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YS

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

YS/T 514.5-2009

Replacing YS/T 514.8-2006

**Methods for chemical analysis of high titanium slag and rutile.
Part 5: Determination of aluminium oxide content. EDTA
titration**

高钛渣、金红石化学分析方法 第5部分：氧化铝量的测定 EDTA滴定法(有黑印，
不清晰)

(English Translation)

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Foreword

YS/T 514 "high titanium slag and rutile chemical analysis method" is divided into 10 parts.

- Part 1. Determination of titanium dioxide content of ammonium ferric sulfate titration;
- Part 2. Determination of total iron content of dichromate method;
- Part 3. Determination of sulfur content of high frequency infrared absorption method;
- Part 4. Determination of the amount of silica weighing method, the molybdenum blue spectrophotometric method;
- Part 5. aluminum oxide content - EDTA titration;
- Part 6. Determination of a manganese oxide content by flame atomic absorption spectrometry;
- Part 7. calcium oxide, magnesium oxide content - Flame atomic absorption spectrometry;
- Part 8. Determination of the amount of phosphorus antimony molybdenum blue spectrophotometric method;
- Part 9. calcium oxide, magnesium oxide, manganese oxide, phosphorus, chromium oxide and vanadium pentoxide content - Inductively coupled plasma Daughters emission spectrometry;
- Part 10. Determination of the amount of carbon frequency infrared absorption method.

This section YS/T 514 Part 5.

The partial replacement of YS/T 514.8-2006 "high titanium slag and rutile chemical analysis method EDTA volumetric method for the determination of aluminum oxide content." this portion of YS/T 514.8-2006 compared to the main changes are as follows.

- Dissolving a sample used in part to nickel-silver crucible, the molten sample of sodium hydroxide to sodium hydroxide - sodium peroxide melt Financial sample;

--- Will melt by the time 10min ~ 15min to 8min ~ 10min;

--- The sample weight 0.4000g constant volume to 200mL sample weight 0.2000g volume to 100mL;

--- Increasing the repeatability limit test as well as increased quality assurance and control provisions.

The non-ferrous metal part by the National Standardization Technical Committee and centralized.

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1 Scope

YS/T 514 This part provides high titanium slag and rutile alumina contents.

This section applies to high titanium slag and rutile measured in the amount of alumina, the measurement range of 0.50% to 5.00%.

2 Method summary

Sample with molten sodium hydroxide, dilute hydrochloric acid leaching.

Hexamethylenetetramine precipitation of aluminum, titanium and iron, and magnesium, calcium and manganese and other elements separated and removed.

The precipitate ashed low temperature, then sodium hydroxide melting, hot water leaching. Titanium and other elements are separated and removed. Pipette part of the test solution, the weak acid solution, Addition of excess EDTA complexed aluminum. At about pH6.0, xylenol orange as indicator, with zinc standard solution titration of excess EDTA. However After substitution with sodium fluoride complexes of EDTA, then zinc standard solution titration, thus determined amount of alumina.

Tin content less than 0.2mg, chromium content of less than 1mg, vanadium content is less than 0.05mg does not affect the determination. When V is greater than 0.05mg, sulfuric acid Ferrous ammonium eliminate interference.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled or deionized water or equivalent purity.

3.1

Sodium hydroxide (excellent pure).

3.2

sodium peroxide.

3.3

ethanol.

3.4

Ammonia (rho about 0.90g/mL).

Ammonia 3.5 (1 + 1).

3.6

HCl (1 + 1).

3.7

hexamethylenetetramine solution (250g/L).

Ammonium chloride solution was washed with 3.8 (20g/L). Each wash solution was added 100mL of 1 to 2 drops of ammonia (3.5).

3.9

ferrous ammonium sulfate solution (1g/L). The time is now equipped with.

3.10

disodium ethylenediamine tetraacetate (EDTA) solution (0.02mol/L). Weigh 3.72g disodium edetate ($\text{Na}_2\text{C}_{10}\text{H}_{16}\text{O}_8\text{N}_2 \cdot 2\text{H}_2\text{O}$), was dissolved in 1000mL of water, and mix.

3.11

methyl orange solution (1g/L).

3.12

XO solution (2g/L). Store in a brown bottle, effective within a week.

3.13

sodium fluoride solution (40g/L).

3.14

acetic acid - ammonium acetate buffer solution ($\text{pH}6.0 \pm 0.2$). Weigh 300g ammonium acetate were dissolved in 500mL water, filtered, added 12.3mL Glacial acetic acid diluted with water to 1000mL, and mix. (With a pH meter calibration).

3.15

Zinc Standard Solution (0.01000mol/L). Weigh 1.6276g of zinc oxide (spectroscopically pure), placed in 300mL beaker with water Wetting, was added 20mL of hydrochloric acid (3.6), was slowly dissolved by heating, and evaporated to a volume of about 3mL ~ 5mL, moved 2000mL volumetric flask Added (2-3) drops of methyl orange solution (3.11), was slowly dropping ammonia (3.5) until the solution was yellow, then dropping hydrochloric acid (3.6) until the solution was red Color and excess (5-6) drops, dilute with water to volume, and mix.