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YS

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

YS/T 227.3-2010

Replacing YS/T 227.3-1994

**Methods for chemical analysis of tellurium. Part 3:
Determination of lead content. Flame atomic absorption
spectrometry**

碲化学分析方法 第3部分铅量的测定 火焰原子吸收光谱法

(English Translation)

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Foreword

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

- Part 1. Determination of bismuth content hydride generation - atomic fluorescence spectrometry;
- Part 2. Determination of aluminum content Chromazurol S- bromo cypylridinium 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 3.

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

The partial replacement of YS/T 227.3-1994 "determination of tellurium in lead content (dithizone Extraction - photometric method)." versus YS/T 227.3-1994 compared, this section has the following changes.

- Changed the measurement method using flame atomic absorption spectrometry;
- 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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This part of the standard replaces the previous editions are.

- YS/T 227.3-1994;
- GB/T 2139-1980.

Methods for chemical analysis of tellurium Part 3. Determination of lead content Flame Atomic Absorption Spectrometry Warning. Use of this standard shall have a person experiences regular laboratory work. This standard does not point out all possible security issues.

Users have the responsibility to take appropriate safety and health practices and to ensure compliance with the conditions relevant national regulations.

1 Scope

YS/T of the provisions of section 227 of the method for the determination of tellurium in lead content.

This section applies to the determination of tellurium in lead content. Measurement range. 0.0005% to 0.0060%.

2 Principle of the method

Samples with hydrochloric acid, nitric acid dissolved, sulfurous acid - ascorbic acid will tellurite reduced to elemental tellurium, lead and elemental tellurium after separation, in

nitric acid medium Quality, the use of air - acetylene flame atomic absorption spectrometer measured at a wavelength of 283.3nm lead absorbance to a standard curve calculated the amount of lead.

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

hydrochloric acid ($\rho=1.19\text{g/mL}$), pure class distinctions.

3.2

nitrate ($\rho=1.40\text{g/mL}$), pure class distinctions.

3.3

sulfurous acid (sulfur dioxide containing not less than 6.0%).

3.4

hydrochloride (11).

3.5

nitric acid (11).

3.6

ascorbic acid solution (20g/L).

3.7

hydrochloride (298).

3.8

lead standard stock solution. Weigh 1.0000g metallic lead ($\geq 99.99\%$) in 200mL beaker, add 20mL of nitric acid (3.5), Low heat until dissolved completely, boil, get rid of nitrogen oxides, remove the cooled and transferred to 1000mL volumetric flask, dilute to the mark with water, mix uniform. This solution 1mL containing 1.0mg lead.

3.9

Lead standard solution. Pipette 10.00mL lead standard stock solution (3.8) in 100mL volumetric flask, dilute with water to volume, and mix.

This solution 1mL containing 100 μg lead.

4 Instrument

Atomic absorption spectrometer, with a lead hollow cathode lamp.

Under optimum working conditions for those who can reach the following indicators can be used.

--- Characteristic concentration. In line with the measurement of the sample solution matrix solution, characteristic concentration of lead should be less than 0.006 μ g/mL;

--- Precision. standard solution with the highest concentration of 10 times the absorbance measurements, the standard deviation should not exceed the average absorbance of 1.0%;

With the lowest concentration of standard solution (not "zero" concentration of the standard) measuring the absorbance of 10 times, the standard deviation should not exceed the maximum