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**Refractory products — Determination  
of compressive strength at elevated  
temperature**

*Produits réfractaires — Détermination de la résistance à la  
compression à température élevée*



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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.

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 (see [www.iso.org/directives](http://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 (see [www.iso.org/patents](http://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.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 33, *Refractories*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Refractory products — Determination of compressive strength at elevated temperature

## 1 Scope

This document specifies a test method for determining the compressive strength of refractory products at elevated temperature.

This test method could also be used for materials development, quality control, characterization, design and data generation purposes.

NOTE This document also could be used for determining the compressive strength of carbon containing refractory products at elevated temperature in an airtight furnace with reducing atmosphere.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 5022, *Shaped refractory products — Sampling and acceptance testing*

ISO 1927-2, *Monolithic (unshaped) refractory products — Part 2: Sampling for testing*

ISO 1927-5, *Monolithic (unshaped) refractory products — Part 5: Preparation and treatment of test pieces*

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

ISO 10059-1, *Dense, shaped refractory products — Determination of cold compressive strength — Part 1: Referee test without packing*

## 3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **compressive strength at elevated temperature**

maximum load (applied under specified conditions at elevated temperature) divided by the area over which the load is applied, that a refractory will withstand before failure occurs

## 4 Principle

A test piece of known dimension is subjected, at test temperature and under specified conditions, to an increasing compressive load until failure occurs (fracture occurs, or strain reaches 1 % for dense refractory products or 10 % for shaped insulating refractory products, respectively). The compressive strength at elevated temperature is calculated from the maximum load that a refractory will withstand before failure occurs and the mean cross-sectional area over which the load is applied.

NOTE The unit of compressive strength at elevated temperature is N/mm<sup>2</sup> (MPa).