

ICS 71.040.50

CCS A 40



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

GB/T 37156-2018

**Nanotechnologies -- Materials specifications -- Guidance on
specifying nano-objects**

Issued on: December 28, 2018

Implemented on: December 28, 2018

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

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method equivalent to ISO /T S12805.2011
"Nano-technical material specification nano-object characteristics guide".

The documents of our country that have a consistent correspondence with the international documents referenced in this standard are as follows.

---GB/T 32269-2015 Terms and definitions of nanotechnology nanoobjects Nanoparticles, nanofibers and nanosheets

(ISO /T S27687.2008, IDT);

---GB/T 30544.1-2014 Nanotechnology terminology Part 1. Core terminology (ISO /T S80004-1.2010, IDT).

This standard was proposed by the Chinese Academy of Sciences.

This standard is under the jurisdiction of the National Nanotechnology Standardization Technical Committee (SAC/TC279).

This standard is mainly drafted by. National Nanoscience Center, Shandong Guohua Functional Materials Co., Ltd., Zhejiang Fenghong New Materials Co., Ltd.

Limited.

Introduction

This standard is recommended to ensure that materials are delivered when there are differences in the material specifications used by suppliers and users of manufactured nano-objects.

Meet the needs of downstream processing, so that the performance of products between different batches is consistent.

Reasons for inconsistent material properties between batches include.

a) The technical specifications adopted by users and suppliers do not cover all characteristics that affect material properties and/or processability, or users and suppliers

There is a difference in the understanding of certain characteristics;

b) the measurement technique used is not applicable to one or more material properties;

c) One or more measurement techniques are used incorrectly.

In order to solve the above problems, this standard has been formulated. When the initial material identification faces the same problem before material specification and material use,

Use the guidelines provided in this standard.

There are three kinds of artificial nano-objects. nano-objects with three-dimensional external dimensions at the nanometer scale, and two-dimensional external dimensions at the nanometer scale.

Rice objects and nano-objects with only one-dimensional external dimensions at the nanometer scale. Since the supply status of many nano-objects is dispersed in liquid medium

In this standard, the properties of nano-objects and dispersion are also defined.

For man-made nano-objects.

- Provide a list of material properties relevant to initial material identification in all areas;

- Provide a list of additional material properties related to material identification in specific application areas;

- * If there are inconsistencies between batches using the material properties specified in the material specification, additional performance on the product and/or downstream additions is required.

a list of material properties that have an impact on the process;

- * There are two types of measurement methods for identifiable material properties.

- a) conventional measurement methods for batch quality control of industrial production with low cost equipment;

- b) Measurement methods for quality evaluation using professional equipment.

- * A brief description of the available measurement methods and test guides (standards) that can be referenced; measures for undetermined feasibility or validity

The law was explained. For parameters that do not establish international standards, this

standard does not reference measurement methods. For specific materials or applications Appendix A gives the decision-making process for how to use this standard.

Please note that the packaging, labeling, material transportation, etc. specified in this standard must meet the requirements of laws and local regulations.

This standard is recommended for qualified or experienced personnel.

Nanotechnology Materials Specification Guide to Nanoparticle Properties

1 Scope

This standard provides guidance for the development of specifications for the properties and measurement methods of manufactured nano-objects to ensure consistency of product characteristics.

This standard includes guidelines for regulating the physicochemical properties of man-made nano-objects that may affect performance or subsequent processing. Attached

A list of applicable measurement methods is given in Record B.

Note 1. The supply state of nano-objects can be dry powder or dispersed in a liquid medium.

This standard does not include guidelines for regulating the environmental, health and safety (EHS) characteristics of man-made nano-objects.

Note 2. Nanotechnology is developing rapidly. It is recommended that users of this standard pay attention to the legal environment and the latest developments in EHS in the field of nanotechnology (see references).

[1-4], [15], [16], [38-43]). If the user or supplier wants to assess the environmental, safety and health risks of the material, please refer to ISO /T R13121 and

ISO /T R12885.

A material that forms a nanoscale phase in situ through a phase transition within the material, such as agglomerated regions in precipitated hardened metals, Gianni Epres

GP, Guinier-Preston zone, does not apply to this standard. In addition, this standard does not regulate the quantitative identification of nano-objects.

However, an example is given of how to identify nano-objects, including the characteristics, performance and measurement methods on which they are based. This standard does not include nano

Determination of device characteristics and corresponding measurement methods.

Although some of the parameters listed in this standard may be related to material quality,

this standard cannot be used to guide the establishment of a quality management system.

Guidance related to the quality management system can be found in the ISO 9000 series of international standards.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO /T S27687 Terms and definitions for nanotechnology nanoobjects Nanoparticles, nanofibers and nanosheets (Nanotechnologies-Terminologyanddefinitionsfornano-objects-Nanoparticle,nanofibreandnanoplate)

ISO /T S80004-1 Nanotechnology terminology Part 1. Core terminology (Nanotechnologies-Vocabulary-Part 1.

Coreterms)

3 Terms and definitions

The following terms and definitions defined by ISO /T S27687 and ISO /T S80004-1 apply to this document.

3.1

Nano object nano-object

A one-dimensional, two-dimensional or three-dimensional external dimension is at the nanoscale object.

3.2

Nanoscale nanoscale

It is in the size range between 1 nm and 100 nm.

3.3

Artificial nano-objects manufacturednano-object

Nano-objects with specific functions or specific compositions manufactured for commercial purposes.