



NSAI
Standards

Standard Recommendation
S.R. CEN ISO/TS 27687:2009

Nanotechnologies - Terminology and definitions for nano-objects -
Nanoparticle, nanofibre and nanoplate
(ISO/TS 27687:2008)

S.R. CEN ISO/TS 27687:2009

Incorporating amendments/corrigenda issued since publication:

<i>This document replaces:</i> CEN ISO/TS 27687:2008	<i>This document is based on:</i> CEN ISO/TS 27687:2009 CEN ISO/TS 27687:2008	<i>Published:</i> 28 October, 2009 3 October, 2008
This document was published under the authority of the NSAI and comes into effect on: 17 November, 2009		ICS number: 07.030 01.040.07
NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie
Údarás um Chaighdeáin Náisiúnta na hÉireann		

English Version

**Nanotechnologies - Terminology and definitions for nano-objects
- Nanoparticle, nanofibre and nanoplate (ISO/TS 27687:2008)**

Nanotechnologies - Terminologie et définitions relatives aux
nano-objets - Nanoparticule, nanofibre et nanofeuillet
(ISO/TS 27687:2008)

Nanotechnologien - Terminologie und Begriffe für
Nanoobjekte - Nanopartikel, Nanofaser und Nanoplättchen
(ISO/TS 27687:2008)

This Technical Specification (CEN/TS) was approved by CEN on 24 August 2009 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....3

Foreword

The text of ISO/TS 27687:2008 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 27687:2009 by Technical Committee CEN/TC 352 “Nanotechnologies” the secretariat of which is held by BSI.

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

This document supersedes CEN ISO/TS 27687:2008.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO/TS 27687:2008 has been approved by CEN as a CEN ISO/TS 27687:2009 without any modification.

This page is intentionally left BLANK.

S.R. CEN/TS 27687:2009
TECHNICAL
SPECIFICATION

ISO/TS
27687

First edition
2008-08-15

Corrected version
2009-02-01

**Nanotechnologies — Terminology and
definitions for nano-objects —
Nanoparticle, nanofibre and nanoplate**

*Nanotechnologies — Terminologie et définitions relatives
aux nano-objets — Nanoparticule, nanofibre et nanoplat*



Reference number
ISO/TS 27687:2008(E)

© ISO 2008

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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.

ISO/TS 27687 was prepared by Technical Committee ISO/TC 229, *Nanotechnologies*.

In this corrected version of ISO/TS 27687:2008, the caption for Figure 1 b) has been altered, a terminology change has been made in the bottom, right-hand box of Figure 2 and the second line of the NOTE under 4.1 has been altered to align with Figure 1 b).

Introduction

As many authorities predict that applications of nanotechnologies will pervade all areas of life and will enable dramatic advances to be realized in all areas of communication, health, manufacturing, materials and knowledge-based technologies, there is an obvious need to provide industry and research with suitable tools to aid the development and application of those technologies. It is also essential that regulators and health and environmental protection agencies have available reliable measurement systems and evaluation protocols supported by well-founded and robust standards.

Often in the field of nanotechnologies, researchers with the aid of microscopes name materials inspired by the shape of objects found in everyday life although the physical size is much smaller. The prefix, nano-, is often added to denote the small size of the object. (The prefix nano-, is also used in S.I. units to indicate 10^{-9} e.g. 1 nanometre = 10^{-9} metre.)

To create a unitary standard, this terminology and definitions document encompasses terms used in both nanosciences and nanotechnologies concerning particles at the nano-scale. Nano-object and other new terms are coined to allow development of a rational hierarchical system of definitions. This hierarchy will allow systematic building of vocabulary and is contained in a larger hierarchy of terms under development for nanotechnologies. This document provides an up-to-date listing of terms and definitions relevant to the area. It forms one part of a projected multi-part terminology and definitions document covering the different aspects of nanotechnologies. It is intended to facilitate communications between organizations and individuals in industry and those who interact with them.

This document is concerned with the definition of terminology and definitions for these small objects. These objects come in several shapes; the three basic shapes referred to in this document are illustrated in Figure 1:

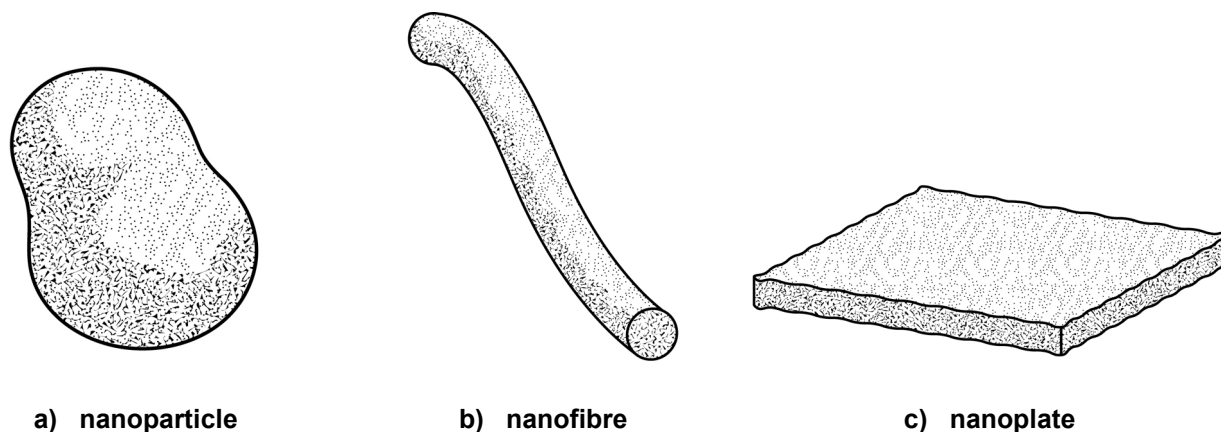


Figure 1 — Schematic diagrams showing some shapes for nano-objects

There is a hierarchical relationship between many of the different terms in the document. Some elements of this are shown in Figure 2 to illustrate some of the relationships that exist.

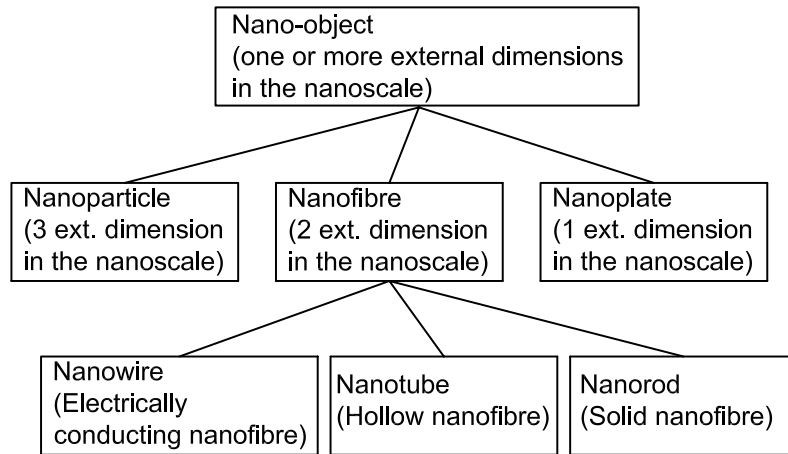


Figure 2 — Fragment of hierarchy of terms related to nano-objects

Nanotechnologies — Terminology and definitions for nano-objects — Nanoparticle, nanofibre and nanoplate

1 Scope

This Technical Specification lists terms and definitions related to particles in the field of nanotechnologies. It is intended to facilitate communications between organizations and individuals in industry and those who interact with them.

2 Core terms related to particles

2.1

nanoscale

size range from approximately 1 nm to 100 nm

NOTE 1 Properties that are not extrapolations from a larger size will typically, but not exclusively, be exhibited in this size range. For such properties the size limits are considered approximate.

NOTE 2 The lower limit in this definition (approximately 1 nm) is introduced to avoid single and small groups of atoms from being designated as nano-objects or elements of nanostructures, which might be implied by the absence of a lower limit.

2.2

nano-object

material with one, two or three external dimensions in the **nanoscale**

NOTE Generic term for all discrete **nanoscale** objects.

3 Terms concerning particles and assemblies of particles

Nano-objects (for example nanoparticles, nanofibres, and nanoplates see Clause 4), often occur in (large) groups, rather than isolated. For reasons of surface energy, such coexisting nano-objects are likely to interact. In the description of these interactions, the following terms are often used. The following terms are not restricted with respect to physical size and shape. These terms are included for completeness and their importance at the nanoscale.

3.1

particle

minute piece of matter with defined physical boundaries

[ISO 14644-6:2007, definition 2.102]

NOTE 1 A physical boundary can also be described as an interface.

NOTE 2 A particle can move as a unit.

NOTE 3 This general particle definition applies to nano-objects.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-