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YS

**NONFERROUS METALS INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

YS/T 575.23-2021

**Methods for chemical analysis of bauxite - Part 22:
Determination of element content - X-ray fluorescence
spectrometry**

铝土矿石化学分析方法 第23部分：元素含量的测定 X射线荧光光谱法
(English Translation)

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Foreword

This document was drafted in accordance with the provisions of GB/T 1.1-2020

"Directives for standardization - Part 1.Rules for the structure and drafting of standardizing documents".

This document is Part 23 of YS/T 575 "Methods for chemical analysis of bauxite". YS/T

575 has published the following parts.

- Part 1.Determination of aluminium oxide content EDTA titrimetric method;
- Part 2.Determination of silicon dioxide content - Gravimetric-molybdenum blue photometric method;
- Part 3.Determination of silicon dioxide content molybdenum blue photometric method;
- Part 4.Determination of iron oxide content - Dichromate titrimetric method;
- Part 5.Determination of iron oxide content - Orthophenanthroline photometric method;

- Part 6.Determination of titanium dioxide content - Diantipyrylmethane photometric method;
- Part 7.Determination of calcium oxide content - Flame atomic absorption spectrophotometric method;
- Part 8.Determination of magnesium oxide content - Flame atomic absorption spectrophotometric method;
- Part 9.Determination of potassium oxide and sodium oxide content - Flame atomic absorption spectrophotometric method;
- Part 10.Determination of manganese oxide content - Flame atomic absorption spectrophotometric method;
- Part 11.Determination of chromium oxide content - Flame atomic absorption spectrophotometric method;
- Part 12.Determination of vanadium pentoxide content - N-benzoy-N-phenylhydroxylamine photometric method;
- Part 13.Determination of zinc content flame - Atomic absorption spectrophotometric method;
- Part 14.Determination the total content of rare earth oxide - Tribromo-arsenazo photometric method;
- Part 15.Determination of gallium oxide content - Rhodamine B-extraction photometric method;
- Part 16.Determination of phosphorus pentoxide content - Molybdenum blue spectrophotometric method;
- Part 17.Determination of sulfur content - Direct combustion-iodometric method;
- Part 18.Determination of total carbon content - Non-aqueous titrimetric method after combustion;
- Part 19.Determination of the loss on ignition Gravimetric method;
- Part 20.Preparation of pre-dried sample;
- Part 21.Determination of organic carbon content titrimetric method;

- Part 22.Determination of hygroscopic moisture on gravimetric method;
- Part 23.Determination of element contents - X-ray fluorescence spectrometric method;
- Part 24.Determination of carbon content and sulfur content - Infrared absorption method;
- Part 25.Determination of sulfur content - Coulometric titration method.

This document replaces YS/T 575.23-2009 "Methods for chemical analysis of bauxite

- Part 23.Determination of element contents - X-ray fluorescence spectrometry method". Compared with YS/T 575.23-2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

a) MODIFY the measurement range of "Al₂O₃" content (see Chapter 1; Chapter 1 of the 2009 edition);

b) MODIFY the measurement range of "S" content (see Chapter 1; Chapter 1 of the **2009 edition**);

c) DELETE the "correction factor" of flux (see 3.1.2 of the 2009 edition);

d) ADD the pre-oxidant "lithium nitrate" (see 5.2.2);

e) MODIFY the "sample" (see Chapter 7; Chapter 5 of the 2009 edition);

f) MODIFY the "test material" (see 8.2; Chapter 6.2 of the 2009 edition);

g) ADD the "high temperature muffle furnace" (see 6.6);

h) ADD the detection method of "high sulfur content sample" (see 8.2.2);

i) MODIFY the test data processing (see Chapter 9; Chapter 7 of the 2009 edition);

j) ADD the "test report" (see Chapter 11).

Please note that some contents of this document may involve patents. The issuing agency of this document does not assume the responsibility for identifying patents.

This document was proposed by AND shall be under the jurisdiction of the National Technical Committee for Standardization of Nonferrous Metals (SAC/TC 243).

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Chinalco Mining Co., Ltd., Shandong Nanshan Aluminum Co., Ltd., Guangdong Academy of Sciences Industrial Analysis and Testing Center, Shimadzu Enterprise Management (China) Co., Ltd.

1 Scope

This document specifies the determination method of aluminum oxide, silicon dioxide, total iron (expressed as Fe_2O_3), titanium dioxide, potassium oxide, sodium oxide, calcium oxide, magnesium oxide, phosphorus pentoxide, manganese oxide, sulfur, vanadium, gallium, zinc in bauxite.

This document is applicable to the determination of aluminum oxide, silicon dioxide, total iron (expressed as Fe_2O_3), titanium dioxide, potassium oxide, sodium oxide, calcium oxide, magnesium oxide, phosphorus pentoxide, manganese oxide, sulfur, vanadium, gallium, zinc in bauxite. The determination range is as shown in Table 1.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, for dated references, only the version corresponding to that date applies to this document; for undated

Composition Determination range % Composition

Determination range

references, the latest version (including all amendments) applies to this document.

GB/T 8170 Rules of rounding off for numerical values and expression and

judgement of limiting values

YS/T 575.19 Methods for chemical analysis of bauxite - Part 19.Determination of loss on ignition - Gravimetric method

3 Terms and definitions

There are no terms and definitions that need to be defined in this document.