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YS

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

YS/T 514.2-2009

Replacing YS/T 514.2-2006

**Methods for chemical analysis of high titanium slag and rutile.
Part 2: Determination of total iron content. Potassium
dichromate titration**

高钛渣、金红石化学分析方法 第2部分：全铁量的测定 重铬酸钾滴定法
(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 2.

The partial replacement of YS/T 514.2-2006 "high titanium slag, the determination of total iron content of rutile potassium dichromate volumetric method for chemical analysis." this portion of YS/T 514.2-2006 compared to the main changes are as follows.

- Adjust measurement range from 1.00% - 15.00% 0.40% 15.00%;

--- Increasing the repeatability limit and 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, the determination of total iron content of rutile.

This section applies to high titanium slag, the determination of total iron content of rutile. Measuring range. 0.40% to 15.00%.

This section does not apply to the determination of copper greater than 1.5% of total iron content of the sample.

2 Method summary

Sample with sodium peroxide melt in hydrochloric acid medium, stannous chloride and hydrogen peroxide decomposition titanium complex generated while the majority Fe (III) reduction of iron (II). Sodium tungstate as an indicator of titanium trichloride Restore the remaining iron (III), further reduction of tungstate to generate Tungsten blue, then a solution of potassium dichromate solution to the disappearance of the blue. Addition of sulfuric acid - phosphoric acid mixture, diphenylamine sulfonate as indicator with dichromate Potassium Standard Solution titration.

3 Reagents

Unless otherwise indicated, the analysis confirmed that only the use of analytical reagents and distilled or deionized water or equivalent purity.

3.1

sodium peroxide.

3.2

HCl (1 + 1).

Hydrochloride 3.3 (1 + 4).

3.4

sulfuric acid - phosphoric acid mixed. A 150mL sulfuric acid (rho1.84g/mL) slowly injected

into 700mL of water, cooled to room temperature, 150mL Phosphoric acid ($\rho=1.70\text{g/mL}$), and mix.

3.5

Stannous chloride solution. Weigh 10g of stannous chloride ($\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$) was dissolved in 10mL hot hydrochloric acid ($\rho=1.19\text{g/mL}$), and diluted with water Diluted to 100mL. filter. When formulated with now.

3.6

potassium permanganate solution (25g/L).

3.7

sodium tungstate solution. Weigh 25g of sodium tungstate ($\text{Na}_2\text{WO}_4 \cdot 2\text{H}_2\text{O}$) was dissolved in an appropriate amount of water, add 10mL phosphate ($\rho=1.70\text{g/mL}$), with Diluted with water to 100mL. filter.

3.8

titanium trichloride solution. Take 1 part of titanium trichloride solution (commercially available) and 9 parts of hydrochloric acid (5 + 95) and mix. Add a layer of liquid paraffin protection.

3.9

diphenylamine solution of sodium (2g/L).

3.10

ferrous ammonium sulfate solution (about 0.03mol/L). Weigh 11.8g of ferrous ammonium sulfate $[(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}]$, dissolved Sulfuric acid (5 + 95), and transferred to 1000mL volumetric flask, then sulfuric acid (5 + 95) diluted to the mark. Mix well.

3.11

potassium dichromate standard titration solution A ($\text{Ba K}_2\text{Cr}_2\text{O}_7 = 0.002500\text{mol/L}$). Weigh 1.4709g reference reagent potassium dichromate (previously Cooled at 150 °C drying 2h, and placed in a desiccator to room temperature), dissolved in an appropriate amount of water, transferred to 2000mL volumetric flask, dilute to the mark with water degree. Mix well.

3.12

potassium dichromate standard titration solution B ($\text{Ba K}_2\text{Cr}_2\text{O}_7 = 0.005000\text{mol/L}$). Weigh 2.9418g reference reagent potassium dichromate (previously Cooled at 150 °C drying 2h, and placed in a desiccator to room temperature), dissolved in an appropriate amount of water, transferred to 2000mL volumetric flask, dilute to the mark with water Degree, and mix.

4 Sample

4.1

Sample size should be less than 90 μ m.