
**Fine ceramics (advanced ceramics,
advanced technical ceramics) —
Determination of the abrasion resistance
of coatings by a micro-scale abrasion
test**

*Céramiques techniques — Détermination de la résistance à l'abrasion
des revêtements par essai d'abrasion à micro-échelle*



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

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Fine ceramics (advanced ceramics, advanced technical ceramics) — Determination of the abrasion resistance of coatings by a micro-scale abrasion test

1 Scope

This International Standard specifies a method for measuring the abrasive wear rate of ceramic coatings by means of a micro-scale abrasion wear test based on the well-known crater-grinding technique used for coating thickness determination in ISO 26423 [11].

The method can provide data on both coating and substrate wear rates, either by performing two separate tests or by careful analysis of the data from a single test series.

The method can be applied to samples with planar or non-planar surfaces, but the results analysis described in Clause 9 applies only to flat samples. For non-planar samples, a more complicated analysis, possibly requiring the use of numerical methods, is required.

2 Normative references

The following referenced documents are indispensable for the application 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 3290-1, *Rolling bearings — Balls — Part 1: Steel balls*

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.

3.1

abrasive wear rate

abrasive wear coefficient

K

volume of material removed in unit sliding distance under a normal contact load of 1 N

4 Significance and use

Although few protective coatings are subject to single wear processes, the abrasive wear resistance of such coatings can play a decisive role in their performance. Hence, knowledge of the abrasive wear resistance of ceramic coatings can help in the proper selection of coatings for applications where abrasion plays a major role in their degradation. Although techniques exist to measure the abrasive wear behaviour of bulk materials and thick films (see References [1] to [3]), these techniques are not easily applied to thin films and the results are difficult to interpret when the methods are used on curved surfaces.