
**Nanotechnologies — Specification
for developing representative test
materials consisting of nano-objects in
dry powder form**

*Nanotechnologies — Spécifications relatives au développement de
matériaux d'essai représentatifs constitués de nano-objets sous forme
de poudre sèche*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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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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This document was prepared by Technical Committee ISO/TC 229, *Nanotechnologies*.

This second edition cancels and replaces the first edition (ISO/TS 16195:2013), which has been technically revised.

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 new manufactured nano-objects are developed and find a wider range of industrial applications, the roles of physico-chemical, performance, and safety testing of their powders (i.e. dry, unsuspended accumulations of such objects) have become more important than ever. However, many testing methods are still under development and have to be properly evaluated in terms of their reliability. Where possible, validation of new measurement methods is performed using certified reference materials, which have known and quantified properties. In the absence of certified reference materials, one often has to rely on non-certified reference materials, with assigned but not certified property values. However, in developing fields of measurement and testing, such as that of nanotechnology, even non-certified reference materials are scarce. In such cases, “test materials,” which are evaluated for homogeneity and stability of one or several of their properties, will be helpful in efforts to improve the reproducibility of testing methods across testing laboratories and the comparability of test results across different test methods. This document specifies that for dry powders of nano-objects the following minimum information be gathered and provided in a verification report to qualify the material as a nanoscale representative test material:

- information describing the manufacturing process,
- information on the quality management of its manufacturing process,
- data from physico-chemical measurements representing the principal features of the representative test material, and
- data on the stability and homogeneity of the above parameters.

Conformity to this document, expressed in the form of a verification report, will provide a level of assurance that the representative test material is homogeneous, statistically representative of the manufacturing process, and has stability. This will increase the likelihood that measurements that are undertaken on the representative test material, whether for safety or function, are comparable across testing laboratories, even for properties for which methods are being developed and for which homogeneity and stability have not been quantitatively assessed.

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