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First edition
1992-02-01

ANSI Internat Doc Sec

**Dense, shaped refractory products —
Determination of cold compressive strength —**

**Part 1:
Referee test without packing**

*Produits réfractaires façonnés denses — Détermination de la résistance
à la compression à température ambiante —*

Partie 1: Méthode d'essai de référence sans intercalaire



Reference number
ISO 10059-1:1992(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.

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.

International Standard ISO 10059-1 was prepared by Technical Committee ISO/TC 33, *Refractories*, Sub-Committee SC 2, *Methods of testing*.

ISO 10059 consists of the following parts, under the general title *Dense, shaped refractory products — Determination of cold compressive strength*:

- *Part 1: Referee test without packing*
- *Part 2: Test with packing*

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International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

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Introduction

ISO 10059 will be published in two Parts. Part 1 specifies a referee method for the determination of cold compressive strength, which does not use any packing material. Part 2 will specify an alternative test where packing material and alternative test piece sizes are permitted.

The test for shaped insulating products is given in ISO 8895.

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Dense, shaped refractory products — Determination of cold compressive strength —

Part 1: Referee test without packing

1 Scope

This International Standard specifies a method of determination of the cold compressive strength of dense, shaped refractory products.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 10059. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 10059 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5017:1988, *Dense shaped refractory products — Determination of bulk density, apparent porosity and true porosity.*

ISO 8895:1986, *Shaped insulating refractory products — Determination of cold crushing strength.*

3 Definitions

For the purposes of this part of ISO 10059, the following definitions apply.

3.1 cold compressive strength: The maximum load per unit area, applied under specified conditions at room temperature, that a refractory product will withstand before failure occurs.

3.2 dense, shaped product: A product having a true porosity of less than 45 %, when measured in accordance with ISO 5017.

4 Principle

A test piece of known dimensions is subjected, under specified conditions, to a steadily increasing compressive load until it fails, i.e. when it cannot support a further increase in load. The cold compressive strength is calculated from the maximum load indicated at failure and the mean cross-sectional area over which the load is applied.

5 Apparatus

5.1 A mechanical or hydraulic compression testing machine, fitted with a measuring device capable of measuring the load exerted on the test piece to within ± 2 %.

The machine shall be capable of increasing the stress at a rate of $1,0 \text{ N/mm}^2\cdot\text{s} \pm 0,1 \text{ N/mm}^2\cdot\text{s}$, until the test piece is unable to support the load.

The platens of the machine shall

- a) have a Rockwell hardness value between 58 HRC and 62 HRC;
- b) be ground plane to a flatness tolerance of 0,03 mm over the area to be in contact with the test piece;
- c) have a surface texture (mean roughness value R_a) between $0,8 \mu\text{m}$ and $3,2 \mu\text{m}$. This can be checked visually or by feeling with a "mean-roughness" reference standard such as is used for flat grinding.

The area of the upper platen shall not be greater than 100 cm^2 . The upper platen shall function on a