

## Aluminium Ore (Bauxite) Procedures

The internationally recognized method for the analysis of major and minor elements in bauxite is X-Ray Fluorescence (XRF). Finely pulverised samples are decomposed using a lithium borate fusion technique and the resultant glass disc is analyzed by wavelength dispersive XRF. XRF instrumentation is extremely stable and provides high accuracy and precision. Bauxite ore is typically very hygroscopic and therefore Loss on Ignition (LOI) determination and moisture correction is an important part of the analysis. Results are reported on a dry weight (110°C) basis by default.

ANALYTES & RANGES (ppm)				DESCRIPTION	CODE
Al <sub>2</sub> O <sub>3</sub>	0.01-100	P <sub>2</sub> O <sub>5</sub>	0.01-23	Fused disc XRF	ME-XRF13n (normalized)  ME-XRF13u (un-normalized)
BaO	0.01-10	SiO <sub>2</sub>	0.01-100		
CaO	0.01-40	SO <sub>3</sub>	0.01-12.5		
Cr <sub>2</sub> O <sub>3</sub>	0.01-10	SrO	0.01-1.5		
Fe <sub>2</sub> O <sub>3</sub>	0.01-100	TiO <sub>2</sub>	0.01-30		
K <sub>2</sub> O	0.01-6.3	V <sub>2</sub> O <sub>5</sub>	0.01-8		
MgO	0.01-40	Zn	0.01-1.6		
MnO	0.01-31	ZrO <sub>2</sub>	0.01-1.5		
Na <sub>2</sub> O	0.01-5.3				
Loss on Ignition					
Loss on Ignition				Thermogravimetric Analyzer (TGA)	OA-GRA05t

### Reactive Silica and Available Alumina

The reactive silica and available alumina, determined using pressure controlled caustic leach at elevated temperature, provide important information on the economic extractability of the ore using the Bayer process.

ANALYTES (%)	DESCRIPTION	CODE
Total Organic Carbon (Non Carbonate Carbon)	TOC by LECO.	C-IR17
Reactive Silica Available Alumina	Microwave digestion, chemical separation/ICP-AES analysis.*	Si-LICP01 Al-LICP01

### Screening and Beneficiation

ALS Minerals can conduct multi screen sizing and subsequent analysis of the size fractions to determine the optimum screen size for bauxite recovery. ALS Minerals can also conduct the subsequent wet beneficiation using the selected single screen.

SAMPLE PREPARATION	DESCRIPTION	CODE
Attrition Testing	Client specific procedure.	n/a
Wet Beneficiation using a single screen	Wet screening using 600mm diameter Kason Screen	Various depending on screen size requested
Multiple Screen Analysis Screens available: 300µm 1200µm 2500µm 600µm 1700µm 7000µm 900µm 1900µm 9600µm	Wet screening using multiple 600mm diameter Kason Screens.	SCR-34
Moisture Content (%)	Gravimetric determination.	OA-GRA05g
Pulverize sub-sample	Prepare <1kg sub-sample for analysis.	PUL-32

\*Additional costs apply to recovery of fines from beneficiated sample.

\*\* Percentage recovery reported under relevant screen code.