

**Monolithic (unshaped) refractory products - Part 3:
Characterization as received (ISO 1927-3:2012)**

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NATIONAL FOREWORD

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English Version

**Monolithic (unshaped) refractory products - Part 3:
Characterization as received (ISO 1927-3:2012)**

Produits réfractaires monolithiques (non façonnés) - Partie
3: Caractérisation à l'état de réception (ISO 1927-3:2012)

Ungeformte (monolithische) feuerfeste Erzeugnisse - Teil 3:
Prüfung im Anlieferungszustand (ISO 1927-3:2012)

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Foreword

This document (EN ISO 1927-3:2012) 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of an identical text or by endorsement, at the latest by June 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

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Endorsement notice

The text of ISO 1927-3:2012 has been approved by CEN as a EN ISO 1927-3:2012 without any modification.

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Monolithic (unshaped) refractory materials —

Part 3: Characterization as received

1 Scope

This part of ISO 1927 specifies the methods for the characterization of monolithic (unshaped) refractory materials as received and for checking the homogeneity of a delivery of a product. It is applicable to castables (dense and insulating), gunning materials tap hole clay, injection mixes, dry vibrating mixes, and ramming materials, as defined in ISO 1927-1.

NOTE A check list of appropriate tests is given in Annex A.

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*

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

ISO 1927-2, *Unshaped refractory materials — Part 2: Sampling for testing*

ISO 10058-1, *Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method) — Part 1: Apparatus, reagents, dissolution and determination of gravimetric silica*

ISO 10058-2, *Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method) — Part 2: Wet chemical analysis*

ISO 10058-3, *Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method) — Part 3: Flame atomic absorption spectrophotometry (FAAS) and inductively coupled plasma atomic emission spectrometry (ICP-AES)*

ISO 12677, *Chemical analysis of refractory products by XRF — Fused cast bead method*

ISO 14719, *Chemical analysis of refractory material, glass and glazes — Determination of iron 2+ and iron 3+ by the spectral photometric method with 1-10 phenanthroline*

ISO 14720-1, *Testing of ceramic raw and basic materials — Determination of sulfur in powders and granules of non-oxidic ceramic raw and basic materials — Part 1: Infrared measurement methods*

ISO 14720-2, *Testing of ceramic raw and basic materials — Determination of sulfur in powders and granules of non-oxidic ceramic raw and basic materials — Part 2: Inductively coupled plasma atomic emission spectrometry (ICP/AES) or ion chromatography after burning in an oxygen flow*

EN 15979, *Testing of ceramic raw and basic materials — Direct determination of mass fractions of impurities in powders and granules of silicon carbide by OES by DC arc excitation*

EN 15991, *Testing of ceramic and basic materials — Direct determination of mass fractions of impurities in powders and granules of silicon carbide by inductively coupled plasma optical emission spectrometry (ICP OES) with electrothermal vaporisation (ETV)*

ISO 20565-1, *Chemical analysis of chrome-bearing refractory products and chrome-bearing raw materials (alternative to the X-ray fluorescence method) — Part 1: Apparatus, reagents, dissolution and determination of gravimetric silica*

ISO 20565-2, *Chemical analysis of chrome-bearing refractory products and chrome-bearing raw materials (alternative to the X-ray fluorescence method) — Part 2: Wet chemical analysis*

ISO 20565-3, *Chemical analysis of chrome-bearing refractory products and chrome-bearing raw materials (alternative to the X-ray fluorescence method) — Part 3: Flame atomic absorption spectrometry (FAAS) and inductively coupled plasma atomic emission spectrometry (ICP-AES)*

ISO 21068-1, *Chemical analysis of silicon-carbide-containing raw materials and refractory products — Part 1: General information and sample preparation*

ISO 21068-2, *Chemical analysis of silicon-carbide-containing raw materials and refractory products — Part 2: Determination of loss on ignition, total carbon, free carbon and silicon carbide, total and free silica and total and free silicon*

ISO 21068-3, *Chemical analysis of silicon-carbide-containing raw materials and refractory products — Part 3: Determination of nitrogen, oxygen and metallic and oxidic constituents*

ISO 21078-1, *Determination of boron (III) oxide in refractory products — Part 1: Determination of total boron (III) oxide in oxidic materials for ceramics, glass and glazes*

ISO 21078-2, *Determination of boron (III) oxide in refractory products — Part 2: Acid extraction method for the determination of boron (III) oxide in binder components*

ISO 21079-1, *Chemical analysis of refractories containing alumina, zirconia and silica — Refractories containing 5 % to 45 % of ZrO_2 (alternative to the X-ray fluorescence method) — Part 1: Apparatus, reagents and dissolution*

ISO 21079-2, *Chemical analysis of refractories containing alumina, zirconia, and silica — Refractories containing 5 % to 45 % of ZrO_2 (alternative to the X-ray fluorescence method) — Part 2: Wet chemical analysis*

ISO 21079-3, *Chemical analysis of refractories containing alumina, zirconia, and silica — Refractories containing 5 % to 45 % of ZrO_2 (alternative to the X-ray fluorescence method) — Part 3: Flame atomic absorption spectrophotometry (FAAS) and inductively coupled plasma emission spectrometry (ICP-AES)*

ISO 21587-1, *Chemical analysis of aluminosilicate refractory products (alternative to the X-ray fluorescence method) — Part 1: Apparatus, reagents, dissolution and gravimetric silica*

ISO 21587-2, *Chemical analysis of aluminosilicate refractory products (alternative to the X-ray fluorescence method) — Part 2: Wet chemical analysis*

ISO 21587-3, *Chemical analysis of aluminosilicate refractory products (alternative to the X-ray fluorescence method) — Part 3: Inductively coupled plasma and atomic absorption spectrometry methods*

ISO 26845, *Chemical analysis of refractories — General requirements for wet chemical analysis, atomic absorption spectrometry (AAS) and inductively coupled plasma atomic emission spectrometry (ICP-AES) methods*

3 Principle

Monolithic (unshaped) refractory products are characterized by making the following determinations:

- a) chemical composition;
- b) grain-size distribution by means of sieve analysis;
- c) moisture content of ramming materials;
- d) workability index of wet ramming materials.