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Fine ceramics (advanced ceramics, advanced technical ceramics) — Determination of absolute density of ceramic powders by pycnometer

Céramiques techniques — Détermination de la masse volumique absolue des poudres céramiques à l'aide d'un pycnomètre

Reference number
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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 206, *Fine ceramics*.

This second edition cancels and replaces the first edition (ISO 18753:2004), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Clause 6 has been modified to include changes in list items d) and g) and to add a paragraph discussing factors affecting accuracy of test results;

— Table A.1 has been modified with new reference data for the absolute density of distilled water[1].

Fine ceramics (advanced ceramics, advanced technical ceramics) — Determination of absolute density of ceramic powders by pycnometer

1 Scope

This document specifies a method for determining the absolute particle density of fine ceramic powders or sintered parts using liquid pycnometry.

NOTE Other pycnometer methods like gas pycnometers (e.g. helium pycnometer), where a gas is used as media, also exist.

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 758, *Liquid chemical products for industrial use — Determination of density at 20 °C*

ISO 3507, *Laboratory glassware — Pyknometers*

ISO 6353-2, *Reagents for chemical analysis — Part 2: Specifications — First series*

ISO 6353-3, *Reagents for chemical analysis — Part 3: Specifications — Second series*

ISO 8213, *Chemical products for industrial use — Sampling techniques — Solid chemical products in the form of particles varying from powders to coarse lumps*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

3.1
absolute particle density
absolute density of ceramic powders
density of an individual ceramic particle, a ceramic powder or sintered parts

Note 1 to entry: When an enclosed space occurs (pore) inside the particle or part, the space is considered to be part of the individual particle or part. The result of the test is then the absolute density of the ceramic particles or ceramic parts with closed porosity.

Note 2 to entry: If the intention of the test is to determine the absolute density of a ceramic material, the test is limited to particles or parts without closed porosity.