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YS

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

YS/T 904.2-2013

**Methods for chemical analysis of iron-chromium-aluminum
fiber. Part 2: Determination of chromium and aluminum content.
Inductively coupled plasma atomic emission spectrometry**

铁铬铝纤维丝化学分析方法 第2部分：铬、铝量的测定电感耦合等离子体原子发射光谱法

(English Translation)

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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 2 904.

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.

This section is drafted. West Co., Ltd., Northwest Nonferrous Metal Research Institute, Guangzhou Nonferrous Metal Research Institute of metal materials.

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Iron chrome aluminum fiber filament chemical analysis Part 2. chromium, aluminum contents -Inductively coupled plasma atomic emission spectrometry

1 Scope

YS/T of the provisions of section 904 of chromium, aluminum determination of the amount of iron chrome aluminum fiber yarn.

This section applies to the determination of iron chrome aluminum filaments in chromium, aluminum amount of chromium was measured in the range of 10.00% ~ 30.00%, measured in the range of aluminum 2.00% to 10.00%.

2 Method summary

With a mixed acid decomposition of sample. Solution directly to the argon plasma excitation source, subjected to spectral measurement, and calculate the chromium and aluminum content.

3 Reagents

Unless otherwise indicated, the reagents used in this section are the gifted class pure reagents, water as a water or equivalent purity.

3.1

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

3.2

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

3.3

hydrochloride (11).

3.4

mixed acid. 3 per unit volume of nitric acid, hydrochloric acid and 5 2 unit volume per unit volume of water and mix.

Argon 3.5 volume fraction $\geq 99.995\%$.

3.6

Chromium standard solution. Weigh 2.8289g baseline potassium dichromate (advance after 150 °C drying 1h, placed in a desiccator, cooled to room Temperature), placed in 300mL beaker, covered with a watch glass was dissolved in water, was added 200mL low electric plate, to be dissolved completely shifted into the 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL containing 1.0mg of chromium.

3.7

aluminum standard solution. Weigh 1.0000g of aluminum (mass fraction of greater than 99.99%), placed in 500mL beaker, add 100mL Hydrochloric acid (3.3) in the

low-temperature hot plate heated and dissolved until completely dissolved and then cooled to room temperature, transferred to 1000mL volumetric flask, dilute to Volume, and mix. This solution 1mL containing 1.0mg aluminum.

4.1 Inductively coupled plasma atomic emission spectrometer

At 200nm spectral resolution should be less than 0.01nm.

4.2 Determination of conditions and analytical instrument lines (recommended)

Measurement conditions. RF power 1.1kW; cooling gas flow rate. 20L/min; nebulizer. 53PSI; Lift solution. 1.4mL/min; Points Time. 10s; observation. vertical; analytical line. Cr267.716nm; Al308.215nm.