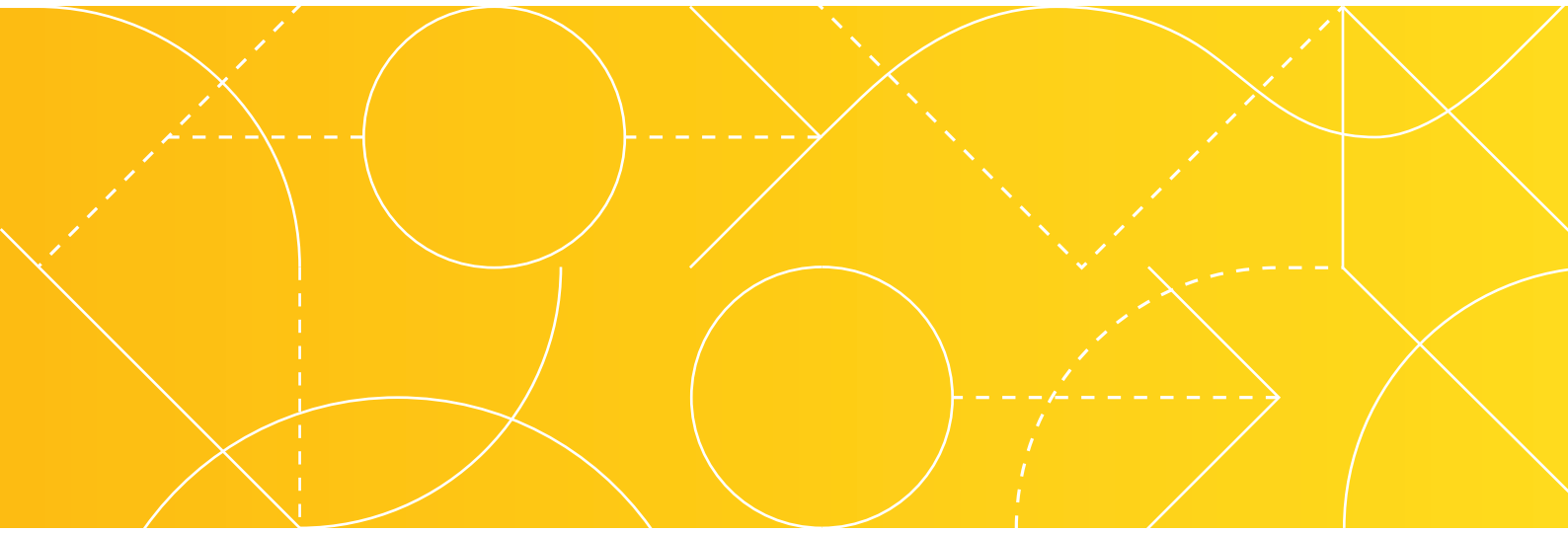
AS 5381:2026

Australian STANDARD®

Standards Australia

Aluminium ores and bauxite residues — Determination of elemental composition by wavelength dispersive X-ray spectrometry



AS 5381:2026

This Australian Standard® was prepared by MN-003, Aluminium Ores. It was approved on behalf of Standards Australia's Standards Development and Accreditation Committee on 26 October 2026.

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Aluminium ores and bauxite residues — Determination of elemental composition by wavelength dispersive X-ray spectrometry

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How to read this Standard

This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

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Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee MN-003, Aluminium Ores, to supersede AS 2564—1982, *Aluminium ores — Determination of aluminium, silicon, iron, titanium and phosphorus contents — Wavelength dispersive X-ray fluorescence spectrometric method*.

The objective of this document is to provide testing laboratories with a method for undertaking an elemental analysis of aluminium ores and bauxite residues by wavelength dispersive X-ray fluorescence spectrometry (XRF).

This document aligns with the AS 2932 series in its focus on the chemical analysis of aluminium ores; however, it addresses different analytical determinations and is therefore distinct from the AS 2932 Standards. None of the AS 2932 series make up part of this document.

A list of all parts in the AS 2932 series can be found in the Standards Australia online catalogue.

The major changes in this edition are as follows:

(a) Update on previously provided information in AS 2564 to reflect modern instrumentation and preparation of equipment.

(b) Increase in the total number of elemental oxides analysed to 16.

(c) Update on previously provided information in AS 2564 using the “quench press” method to sample preparation via borate fusion.

(d) Inclusion of Bayer process residue analysis within the document.

(e) Removal of previously provided information for data assessment in AS 2564 where a “computer program” was needed for data assessment.

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Australian Standard®

Aluminium ores and bauxite residues — Determination of elemental composition by wavelength dispersive X-ray spectrometry

Section 1 Scope and general

1.1 Scope

This document specifies a method for the elemental analysis of aluminium ores and bauxite residues using wavelength dispersive X-ray fluorescence spectrometry, with samples prepared by borate fusion.

The objective of this document is to provide testing laboratories with a method for undertaking an elemental analysis of aluminium ores and bauxite residues by wavelength dispersive X-ray fluorescence spectrometry (XRF).

The following elements are determined: aluminium, silicon, iron, titanium, calcium, sodium, vanadium, chromium, sulfur (excluding sulfides), potassium, gallium, zirconium, zinc, manganese, phosphorus and magnesium. The components are reported as the oxide form of the element (Al_2O_3, SiO_2, Fe_2O_3, TiO_2, CaO, Na_2O, V_2O_5, Cr_2O_3, SO_3, K_2O, Ga_2O_3, ZrO_2, ZnO, MnO, P_2O_5 and MgO).

1.2 Application

This method of test has been designed to be applicable to ores that have high and variable ignition losses, and is equally applicable to all normal aluminium ores regardless of mineralogical type (gibbsitic, boehmitic and diasporic aluminium ores), and bauxite residues from various initial sources. The method is intended for persons competent in the operation and calibration of wavelength dispersive X-ray fluorescence spectrometers. See Table 1 for the concentration range of components.

Table 1 — Concentration range of components

Component	Calibration range, percent
Al_2O_3	5–75
SiO_2	2–30
Fe_2O_3	5–67
TiO_2	2–13
CaO	0–15
Na_2O	0–22
V_2O_5	0–1
Cr_2O_3	0–1
SO_3	0–1
K_2O	0–1
Ga_2O_3	0–1
ZrO_2	0–1
ZnO	0–1
MnO	0–1
P_2O_5	0–1
MgO	0–1

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