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Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for linear thermal expansion of monolithic ceramics by push-rod technique

Céramiques techniques — Méthode d'essai pour le coefficient d'expansion thermique linéaire des céramiques monolithiques par la technique du poussoir de soupape



Reference number ISO 17562:2001(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 17562 was prepared by Technical Committee ISO/TC 206, Fine ceramics.

Annexes A and B form a normative part of this international Standard. Annex C is for information only.

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Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for linear thermal expansion of monolithic ceramics by push-rod technique

1 Scope

This International Standard specifies a method for the determination of the linear thermal expansion and the linear thermal expansion coefficient of monolithic ceramics from near liquid nitrogen temperature up to a maximum temperature of 1 500 °C.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to encements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3611:1978, Micrometer callipers for external measuremen

ISO 6906:1984, Vernier callipers reading to 0,02 mm

ISO 7991:1987, Glass — Determination of coefficient of mean inter thermal expansion

IEC 60584-1:1995, Thermocouples - Part 1: Reference tables

IEC 60584-2:1982, Thermocouples — Part 2: Tolerances

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply

3.1

linear thermal expansion

between temperatures T_1 and T_2 is the ratio $\Delta L/L_0$, where $\Delta L = (L_2 - L_1)$ and L_0 = specimen length at room temperature

NOTE When the temperature has changed from T_1 to T_2 , assume that the length of specimen changes from L_1 to L_2 .

3.2

mean linear thermal expansion coefficient

$\bar{\alpha}$

between temperatures T_1 and T_2 is the linear thermal expansion divided by $\Delta T (= T_2 - T_1)$ to produce the quotient $\overline{\alpha} = \Delta L / (L_0 \times \Delta T)$