Fine ceramics (advanced ceramics, advanced technical ceramics) — Mechanical properties of monolithic ceramics at room temperature — Determination of compressive strength

1 Scope

This International Standard specifies a method for the determination of nominal compressive strength of advanced monolithic technical ceramic materials at room temperature.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3611, *Geometrical product specifications (GPS) — Dimensional measuring equipment: Micrometers for external measurements — Design and metrological characteristics*

ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system*

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

EN 623-4, *Advanced technical ceramics — Monolithic ceramics — General and textural properties — Part 4: Surface roughness*

EN 843-5, *Advanced technical ceramics — Mechanical properties of monolithic ceramics at room temperature — Part 5: Statistical analysis*

3 Terms and definitions

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

3.1
nominal compressive strength
$\sigma_{c,m}$
maximum nominal stress supported by the material at the instant of failure when loaded in linear elastic compression

4 Significance and use

Advanced technical ceramics are used for applications in which their corrosion resistance, their high temperature stability, their potential for light-weight constructions, and their high nominal compressive strength can be utilized in an ideal manner. For application of ceramic components, it shall be considered that they are loaded mainly with compressive stresses since this type of loading is considerably less critical than probably appearing tensile stresses.

This International Standard describes the background for a directed material development, quality control, and for component-optimised applications. It ensures the determination of comparable nominal compressive strength data.

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