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**YS**

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

**YS/T 227.7-2010**

Replacing YS/T 227.7-1994

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**Methods for chemical analysis of tellurium. Part 7:  
Determination of sulphur content. Inductively coupled  
plasma-atomic emission spectrometry**

碲化学分析方法 第7部分：硫量的测定电感耦合等离子体原子发射光谱法  
**(English Translation)**

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### Foreword

YS/T 227 "tellurium chemical analysis methods," a total of 12 parts.

- Part 1. Determination of bismuth content hydride generation - atomic fluorescence spectrometry;
- Part 2. Determination of aluminum content Chromazurol S- bromo cypyrindinium micellar solubilization spectrophotometry;
- Part 3. Determination of lead content by flame atomic absorption spectrometry;
- Part 4. Determination of iron content - Phenanthroline spectrophotometric method;
- Part 5. determination of selenium content of 2,3-diaminonaphthalene spectrophotometry;
- Part 6. Determination of copper content of solid-liquid separation - flame atomic absorption spectrometry;
- Part 7. Determination of sulfur content by inductively coupled plasma atomic emission spectrometry;
- Part 8. magnesium, sodium content - Flame atomic absorption spectrometry;
- Part 9. Determination of tellurium content of potassium dichromate - ammonium ferrous sulfate volumetric method;
- Part 10. Determination of arsenic content by hydride generation - atomic fluorescence spectrometry;
- Part 11. Determination of silicon content of n-butanol silicon molybdenum blue spectrophotometric method;
- Part 12. bismuth, aluminum, lead, iron, selenium, copper, magnesium, sodium, arsenic content - Inductively coupled plasma atomic emission spectrometry.

This is Part 7.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This part is the "determination of tellurium in sulfur content (barium sulfate turbidimetry)" YS/T 227.7-1994 revision. And YS/T 227.7-1994 Compared to the main changes are as follows.

- Changed the measurement method using inductively coupled plasma atomic emission spectrometry;
- Measurement range from 0.001% to 0.01% by the expansion of 0.0007% to 0.010%;
- Complements the precision, quality assurance and control provisions;
- Complements the "test report" requirement.

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized.

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## 1 Scope

YS/T of the provisions of the section 227 determination of tellurium in sulfur content.

This section applies to the determination of tellurium in sulfur content. Measurement range. 0.0007% to 0.01%.

## 2 Principle of the method

Sample decomposition with nitric acid and potassium chlorate, tellurium dioxide removed by hydrolysis. In acidic medium, the solution is introduced into the inductively coupled plasma Emission spectrometer to measure the spectral intensity of sulfur. According to the working curve, calculate the amount of sulfur.

## 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

potassium chlorate, pure class distinctions.

### 3.2

nitrate ( $\rho=1.42\text{g/mL}$ ), pure class distinctions.

### 3.3

nitric acid (11).

### 3.4

sulfur standard stock solution. Weigh 0.5435g reference reagent potassium (previously dried at  $120\text{ }^{\circ}\text{C}$  to constant weight), placed in 200mL beaker in, dissolved in water and transferred to 1000mL volumetric flask, dilute to the mark. This solution 1mL containing  $100\mu\text{g}$  sulfur.

### 3.5

sulfur standard solution. Pipette 20.00mL sulfur standard stock solution (3.4), placed in 200mL volumetric flask, dilute to the mark, shake uniform. This solution 1mL containing  $10\mu\text{g}$  sulfur.

## 4 Instrument

Inductively coupled plasma atomic emission spectrometer. The correlation coefficient of linear calibration curve must be greater than 0.999.

Inductively coupled plasma atomic emission spectrometer operating conditions refer to Table 1, the recommended analytical line of sulfur is 180.7nm.

Table 1 instrument reference operating conditions

|                 |                                 |                          |                    |
|-----------------|---------------------------------|--------------------------|--------------------|
| RF power/W      | auxiliary gas flow rate/(L/min) | fog chamber pressure/MPa | pump speed/(r/min) |
| exposure time/s | 0.5 0.2 12 010 1150             |                          |                    |

## 5 Sample

Sample size not greater than 0.25mm.