AS 2503.6—2007
(Incorporating Amendment No. 1)
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Australian Standard®

Refractories and refractory materials—Chemical analysis

Part 6: Refractories, refractory mortars and silicate materials—Determination of major and minor elements—Wavelength dispersive X-ray fluorescence spectrometry using lithium borate fusion

This Australian Standard® was prepared by Committee MN-007, Refractories and Refractory Materials. It was approved on behalf of the Council of Standards Australia on 22 December 2006.
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The following are represented on Committee MN-007:

- Australian Ceramic Society
- Australasian Institute of Mining and Metallurgy
- Bureau of Steel Manufacturers of Australia
- CSIRO—Manufacturing and Materials Technology
- Institute of Refractories Engineers
- Refractories Manufacturers Association of Australia
- University of New South Wales

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STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 2503.6—2007
Refractories and refractory materials—Chemical analysis
Part 6: Refractories, refractory mortars and silicate materials—Determination of major and minor elements—Wavelength dispersive X-ray fluorescence spectrometry using lithium borate fusion

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Bureau of Steel Manufacturers of Australia
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CSIRO
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Refractories Manufacturers Association of Australia
The University of New South Wales

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PREFACE

This Standard was prepared by the Standards Australia Committee MN-007, Refractories and Refractory Materials, to provide an XRF method for the analysis of refractories, refractory mortars and silicate materials.

This Standard incorporates Amendment No. 1 (May 2011). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide those responsible for the analysis of refractories, refractory mortars and silicate materials with standardized procedures that will ensure the integrity of the analysis.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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STANDARDS AUSTRALIA

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1 SCOPE

This Standard sets out a wavelength dispersive X-ray fluorescence spectrometry method for the analysis of refractories and refractory mortars, including their feedstocks, using a spectrometer and current XRF software. Silicate materials can also be analyzed using this method. This method is applicable to the elements and concentrations ranges in Appendix A (Tables A1–A8).

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
2243	Safety in laboratories (series)
2563	Wavelength dispersive X-ray fluorescence spectrometers—Determination of precision
2879	Alumina
2879.7	Part 7: Determination of trace elements—Wavelength dispersive X-ray fluorescence spectrometric method
4392	Heavy mineral sands—Analysis by wavelength dispersive X-ray fluorescence spectrometry
4392.2	Part 2: Zircon materials
4433	Guide to sampling of particulate materials
4433.1	Part 1: Sampling procedures
4433.2	Part 2: Preparation of samples
ISO	
12677	Chemical analysis of refractory products by XRF—Fused cast bead method

3 PRINCIPLE

X-ray fluorescence measurements are made on a glass disc prepared by fusing and casting the test sample into a lithium borate disc.

Calibration is primarily carried out using synthetic standards prepared from pure chemicals using a two-point regression. Reference materials are used in addition to the synthetic standards. Matrix corrections are employed to ensure linearity throughout the concentration range of the calibration. Reference materials are used to verify the calibration.

Intensity measurements are corrected for spectrometer drift via a monitor fused glass disc.

NOTE: It is assumed that the analyst is using current XRF software for calibration and instrument control. (See Section 8.)

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