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

YS/T 74.7-2010

Replacing YS/T 74.7-1994

**Methods of chemical analysis of cadmium. Part 7: Determination
of iron content. 1, 10-Phenanthroline spectrophotometry**

镉化学分析方法 第7部分：铁量的测定1,10-二氮杂菲分光光度法

(English Translation)

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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 7.

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

The partial replacement of YS/T 74.7-1994 "cadmium chemical analysis of 1,10 phenanthroline spectrophotometric determination of the amount of iron", and this section Compared to the original standard, the main changes are as follows.

Extended --- limit the scope of analysis from the original 0.006 to 0.010%;

--- 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.

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1 Scope

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

This section applies to the determination of cadmium in iron content. Measurement range. 0.0005% to 0.010%.

2 Principle of the method

In hydrochloric acid (32) medium, with iso-amyl acetate extract trivalent iron to hydroxylamine hydrochloride solution back-extracted and reduced to divalent and large Cadmium and interfering elements separate, small amounts of other elements to interfere with disodium edetate masking. In acidic medium (pH5 ~ pH6), the di Valent iron with 1,10-phenanthroline to form a colored complex, in the spectrophotometer at a wavelength of 510nm, measured absorbance.

3 Reagents

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

3.1

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

3.2

hydrochloric acid (ρ 1.19g/mL), pure class distinctions.

3.3

sulfate (ρ 1.84g/mL), pure class distinctions.

3.4

isoamyl acetate.

3.5

Ammonia (ρ 0.90g/mL).

3.6

Hydrogen peroxide (30%).

3.7

nitric acid (11).

3.8

hydrochloride (11).

3.9

hydrochloride (32).

Sulfuric acid 3.10 (11).

3.11

ammonia (11).

3.12

hydroxylamine hydrochloride solution (20g/L).

3.13

ammonium acetate solution (400g/L).

3.14

disodium ethylenediaminetetraacetate solution (100g/L). Weigh 10g edetate disodium, is dissolved in water, a few drops of aqueous ammonia (3.5), Stir until completely dissolved, diluted with water to 100mL.

3.15 1,10-phenanthroline solution ($C_{12}H_8N_2 \cdot H_2O$) (5g/L). Weigh 0.5g 1,10-phenanthroline dissolved in water, adding a few drops of salt Acid (3.8), stirring until completely dissolved, diluted with water to 100mL.

3.16

iron standard stock solution. Weigh 0.1000g metallic iron ($w_{\text{Fe}} \geq 99.99\%$) sulfuric acid was added 10mL (3.10), a few drops of peroxide Hydrogen (3.6) and heated to dissolve completely. Cooled and transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution containing 1mL 100 μg iron.