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

YS/T 74.3-2010

Replacing YS/T 74.3-1994

**Methods of chemical analysis of cadmium. Part 3: Determination
of nickel content. Electrothermal atomic absorption
spectrometry method**

镉化学分析方法 第3部分：镍量的测定电热原子吸收光谱法
(English Translation)

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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 3.

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

The partial replacement of YS/T 74.3-1994 "Methods for chemical analysis of cadmium dimethylglyoxime spectrophotometric determination of nickel content," this part of the

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

- Analytical methods to electrothermal atomic absorption spectrometry;
- 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.

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1 Scope

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

This section applies to the determination of cadmium in nickel content. Measurement range. 0.0004% to 0.010%.

2 Principle of the method

Sample dissolved in nitric acid, a volume of the test solution injected into the electrothermal atomizer with Zeeman effect atomic absorption spectrometer at a wavelength 232.0nm measured at an absorbance of nickel, content calculated by working curve method.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled water or equivalent purity. Containers are used in the experiments After soaking 12h, thoroughly washed with distilled water with nitric acid (3.3).

3.1

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

3.2

nitric acid (11).

3.3

nitric acid (199).

3.4

Nickel standard stock solution. Weigh 1.0000g of nickel ($w_{Ni} \geq 99.99\%$) in 100mL beaker, add 40mL of nitric acid (3.2) Table covered dish, heated to dissolve the low temperature, the removal of nitrogen oxides, was cooled, the solution is transferred 1000mL volumetric flask, with nitric acid (298) diluted to the mark, and mix. This solution 1mL containing 1.0mg nickel.

3.5

Nickel standard solution. Pipette 1.00mL Nickel standard stock solution (3.4) in 500mL volumetric flask, dilute with nitric acid (298) to the mark Degree, and mix. This solution 1mL containing 2.0 μ g nickel.

4 Instrument

4.1

graphite furnace atomic absorption spectrometer. with electrothermal atomizer, micro sampler or autosampler, nickel hollow cathode lamp and Zeeman effect Background correction devices.

4.2

by graphite furnace atomic absorption spectrometer should meet the following specifications.

--- Sensitivity. curve used in the arithmetic series of standard solution of greatest concentration, absorbance should not be less than 0.300.

--- Correlation coefficient curve is not less than 0.995.

--- Precision. standard solution with the highest concentration, the absorbance measured 10 times, calculate the mean and standard deviation. The standard deviation is not it should be more than 1.5% of the mean absorbance. With the lowest concentration of standard solution (standard solution concentration is not zero), measuring 10 times the absorbance, calculating the standard deviation. The standard deviation of the highest concentrations of the standard solution should not exceed the average absorbance 0.5%.