
**Fine ceramics (advanced ceramics,
advanced technical ceramics) —
Methods for chemical analysis of
zirconium oxide powders**

*Céramiques techniques — Méthodes pour l'analyse chimique des
poudres d'oxyde de zirconium*



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Published in Switzerland

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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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

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

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.

Fine ceramics (advanced ceramics, advanced technical ceramics) — Methods for chemical analysis of zirconium oxide powders

1 Scope

This document specifies methods for the chemical analysis of zirconium oxide powders used as the raw material for fine ceramics.

It stipulates the determination methods of the zirconium, aluminium, barium, calcium, cerium, cobalt, gadolinium, hafnium, iron, magnesium, potassium, silicon, sodium, strontium, titanium and yttrium contents in zirconium oxide powders for fine ceramics. The test sample is decomposed by acid pressure decomposition or alkali fusion. Contents of zirconium and yttrium are determined by using either a precipitation and gravimetric method or an inductively coupled plasma–optical emission spectrometry (ICP–OES) method. Contents of aluminium, barium, calcium, cerium, cobalt, gadolinium, hafnium, iron, magnesium, potassium, silicon, sodium, strontium and titanium are determined by using an ICP–OES method.

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 835, *Laboratory glassware — Graduated pipettes*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 8656-1, *Refractory products — Sampling of raw materials and unshaped products — Part 1: Sampling scheme*

3 Terms and definitions

No terms and definitions are listed in this document.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Analytes and ranges

- Zirconium (Zr), range of 60 % to 74 % (mass fraction).
- Aluminium (Al), range of 0,01 % to 0,5 % (mass fraction).
- Barium (Ba), range of 0,01 % to 0,5 % (mass fraction).
- Calcium (Ca), range of 0,01 % to 6 % (mass fraction).
- Cerium (Ce), range of 0,01 % to 0,5 % (mass fraction).
- Cobalt (Co), range of 0,01 % to 0,5 % (mass fraction).