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

GB/T 3260.10-2013

Replacing GB/T 3260.11-2000

**Methods for chemical analysis of tin -- Part 10: Determination of
cadmium content -- Flame atomic absorption spectrometric
method**

(English Translation)

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Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagents
4 Instrument

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 10.

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

This part is GB/T 3260.11-2000 "chemical analysis of tin Determination of cadmium content," the amendment of this section and GB/T 3260.11-2000 compared to the main technical content changes are as follows.

--- Cadmium mass fraction 0.00001% 0.00010% of the sample to increase sample weight 5.0g;

--- Determination limit expanded from 0.0010% to 0.0020%;

--- 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.

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1 Scope

GB/T 3260 provisions of this part of the tin by flame atomic absorption spectrometry cadmium content method.

This section applies to the determination of tin in cadmium content. Determination of the range of 0.00001% to 0.0020%.

2 Method summary

Sample with dilute hydrochloric acid in the presence of a small amount of sulfuric acid, nitric acid dissolved in hydrochloric acid - hydrobromide exclude tin in hydrochloric acid - nitric acid, mixed media, Using air - acetylene flame atomic absorption spectrometry spectrometer wavelength 228.80nm at measuring the absorbance of cadmium.

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

hydrochloride ($\rho=1.19\text{g/mL}$).

Nitrate 3.2 ($\rho=1.42\text{g/mL}$).

3.3

sulfate ($\rho=1.84\text{g/mL}$).

3.4

hydrobromide ($\rho=1.48\text{g/mL}$).

3.5

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

3.6

sulfate (11).

3.7

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

3.8

cadmium standard stock solution. Weigh 0.5000g metal cadmium ($w_{\text{Cd}} \geq 99.99\%$) in 250mL beaker, add 10mL water, 8mL Nitric acid (3.2), cover the dish table, micro heat until completely dissolved, washed with water and dish table Beibi, cooling. Transferred to 500mL volumetric flask.

25mL of nitric acid (3.2), dilute to the mark and mix. This solution 1mL 1mg containing cadmium.

3.9

Cadmium standard solution. Pipette 5.00mL cadmium standard stock solution (3.8) in 500mL volumetric flask, was added 25mL of hydrochloric acid (3.1) to Dilute with water to volume, and mix. This solution 1mL containing 10 μg cadmium.

4 Instrument

Atomic absorption spectrometer, with a cadmium 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, characteristic concentration of cadmium should not exceed 0.0065 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 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