



BSI Standards Publication

Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for interfacial bond strength of ceramic materials at elevated temperatures

National foreword

This British Standard is the UK implementation of ISO 17095:2013.

The UK participation in its preparation was entrusted to Technical Committee RPI/13, Advanced technical ceramics.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2013. Published by BSI Standards Limited 2013

ISBN 978 0 580 77168 2

ICS 81.060.30

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 August 2013.

Amendments issued since publication

Date	Text affected
------	---------------

**Fine ceramics (advanced ceramics,
advanced technical ceramics) — Test
method for interfacial bond strength
of ceramic materials at elevated
temperatures**

*Céramiques techniques — Méthode d'essai pour la résistance de
l'interface des matériaux céramiques à températures élevées*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	2
5 Principle	3
6 Apparatus	4
6.1 Test machine	4
6.2 Heating machine	4
6.3 Temperature measuring and indicating instruments	5
6.4 Data acquisition	5
6.5 Dimension-measuring device	5
6.6 Test fixture	6
7 Test pieces	7
7.1 Test piece size	7
7.2 Test piece preparation	8
8 Test procedure	8
8.1 Test mode and rate	8
8.2 Preparation of test pieces	9
8.3 Measurement of the cross-bonded area	9
8.4 Measurement of the tensile bond strength	9
8.5 Measurement of the shear bond strength	10
9 Calculation of results	11
9.1 Interfacial tensile bond strength	11
9.2 Interfacial shear bond strength	11
10 Test report	12
Bibliography	13

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. www.iso.org/directives

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

ISO 17095 was prepared by Technical Committee ISO/TC 206, *Fine ceramics*.

Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for interfacial bond strength of ceramic materials at elevated temperatures

1 Scope

This International Standard specifies the method of test for determining the interfacial tensile and shear bond strength of ceramic-ceramic, ceramic-metal, and ceramic-glass joining at elevated temperature by the compression tests on the cross-bonded test pieces. Methods for test piece preparation, test modes and rates (load rate or displacement rate), data collection, and reporting procedures are addressed.

This International Standard applies primarily to the ceramic materials, including monolithic fine ceramics and whisker-, fibre- or particulate-reinforced ceramic composites. This test method can be used for materials research, quality control, and characterization and design data-generation purposes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable to its application. For dated references, only the edition cited applies. For undated references, the last 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*

IEC 60584-1, *Thermocouples — Part 1: Reference tables*

3 Terms and definitions

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

3.1

advanced ceramic

advanced technical ceramic

fine ceramic

highly-engineered, high-performance predominately non-metallic, inorganic, ceramic material having specific functional attributes

3.2

cross-bonded sample

testing sample having the form of a symmetrical cross, which is prepared by joining two rectangle bars of the same shape and size

Note 1 to entry: See [Figure 1](#).

Note 2 to entry: The two bars joined to form the cross-bonded sample may be of the same or different materials.

Note 3 to entry: The approach used for joining may be any chemical or physical bonding.

Note 4 to entry: The two bars should be joined perpendicularly and symmetrically within $\pm 1^\circ$ ($\alpha = 90^\circ \pm 1^\circ$).