
**Aluminium oxide primarily used
for production of aluminium —
Determination of trace elements
— Wavelength dispersive X-ray
fluorescence spectrometric method**

*Oxyde d'aluminium utilisé pour la production d'aluminium —
Détermination d'éléments traces — Spectrométrie de fluorescence des
rayons X par dispersion en longueur d'onde*



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Foreword

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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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 226, *Materials for the production of primary aluminium*.

Introduction

This International Standard is based on Australian Standard AS 2879.7-1997, *Alumina — Determination of trace elements — Wavelength dispersive X-ray fluorescence spectrometric method*, developed by the Standards Australia Committee on Alumina and Materials used in Aluminium Production to provide an XRF method for the analysis of alumina.

The objective of this International Standard is to provide those responsible for the analysis of smelting-grade alumina with a standardized, validated procedure that will ensure the integrity of the analysis.

Aluminium oxide primarily used for production of aluminium — Determination of trace elements — Wavelength dispersive X-ray fluorescence spectrometric method

1 Scope

This International Standard sets out a wavelength dispersive X-ray fluorescence spectrometric method for the analysis of aluminium oxide for trace amounts of any or all of the following elements: sodium, silicon, iron, calcium, titanium, phosphorus, vanadium, zinc, manganese, gallium, potassium, copper, chromium and nickel. These elements are expressed as the oxides Na₂O, SiO₂, Fe₂O₃, CaO, TiO₂, P₂O₅, V₂O₅, ZnO, MnO, Ga₂O₃, K₂O, CuO, Cr₂O₃, and NiO on an un-dried sample basis.

The method is applicable to smelting-grade aluminium oxide. The concentration range covered for each of the components is given in [Table 1](#).

Table 1 — Applicable concentration range

Component	Concentration range %		
Na ₂ O	0,10	to	1,00
SiO ₂	0,003	to	0,05
Fe ₂ O ₃	0,003	to	0,05
CaO	0,003	to	0,10
TiO ₂	0,000 5	to	0,010
P ₂ O ₅	0,000 5	to	0,050
V ₂ O ₅	0,000 5	to	0,010
ZnO	0,000 5	to	0,010
MnO	0,000 5	to	0,010
Ga ₂ O ₃	0,000 5	to	0,020
K ₂ O	0,000 5	to	0,010
CuO	0,000 5	to	0,010
Cr ₂ O ₃	0,000 5	to	0,010
NiO	0,000 5	to	0,010

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AS 2563, *Wavelength dispersive X-ray fluorescence spectrometers — Determination of precision*

AS 2706, *Numeric values — Rounding and interpretation of limiting values*

AS 4538.1-1999 (R2013), *Guide to the sampling of alumina — Sampling procedures*

AS 4538.2-2000 (R2013), *Guide to the sampling of alumina — Preparation of samples*