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Nanotechnologies – Vocabulary –
Part 9: Nano-enabled electrotechnical products and systems

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Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 80004-9, which is a Technical Specification, has been prepared by IEC technical committee 113: Nanotechnology for electrotechnical products and systems.

The text of this standard is based on the following documents:

Enquiry draft	Report on voting
113/315/DTS	113/335/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the 80004 Technical Specification, published under the general title *Nanotechnologies – Vocabulary*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- transformed into an International Standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

Nanotechnology advances have profound implications in all branches of engineering and science and have a noticeable impact on established industries by introducing technological innovation. Within the electrotechnical industry, nanotechnologies play an important role as regards the miniaturization and the integration of electronic components as well as the fabrication of electrical devices with novel functionalities and improved performances.

There is a substantial investment in research that will bring development and wide diffusion of new nanomaterials, devices and systems. Examples include nanoscale interconnects made with carbon nanotube bundles and graphene nanoribbons to replace copper and overcome physical and performance limits in integrated electronics. Carbon-based nanostructures are promising for nanoscale transistors in post-silicon electronics, enabling higher integration and faster switching speeds and lighting devices with more efficient and powerful electron emission. Nanoscale sensors and nano-electromechanical systems are also being widely investigated.

Recent progress in the synthesis of nanomaterials and composites with nanoscale phases offers real opportunities for application in electrochemical systems-technology to obtain, for example, more efficient and inexpensive fuel cells and nano-enabled lithium ion batteries with extended capacity. High energy storage capacity, reaching and exceeding that of modern batteries, is the target of new ultra-capacitors exploiting state-of-the-art nanotechnology. Developments in solar cells via nanostructures are intended to reduce costs as well as improve the conversion efficiency. The aforementioned products are just some electrotechnical examples that exploit nanotechnologies and are in rapid and constant evolution.

However, such a fast moving technology, as well as its high multidisciplinary nature, inevitably generates a multiplicity of new scientific and technical terms often with ambiguous definitions. The objective of this document is the compilation of a list of terms and definitions useful for persons operating in the field of nanotechnologies and in the production of electrotechnical products and systems.

NANOTECHNOLOGIES – VOCABULARY –

Part 9: Nano-enabled electrotechnical products and systems

1 Scope

This document specifies terms and definitions for electrotechnical products and systems reliant on nanomaterials for their essential functionalities. It is intended to facilitate communications between organizations and individuals in industry and those who interact with them.

2 Normative references

There are no normative references in this document.