

**Monolithic (unshaped) refractory products - Part 1:  
Introduction and classification (ISO 1927-1:2012)**

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English Version

**Monolithic (unshaped) refractory products - Part 1: Introduction  
and classification (ISO 1927-1:2012)**

Produits réfractaires (non façonnés) monolithiques - Partie  
1: Introduction et classification (ISO 1927-1:2012)

Ungeformte (monolithische) feuerfeste Erzeugnisse - Teil 1:  
Einführung und Klassifizierung (ISO 1927-1:2012)

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## Foreword

This document (EN ISO 1927-1:2012) has been prepared by Technical Committee ISO/TC 33 "Refractories" in collaboration with Technical Committee CEN/TC 187 "Refractory products and materials" 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of an identical text or by endorsement, at the latest by February 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

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### Endorsement notice

The text of ISO 1927-1:2012 has been approved by CEN as a EN ISO 1927-1:2012 without any modification.

# Contents

Page

Foreword .....	iv
Introduction .....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 Product types and methods of placement .....	2
4.1 Refractory castables .....	2
4.2 Refractory gunning materials .....	3
4.3 Refractory ramming materials .....	3
4.4 Refractory jointing materials .....	3
4.5 Other monolithic (unshaped) refractory products .....	3
5 Type of chemical composition .....	4
5.1 Alumina-silica products .....	4
5.2 Basic products .....	4
5.3 Special products .....	4
5.4 Carbon-containing products .....	4
6 Classification .....	4
6.1 General .....	4
6.2 Main raw material .....	4
6.3 Classification temperature .....	5
7 Designation of a monolithic (unshaped) refractory material .....	6
Bibliography .....	9

## Introduction

The general objective of this part of ISO 1927 is to define, with as much accuracy as possible, the control of monolithic (unshaped) refractory products with special reference to the following:

- a) quality control;
- b) checking the conformity of the delivery as compared with claimed properties;
- c) the control of batch homogeneity;
- d) the final control of linings.

Properties are unavoidably influenced by industrial placing as a result of the equipment, environmental conditions and often by specific site conditions (target date, location). Quality control and final control of lining should not be considered in the same documents, since the former requires accuracy and clean operative methods while the latter requires the control of the placing.

Monolithic (unshaped) refractory products used in industrial linings are generally not fired, so that the high temperatures which result from use create firing which results from use creates complicated conditions that make control difficult. The main points to be mentioned are:

- 1) the temperature gradient, the consequence of which is a property gradient;
- 2) the level of maximum temperature reached on the hot face directly depends on the working temperature of the equipment;
- 3) the life of the equipment may be numbered in hours or in years.

NOTE Properties measured in the laboratory frequently do not reflect the properties of the material when installed.

# Monolithic (unshaped) refractory products —

## Part 1: Introduction and classification

### 1 Scope

This part of ISO 1927 defines terms relating to monolithic (unshaped) refractory products and establishes a classification for the various types of product.

Raw materials and crushed or granulated refractory materials, which do not contain any binder, are excluded.

### 2 Normative references

The following referenced documents are indispensable for the application 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 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

### 3 Terms and definitions

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

#### 3.1

##### **monolithic (unshaped) refractory materials**

mixtures which consist of an aggregate and a bond or bonds, prepared ready for use either directly in the condition in which they are supplied or after the addition of one or more suitable liquids

NOTE 1 They can contain metallic, organic or ceramic fibre material.

NOTE 2 These mixtures are either dense or insulating. Insulating mixtures are those whose true porosity is not less than 45 % when determined in accordance with ISO 5016, using a test piece fired to specified conditions.

#### 3.2

##### **pre-formed shapes**

shapes made from monolithic (unshaped) refractory materials, cast or moulded and pre-treated by the manufacturer, so that they can be directly placed in service

NOTE They may have a thermal pre-treatment.

#### 3.3

##### **nature of the bond**

bond depending on the hardening process of the different materials

NOTE 1 The bond may be

- a hydraulic bond with setting and hydraulic hardening at ambient temperature,
- a ceramic bond with hardening by sintering during firing,
- a chemical bond (inorganic or organic-inorganic) with hardening by chemical, but not hydraulic, reaction at ambient temperature or at a temperature lower than that of a ceramic bond, or
- an organic bond with binding or hardening at ambient temperature or at higher temperatures.