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YS

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

YS/T 539.10-2009

Replacing YS/T 539.10-2006

**Method for chemical analysis of nickel base alloy powder. Part
10: Determination of molybdenum content. Thiocyanate
spectrophotometry**

镍基合金粉化学分析方法 第10部分：钼量的测定硫氰酸盐分光光度法
(English Translation)

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Foreword

YS/T 539 "nickel-based alloy powder chemical analysis method" is divided into 13 parts.

- Part 1. Determination of the amount of boron acid-base titration;
- Part 2. Determination of the amount of chrome aluminum Azure S Spectrophotometry;
- Part 3. Determination of silicon content of perchloric acid dehydration gravimetric method;
- Part 4. Determination of chromium content of ammonium persulfate oxidation titration;
- Part 5. Determination of manganese content of sodium periodate (K) oxidation spectrophotometry;
- Part 6. Determination of iron content of titanium trichloride - potassium dichromate titration;
- Part 7. Determination of cobalt content nitroso R salt spectrophotometric method;
- Part 8. Determination of copper content Neocuproine - chloroform extraction spectrophotometric method;
- Part 9. Determination of copper content of sodium thiosulfate iodometry;
- Part 10. Determination of molybdenum content - Thiocyanate spectrophotometric method;
- Part 11. Determination of cinchonine gravimetric method tungsten content;
- Part 12. Determination of phosphorus content of n-butyl alcohol - chloroform extraction spectrophotometric method;

--- Part 13. Determination of oxygen pulse heating inert gas fusion - infrared absorption method.

This section is YS/T 539 Part 10.

The partial replacement of YS/T 539.10-2006 "nickel-based alloy powder chemical analysis Thiocyanate spectrophotometric determination of molybdenum content." this portion of YS/T 539.10-2006 phase comparator major changes are as follows.

--- Increasing the foreword;

--- Complements the repeatability limit.

The non-ferrous metal part by the National Standardization Technical Committee and centralized.

This section is responsible for drafting unit. Beijing Nonferrous Metal Research Institute, China Nonferrous Metals Industry Institute of Standards and Metrology and Quality.

This section is drafted. Beijing Nonferrous Metal Research Institute, Steel Research Institute.

1 Scope

YS/T 539 This part specifies the method for determination of nickel-base alloy powder molybdenum content.

This section applies to the determination of nickel base alloy powder of molybdenum content in the measurement range. 0.5% to 5%.

2 Method summary

Sample in acid dissolved in sulfuric acid medium with ascorbic acid reducing pentavalent molybdenum, with thiocyanate generated orange-red complex in 470nm wavelength spectrophotometer measured absorbance.

3 Reagents

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

3.1

hydrochloride (ρ 1.19g/mL).

Nitrate 3.2 (ρ 1.42g/mL).

3.3

Hydrofluoric acid ($\rho=1.15\text{g/mL}$).

3.4

sulfate (1 + 1).

3.5

phosphoric acid (1 + 1).

3.6

ammonium thiocyanate solution (100g/L).

3.7

ascorbic acid solution (100g/L), the time is now equipped with.

3.8

ferric sulfate solution (5g/L). Weigh 0.5g ferric sulfate [$\text{Fe}_2(\text{SO}_4)_3 \cdot x\text{H}_2\text{O}$] was dissolved in water, add 10mL sulfuric acid (3.4), washed with water Diluted to 100mL.

3.9

Molybdenum standard stock solution. Weigh 0.2000g pure molybdenum ($\text{Mo} \geq 99.9\%$) placed in 250mL beaker, add 20mL sulfuric acid (3.4), in the case of heating, a solution of nitric acid was dissolved and heating was continued to take fuming sulfuric acid. Cooling, 20mL of water was added and heated to dissolve the salt. Moved 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL containing 200 μg molybdenum.

3.10

Molybdenum standard solution. Pipette 25.00mL molybdenum standard storage solution in 100mL volumetric flask, dilute with water to volume, and mix. this 1mL solution containing 50 μg molybdenum.

4 Instrument

Spectrophotometer.

5.1 Sample

Weigh 0.10g ~ 0.50g sample, accurate to 0.0001g.

5.2 Determination of the number of Independently measured twice and averaged.

5.3 Blank test

Along with sample blank test.