéristiques et mesurages

Reference number
ISO 17200:2020(E)

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Published in Switzerland

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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).

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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 229 *Nanotechnologies,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 352, *Nanotechnologies*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition cancels and replaces ISO/TS 17200:2013, which has been technically revised. The main changes compared with the previous edition are as follows:

— ISO documents for primary particle size measurements by electron microscope have been updated;

— the descriptions of characteristics to be measured and their measurement methods based on the purpose of this document have been changed;

— the requirement for crystallite size measurement has been relaxed.

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.

Introduction

As is commonly noticed for every technology concerned with the development of new materials, and for nanotechnology in particular, communication and mutual understanding of material characteristics are important among consumers, regulators and industries. In the case of nanoparticles, the stakeholders' basic interest is in the characteristics of nanoparticles in a material, i.e. what nanoparticles are present and what is the size distribution of nanoparticles. Such identification of nanoparticles in a material can be facilitated by the development of standards for nanoparticle characteristics and their measurement methods.

This document provides standardized methods for identifying and characterizing nanoparticles in powder form. Other standards have been developed for specific materials, i.e. ISO/TS 11931 and ISO/TS 11937 for calcium carbonates and titanium dioxides, respectively. This document is generic and may apply to nanoparticles composed generally of metal/metal ion and counter-ion, and to carbon materials (e.g. fullerenes and fullerene derivatives) and polymers (e.g. polystyrene). The applicability of this document includes calcium carbonate and titanium dioxide. This document is applicable to both coated and uncoated nanoparticles.

This document facilitates communication and mutual understanding among consumers, regulators and industries about the characteristics of nanoparticles. It supports consumers in purchasing and using nanoparticle-containing products, regulators in establishing legislative frameworks, and industries in setting up voluntary risk control systems.

Nanotechnology — Nanoparticles in powder form — Characteristics and measurements

1 Scope

This document specifies the fundamental characteristics to be measured of a sample of engineered nanoparticles in powder form to determine the size, the chemical content and the surface area. This document also specifies measurement methods for determining each of the characteristics.

It is intended to facilitate communication among consumers, regulators and industries with the necessary characteristics.

It excludes characteristics that pertain to specific industrial applications of nanoparticles in powder form and detailed measurement protocols, as well as characteristics related to health, safety and environmental issues.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 9276-1, *Representation of results of particle size analysis — Part 1: Graphical representation*

ISO/TS 80004-1, *Nanotechnologies — Vocabulary — Part 1: Core terms*

ISO/TS 80004-2, *Nanotechnologies — Vocabulary — Part 2: Nano-objects*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TS 80004-1, ISO/TS 80004-2 and the following apply.

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

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

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

3.1
area equivalent diameter
diameter of a circle having the same area as the projected image of the particle

[SOURCE: ISO 13322-1:2014, 3.1.1, modified — Note 1 to entry has been deleted.]

3.2
crystallite
small crystalline domain in the material

3.3
engineered nanoparticle
nanoparticle (3.6) designed for specific purpose or function

Note 1 to entry: In this document, the powder material containing engineered nanoparticles and provided for the measurement is called the "nanoparticles sample" and may be abbreviated to "sample".