

ICS 77.120.70
CCS H 13

YS

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

YS/T 74.4-2010

Replacing YS/T 74.4-1994

**Methods of chemical analysis of cadmium. Part 4: Determination
of lead content. Flame atomic absorption spectrometry**

镉化学分析方法 第4部分：铅量的测定火焰原子吸收光谱法

(English Translation)

Issued on: November 22, 2010

Implemented on: March 1, 2011

Issued by: Ministry of Industry and Information Technology

Table of Contents

Foreword
1 Scope
2 Principle of the method
3 Reagents
4 Instrument

Foreword

YS/T 74-2010 "cadmium chemical analysis method" is divided into 11 parts.

--- Part 1. Determination of arsenic content by hydride generation - atomic fluorescence spectrometry;

--- Part 2. Determination of antimony content hydride generation - atomic fluorescence spectrometry;

--- Part 3. Determination of nickel content by electrothermal atomic absorption spectrometry;

--- Part 4. Determination of lead content by flame atomic absorption spectrometry;

--- Part 5. Determination of the amount of copper diethyl dithiocarbamate spectrophotometry lead;

--- Part 6. Determination of zinc content - Flame atomic absorption spectrometry;

--- Part 7. Determination of iron content of 1,10 phenanthroline spectrophotometry;

--- Part 8. Determination of thallium content of crystal violet spectrophotometry;

--- Part 9. Determination of tin content by hydride generation - atomic fluorescence spectrometry;

--- Part 10. Determination of the amount of silver by flame atomic absorption spectrometry;

--- Part 11. Inductively coupled plasma atomic arsenic, antimony, nickel, lead, copper, zinc, iron, thallium, tin and silver content of the emitted light Spectroscopy.

This is Part 4.

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

The partial replacement of YS/T 74.4-1994 "cadmium chemical analysis by flame atomic absorption spectrometric method for the determination of lead content," this part of the

original standard Quasi compared to the main changes are as follows.

- Text format has been modified;
- Complements the precision, quality assurance and control provisions;
- Increase the warning prompt;
- Increasing the test report clause.

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

This section is responsible for drafting unit. MCC Huludao Nonferrous Metals Group Co., Ltd.

Participated in the drafting of this section. Shenzhen Lingnan Nonferrous Metals Co., Ltd. Shaoguan Smelter, Zhuzhou Smelter Group Co. Shares the company, Henan Yuguang Gold & Lead Co., Ltd.

1 Scope

YS/T of the provisions of section 74 of the method for the determination of cadmium in lead content.

This section applies to the determination of cadmium in lead content. Measurement range. 0.0005% to 0.055%.

2 Principle of the method

Sample decomposition with nitric acid, ferric hydroxide as a carrier, co-precipitation of cadmium and enrichment of trace lead. In dilute nitric acid medium, using air - B Alkyne flame atomic absorption spectrometer to measure the absorbance at a wavelength of 283.3nm, the amount of lead is obtained using standard curve method. The amount of lead (wPb) $\geq 0.01\%$ of the sample, without co-precipitation and direct determination in dilute nitric acid medium.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled water or equivalent purity.

3.1

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

3.2

Ammonia (rho 0.90g/mL), pure class distinctions.

3.3

nitric acid (11).

3.4

ammonia (120).

3.5

ferric nitrate solution. Weigh 28.9g of ferric nitrate $[\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}]$ ($w_{\text{Pb}} \leq 0.0001\%$) was dissolved in 100mL nitric acid (1

27). This solution 1mL contains 40mg iron.

3.6

Cadmium matrix solution. Weigh 10.00g metal cadmium ($w_{\text{Cd}} \geq 99.99\%$ and $w_{\text{Pb}} \leq 0.0001\%$), placed in 400mL beaker, graded Was added 40mL of nitric acid (3.3), After vigorous reaction, the oxides of nitrogen purge heating, cooling. Transferred to 100mL volumetric flask, diluted with water to the mark, and mix. This solution 1mL containing 100mg cadmium.

3.7

lead standard stock solution. Weigh 1.0000g cleaned surface of metallic lead ($w_{\text{Pb}} \geq 99.99\%$) placed in 250mL beaker, add 20mL of nitric acid (3.3), is completely dissolved in a low temperature, nitrogen oxides rid boiling, remove the cooling. Moved into 1000mL volumetric flask with water Dilute to volume, and mix. This solution 1mL containing 1mg lead.

3.8

Lead standard solution. Pipette 50.00mL lead standard stock solution (3.7) in 500mL flask, add 10mL of nitric acid (3.3), 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, who can reach the following indicators are, can be used.