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YS

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

YS/T 358.6-2011

Replacing YS/T 358-1994

**Methods for chemical analysis of tantalite, columbite
concentrate. Part 6: Determination of thorium oxide content.
Inductively coupled plasma atomic emission spectrometry**

钽铁、铌铁精矿化学分析方法 第6部分：氧化钍量的测定电感耦合等离子体发射
光谱法

(English Translation)

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Foreword

YS/T 358 "tantalum iron, niobium iron concentrate chemical analysis method" includes 12 parts.

- Part 1. Determination of tantalum and niobium content Paper color layer weight method;
- Part 2. Determination of titanium dioxide - Amipyridine methane spectrophotometric method;
- Part 3. Determination of silicon dioxide - Mo - Mo - blue spectrophotometric and gravimetric methods;
- Part 4. Determination of tungsten trioxide - Thiocyanate spectrophotometric method;
- Part 5. Determination of uranium content - Inductively coupled plasma - atomic emission spectrometry;
- Part 6. Determination of thorium oxide - Inductively coupled plasma - atomic emission spectrometry;
- Part 7. Determination of iron content - Inductively coupled plasma - atomic emission spectrometry;
- Part 8. Determination of iron content - Potassium dichromate titration;
- Part 9. Determination of antimony content - Inductively coupled plasma - atomic emission spectrometry;
- Part 10. Determination of tin content Potassium iodate titration;
- Part 11. Determination of manganese content - Atomic absorption spectroscopy;
- Part 12. Determination of wet water content - Weight method.

This section is part 6 of YS/T 358.

This part of the replacement of YS/T 358-1994 "tantalum iron, niobium iron concentrate chemical analysis method" (formerly YB874-76) Section VII "thorium dioxide Amount of determination (arsenazo III colorimetric method) ".

The main changes in this part compared with Part 7 of the YS/T 358-1994 are as follows.

Inductively Coupled Plasma Emission Spectroscopy Instead of Arsenazo III Colorimetry.

This part is the national nonferrous Metals Standardization Technical Committee (SAC/TC243).

This part of the drafting unit. Ganzhou Nonferrous Metallurgy Research Institute, Jiujiang tantalum and niobium limited liability company, Conghua tantalum and niobium smelter.

This part of the main drafters. Pan Jianzhong, Liu Hong, Song Jinhua, Huang Shuang, Wang Jing, Jiang Tengrong.

This part of the previous version of the standard to replace the release of the situation.

YB874-76, YS/T 358-1994.

Chemical analysis of tantalum iron and niobium iron concentrates Part 6. determination of the amount of thorium oxide Inductively Coupled Plasma Atomic Emission Spectrometry

1 Scope

This method specifies the determination method of thorium oxide content in tantalum iron and niobium iron concentrate.

This method is applicable to the determination of thorium oxide in tantalum iron and niobium iron concentrate. The measurement range is 0.001% ~ 0.50%.

2 Method summary

The sample was decomposed with sulfuric acid-ammonium sulfate. In the dilute acid medium, argon plasma was used as the ionization source, and the inductively coupled plasma was directly applied Determination of radio spectrum.

3 Reagent

3.1

ammonium sulfate.

3.2

Sulfuric acid (rho1.84g/mL).

3.3

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

3.4

hydrochloric acid lotion (1.49).

3.5

thorium oxide standard storage solution. Weigh 0.1000g thorium dioxide [$w(\text{ThO}_2) \geq 99.95\%$, dried at 110°C] in 250mL burn Cup, add 10mL hydrochloric acid (3.3) and 0.5mL hydrofluoric acid ($\rho=1.14\text{g/mL}$), dissolve by heating, add 2mL perchloric acid ($\rho=1.67\text{g/mL}$) Evaporated to white smoke until the wet salt, cooling, with 5mL hydrochloric acid (1.1) dissolved and hydrochloric acid (1.9) fixed in 1000mL volumetric flask, Mix, this solution 1mL equivalent to 0.1mg thorium dioxide.

3.6

argon w (Ar) $\geq 99.99\%$.

4 Instruments

Inductively Coupled Plasma Atomic Emission Spectrometer. Resolution 5 samples

5.1 Specimen size less than 0.074mm.

5.2 samples in $105^\circ\text{C} \sim 110^\circ\text{C}$ pre-bake 2h, placed in a dryer to cool to room temperature.

6.1 Samples

Weigh 0.10g of sample (5), accurate to 0.0001g.