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YS

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

YS/T 904.4-2013

**Methods for chemical analysis of iron-chromium-aluminum
fiber. Part 4: Determination of phosphorus content.
Molybdenum blue spectrophotometry**

铁铬铝纤维丝化学分析方法 第4部分：磷量的测定钼蓝分光光度法

(English Translation)

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Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagents
4 Instrument

Foreword

YS/T 904 "filament chemical analysis of iron chrome aluminum" is divided into five sections.

--- Part 1. Determination of nitrogen inert gas fusion thermal conductivity method;

--- Part 2. chromium, aluminum content - Inductively coupled plasma atomic emission spectrometry;

--- Part 3. silicon, manganese, titanium, copper, lanthanum, cerium content - Inductively coupled plasma atomic emission spectrometry;

--- Part 4. Determination of phosphorus content - Molybdenum blue spectrophotometric method;

--- Part 5. carbon, sulfur content was measured high-frequency combustion infrared absorption method.

This section YS/T Part 4 904.

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

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

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Iron chrome aluminum fiber filament chemical analysis Part 4. determination of phosphorus content Molybdenum blue spectrophotometric method

1 Scope

YS/T of the provisions of section 904 of the determination of iron chrome aluminum filaments of phosphorus content.

This section applies to the determination of iron chrome aluminum silk fiber phosphorus content measurement range from 0.001% to 0.050%.

2 Method summary

Sample by mixed acid is dissolved in nitric acid medium, the phosphorus and ammonium molybdate generate phosphorus molybdenum heteropoly acid may be butanol - chloroform extraction, chloride Stannous phosphorus molybdenum heteropoly acid reduction and back-extracted into the aqueous phase, at a wavelength of 680nm spectrophotometer measured absorbance.

3 Reagents

Unless otherwise indicated, this part of the reagents used were of analytical grade reagent water as a water or equivalent purity.

3.1

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

3.2

nitric acid ($\rho = 1.42\text{g/mL}$).

3.3

perchloric acid ($\rho = 1.67\text{g/mL}$).

3.4

ammonium molybdate solution (100g/L).

3.5

sodium nitrite solution (20g/L).

3.6

potassium permanganate solution (10g/L).

3.7

nitric acid (11), AR.

3.8

n-butanol - chloroform mixture (13).

3.9

mixed acid. 3 per unit volume of hydrochloric acid, nitric acid and 4 1 per unit volume per unit volume of water and mix.

3.10

stannous chloride solution (10g/L). 10g of stannous chloride dissolved in 80mL hydrochloric acid, dilute with water to 1000mL, the time is now equipped with.

3.11

P standard stock solution. Weigh in advance by 105 °C ~ 0.2195g 110 °C dried potassium dihydrogen phosphate in 250mL beaker, the lid on the surface of the dish, add 100mL water dissolved in the cold on a hot plate. Until dissolution is complete, add 10mL of nitric acid (3.2) and transferred to 1000mL Volumetric flask, dilute with water to volume, and mix. This solution 1mL containing 50µg phosphorus.

3.12

Phosphorus standard solution. Pipette 20.00mL phosphate standard stock solution (3.11) in 100mL volumetric flask, was added 5mL of nitric acid (3.2), Dilute with water to volume, and mix. This solution 1mL containing 10µg phosphorus.

4 Instrument

Spectrophotometer.