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**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB/T 3260.8-2013**

Replacing GB/T 3260.9-2000

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**Methods for chemical analysis of tin -- Part 8: Determination of  
zinc content -- Flame atomic absorption spectrometric method**

锡化学分析方法 第8部分：锌量的测定 火焰原子吸收光谱法

**(English Translation)**

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### Foreword

GB/T 3260 "Methods for chemical analysis of tin" is divided into 14 parts.

- Part 1. Determination of copper content - Flame atomic absorption spectrometry;
- Part 2. Determination of iron content - 1,10-phenanthroline spectrophotometry;
- Part 3. Determination of bismuth content of potassium iodide spectrophotometric method and the flame atomic absorption spectrometry;
- Part 4. Determination of lead content by flame atomic absorption spectrometry;
- Part 5. Determination of antimony content - Malachite green spectrophotometry;
- Part 6. Determination of arsenic content - Malachite Green - arsenic heteropolyoxomolybdate spectrophotometry;
- Part 7. Determination of aluminum content electrothermal atomic absorption spectrometry;
- Part 8. Determination of zinc content - Flame atomic absorption spectrometry;
- Part 9. Determination of sulfur content of high frequency induction furnace combustion infrared absorption method;
- Part 10. Determination of cadmium content by flame atomic absorption spectrometry;
- Part 11. Determination of the amount of silver by flame atomic absorption spectrometry;
- Part 12. Determination of nickel content by flame atomic absorption spectrometry;
- Part 13. Determination of cobalt content by flame atomic absorption spectrometry;
- Part 14. Inductively coupled plasma atomic copper, iron, bismuth, lead, antimony, arsenic, aluminum, zinc, cadmium, nickel, cobalt and the amount of emitted light Spectroscopy.

This section GB/T 3260 Part 8.

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

This Part replaces GB/T 3260.9-2000 "chemical analysis of tin Determination of zinc content." this section compared with the GB/T 3260.9-2000, major technical changes as follows.

- Zinc mass fraction of 0.00020% - 0.00050% of the sample to increase sample weight 2g;
- Text format has been modified;
- Increasing the repeatability and reproducibility content.

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

This section is responsible for drafting unit. Yunnan Tin Group Co., Ltd., Guangxi China Tin Group Co., Ltd.

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Participated in the drafting of this section. Gaofeng Mining Co., Ltd., Beijing General Research Institute of Mining and Metallurgy.

## 1 Scope

GB/T 3260 provisions of this part of the tin-zinc flame atomic absorption spectrometric method for the amount.

This section applies to the determination of tin in zinc content. Determination of the range of 0.00020% to 0.0050%.

## 2 Method summary

Samples with hydrochloric acid, nitric acid dissolved completely after in sulfuric acid, hydrochloric acid - hydrobromide exclude a large number of tin. Hydrochloric acid - nitric acid medium mixing Quality, the use of air - acetylene flame atomic absorption spectrometer at a wavelength of 213.9nm, measuring absorbance of zinc.

## 3 Reagents

Unless otherwise indicated, used in the analysis confirmed only for the gifted class pure reagents and deionized water or equivalent purity.

**3.1**

hydrochloride (rho1.19g/mL).

Nitrate 3.2 (rho1.42g/mL).

**3.3**

sulfate (rho1.84g/mL).

**3.4**

hydrobromide (rho1.48g/mL).

**3.5**

sulfate (11).

**3.6**

hydrochloric acid - Mixed hydrobromic acid. hydrochloric acid hydrobromide (11).

**3.7**

hydrochloric acid - mixed nitric acid. hydrochloric acid, nitric acid (31), using now.

**3.8**

standard zinc stock solution. Weigh 0.1000g zinc metal ( $w_{Zn} \geq 99.99\%$ ) in 200mL beaker, add 20mL hydrochloric acid (11), completely dissolved by heating and then cooled, transferred to water 1000mL volumetric flask, was added 20mL of hydrochloric acid (3.1), diluted with water to the mark, Mixing, transferred to a plastic bottle storage solution 1mL containing 100 $\mu$ g zinc.

**3.9**

Zinc standard solution. Pipette 25.00mL standard zinc stock solution (3.8) in 250mL volumetric flask, was added 5mL hydrochloric acid (3.1), with Diluted with water to the mark, mix and transferred to a plastic bottle for storage. This solution 1mL containing 10 $\mu$ g zinc.

## **4 Instrument**

Atomic absorption spectrometer, with zinc hollow cathode lamp.

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

--- Characteristic concentration. a solution in the measurement matrix consistent solution, characterized in zinc concentration should be less than 0.011 $\mu$ 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 0.5% concentration of the standard average absorbance.

--- Linear curve. A standard curve is divided into five sections according to concentration, absorbance difference of the absorbance difference between the highest and the lowest segment