

**SLOVENSKI STANDARD**  
**SIST EN ISO 14604:2016****01-junij-2016****Nadomešča:**  
**SIST EN 1071-9:2009**

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**Fina keramika (sodobna keramika, sodobna tehnična keramika) - Metode za preskušanje keramičnih prevlek - Ugotavljanje pokanja zaradi obremenitve (ISO 14604:2012)**

Fine ceramics (advanced ceramics, advanced technical ceramics) - Methods of test for ceramic coatings - Determination of fracture strain (ISO 14604:2012)

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Hochleistungskeramik - Verfahren zur Prüfung keramischer Schichten - Bestimmung der Bruchdehnung

[SIST EN ISO 14604:2016](#)[http://standards.iteh.ai/catalog/standards/sist/en-iso-14604-2016/iso-14604-2016](#)  
Céramiques techniques - Méthodes d'essai des revêtements céramiques - Détermination de la déformation à la rupture (ISO 14604:2012)**Ta slovenski standard je istoveten z: EN ISO 14604:2016****ICS:**

25.220.99	Druge obdelave in prevleke	Other treatments and coatings
81.060.30	Sodobna keramika	Advanced ceramics

**SIST EN ISO 14604:2016**                      **en**

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EUROPEAN STANDARD

**EN ISO 14604**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2016

ICS 81.060.30

Supersedes EN 1071-9:2009

English Version

## Fine ceramics (advanced ceramics, advanced technical ceramics) - Methods of test for ceramic coatings - Determination of fracture strain (ISO 14604:2012)

Céramiques techniques - Méthodes d'essai des revêtements céramiques - Détermination de la déformation à la rupture (ISO 14604:2012)

Hochleistungskeramik - Verfahren zur Prüfung keramischer Schichten - Bestimmung der Bruchdehnung (ISO 14604:2012)

This European Standard was approved by CEN on 25 March 2016.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

The text of ISO 14604:2012 has been prepared by Technical Committee ISO/TC 206 “Fine ceramics” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 14604:2016 by Technical Committee CEN/TC 184 “Advanced technical ceramics” the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2016, and conflicting national standards shall be withdrawn at the latest by October 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1071-9:2009.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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### Endorsement notice

The text of ISO 14604:2012 has been approved by CEN as EN ISO 14604:2016 without any modification.

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INTERNATIONAL  
STANDARD

ISO  
14604

First edition  
2012-12-01

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**Fine ceramics (advanced ceramics,  
advanced technical ceramics) —  
Methods of test for ceramic coatings —  
Determination of fracture strain**

*Céramiques techniques — Méthodes d'essai des revêtements  
céramiques — Détermination de la déformation à la rupture*

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Reference number  
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**ISO 14604:2012(E)****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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14604 was prepared by Technical Committee ISO/TC 206, *Fine ceramics*.

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## Introduction

The fracture strain of a coating is a critical factor often determining the performance of a coated product. Clearly, if stressed either directly or due to thermal effects (thermal expansion coefficient mismatch between the coating and substrate) coating cracking can occur if the critical fracture stress/strain is exceeded, and in many cases the effectiveness of the coating will be reduced. For example, corrosion-resistant coatings lose their protective character if cracking occurs, and optical coatings become ineffective when cracked. In many cases, cracking is the first stage of a much more serious form of failure in which large areas of the coating can spall.

This International Standard describes a method for the determination of fracture strain using a technique of applying stresses to a coupon of material by a uniaxial tensile or compressive test or a beam bending test where the initiation of fracture in the coating is determined using an acoustic emission method.

The extent to which coated components can withstand external applied loads is an important property in the application of any coated system, and usually the failure stress is required. For calculation of the stress, both the fracture strain and Young's modulus of the coating should be known. ISO 14577-4:2007<sup>[1]</sup> can be used to measure Young's modulus by depth-sensing indentation, but there are other methods involving flexure and impact excitation that may also be applied (References [2], [3]).

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