



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 658-2:2002

ICS 81.060.30

**ADVANCED TECHNICAL CERAMICS -
MECHANICAL PROPERTIES OF CERAMIC
COMPOSITES AT ROOM TEMPERATURE -
PART 2: DETERMINATION OF
COMPRESSION PROPERTIES**

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*This Irish Standard was
published under the
authority of the National
Standards Authority of
Ireland
and comes into effect on:
January 17, 2003*

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EUROPEAN STANDARD

EN 658-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2002

ICS 81.060.30

Supersedes ENV 658-2:1993

English version

Advanced technical ceramics - Mechanical properties of ceramic composites at room temperature - Part 2: Determination of compression properties

Céramiques techniques avancées - Propriétés mécaniques des céramiques composites à température ambiante - Partie 2: Détermination des propriétés en compression

Hochleistungskeramik - Mechanische Eigenschaften von keramischen Verbundwerkstoffen bei Raumtemperatur - Teil 2: Bestimmung der Eigenschaften unter Druck

This European Standard was approved by CEN on 16 October 2002.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 658-2:2002) has been prepared by Technical Committee CEN /TC 184, "Advanced technical ceramics", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by June 2003, and conflicting national standards shall be withdrawn at the latest by June 2003.

This document supersedes ENV 658-2 :1993.

EN 658 consists of the following parts, under the general title "*Advanced technical ceramics – Mechanical properties of ceramic composites at room temperature*"

- Part 1 : *Determination of tensile properties*
- Part 2 : *Determination of compressive properties*
- Part 3 : *Determination of flexural strength*
- Part 4 : *Determination of interlaminar shear strength by compression loading of notched test specimens*
- Part 5 : *Determination of interlaminar shear strength by short span bend test (three-points)*
- Part 6 : *Determination of interlaminar shear strength by double-punch shearing*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

EN 658-2:2002 (E)

1 Scope

This part of this European Standard describes a method for determination of compression properties of ceramic matrix composite materials with continuous fibre reinforcement at room temperature. This method applies to all ceramic matrix composites with a continuous fibre reinforcement, unidirectional (1D), bidirectional (2D), and tridirectional (xD, with $2 < x \leq 3$) as defined in ENV 13233, loaded along one principal axis of reinforcement.

Two cases are distinguished:

- compression between platens;
- compression using grips.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ENV 13233:1998, *Advanced technical ceramics - Ceramic composites - Notations and symbols*.

EN ISO 7500-1:1999, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines (ISO 7500-1:1999)*.

ISO 3611, *Micrometer callipers for external measurements*

3 Principle

A test specimen of specified dimensions is loaded in compression. The test is performed at a constant crosshead displacement rate or at a constant deformation rate.

NOTE 1 Constant loading rate is only allowed in the case of linear stress strain behaviour up to failure.

NOTE 2 When applied, it is recommended to use constant cross head displacement rate when the test is carried out up to failure.

The force and longitudinal deformation are measured and recorded simultaneously.

4 Terms, definitions and symbols

For the purposes of this European Standard, the following terms and definitions and the symbols given in ENV 13233 apply.

4.1
calibrated length, l

the part of the test specimen which has uniform and minimum cross-section area

4.2
gauge length, L_0

initial distance between reference points on the test specimen in the calibrated length

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