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**YS**

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

**YS/T 514.3-2009**

Replacing YS/T 514.5-2006; YS/T 514.6-2006

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**Method for chemical analysis of high-titanium slag and rutile.  
Part 3: Determination of sulfur content. High frequency infrared  
absorption method**

高钛渣、金红石化学分析方法 第3部分：硫量的测定 高频红外吸收法  
**(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 3.

The partial replacement of YS/T 514.5-2006 "high titanium slag and rutile chemical analysis of combustion - iodometric determination of sulfur content Law" and YS/T 514.6-2006 "high titanium slag and rutile determination of sulfur content Methods for chemical analysis of barium sulfate gravimetric method." this portion of YS/T 514.5-2006 and YS/T 514.6-2006 compared to the main changes are as follows.

--- High frequency infrared absorption spectrometry determination of sulfur content;

--- Increasing the repeatability limit and quality assurance and control provisions.

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

This section is responsible for drafting unit. Zunyi Titanium Co., Ltd., China Nonferrous Metals Industry Standards and Metrology Institute for Quality.

Participated in the drafting of this section. Jinchuan Group Co., Ltd. Fushun Titanium.

## 1 Scope

YS/T 514 This part provides high titanium slag and rutile in the determination of sulfur content.

This section applies to high titanium slag and rutile in the determination of sulfur content measurement range. 0.0010% to 0.40%.

## 2 Method summary

Sample in the presence of a suitable amount of flux, which leads to oxygen in a high frequency induction furnace combustion. In a sample of sulfur in the form of SO<sub>2</sub> release Place, and with the carrier gas flowing through the oxygen tank SO<sub>2</sub> infrared detector cell, the detection cell is detected by measuring the concentration of SO<sub>2</sub> in the energy change.

## 3 Reagents and materials

### 3.1

tungsten particles. particle size of 0.4mm ~ 0.8mm, a sulfur content of 99.5%.

### 3.5

fiber cotton.

### 3.6

porcelain crucible. 25mm x 25mm or 24mm x 24mm, before use 2h 1000 °C calcined in a muffle furnace.

### **3.7**

Standard sample. 0.0010% sulfur content 0.40%.

## **4 Instrument**

High-frequency infrared carbon and sulfur analyzer.

## **5 Sample**

### **5.1**

Sample size should be less than 90 $\mu$ m.

### **5.2**

Sample required at 105 °C ~ 110 °C drying 2h, placed in a desiccator to cool to room temperature.

### **5.3**

There should be a sample of oil, grease and other contaminants.

## **6 Measuring step**

### **6.1**

Switch on the instrument, preheat 10min after viewing the relevant instrument parameters, confirm the determination to meet the requirements of the instrument.

### **6.2**

Weigh 1.5g of tungsten particles (3.1), placed in a crucible (3.6), the determination is repeated more than four times, setting a blank after completion.

6.3 0.1g weighed (accurate to 0.001 g of) standard samples (3.7), placed in a crucible (3.6) was added 1.5g tungsten particles (3.1) uniformly covered in the standard (3.7) surface was measured. More than four times repeated measurements, carried out after the standard setting.

6.4 0.1g weighed (accurate to 0.001 g of) sample (5) placed in a crucible (3.6) was added 1.5g tungsten particles (3.1) evenly covering the sample the surface was measured. Repeat 2 more times measured and averaged.

### **7.1 Repeatability**

Two measured values independent test results obtained under repeatability conditions, given below in the average range, these two test results