

ICS 77.040.30

CCS H 12

YS

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

YS/T 244.3-2008

Replacing YS/T 244.3-1994

**Chemical analysis methods of high purity aluminium. Part 3:
Determination of titanium content by
diantipyrylmethane-thiocyanate photometric method**

高纯铝化学分析方法第33部分：二安替吡啉甲烷-硫氰酸盐光度法测定钛含量
(English Translation)

Issued on: March 12, 2008

Implemented on: September 1, 2008

Issued by: National Development and Reform Commission

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Foreword

YS/T 244 "Chemical analysis methods of high purity aluminum" is divided into nine sections.

- Part 1. phenanthroline - thiocyanate spectrophotometric determination of iron content;
- Part 2. molybdenum blue extraction and spectrophotometric determination of silicon content;
- Part 3. Two-antipyrine DAM - spectrophotometric determination of titanium content thiocyanate;
- Part 4. Butyl Rhodamine B spectrophotometric determination of gallium content;
- Part 5. Determination of copper, zinc and lead content anodic stripping voltammetry;
- Part 6. Catalytic manganese - sulfuric acid system through the determination of silver content;
- Part 7. dithizone extraction and spectrophotometric determination of cadmium content;
- Part 8. crystal violet extraction and spectrophotometric determination of indium content;
- Part 9. Determination of impurities by inductively coupled plasma mass spectrometry.

This is Part 3.

The partial replacement of YS/T 244.3-1994 "Chemical analysis methods of high purity aluminum for the two security DAM - thiocyanate photometric method for determination of titanium content." this part is YS/T 244.3-1994 revision. Compared with YS/T 244.3-1994, the main changes are as follows.

- Added "repeatability" clause;
- Increase the "quality assurance and control" clause.

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

This part of the Fushun Aluminum Co., Ltd., China Nonferrous Metals Industry Institute of Standards Metrology and Quality is responsible for drafting.

This part of the Fushun Aluminum Co. drafted.

1 Scope

This section specifies the determination method of high purity titanium content.

This section applies to the determination of high purity titanium content. Measurement range. $\sim 0.00003\%$ 0.00020% .

2 Method summary

A nickel salt in the presence of sample, dissolve in hydrochloric acid. In $2.5\text{mol/L} \sim 4\text{mol/L}$ hydrochloric acid neutralizing, thiocyanate and added security for the two topiramate Morpholino methane, so that the formation of titanium ternary complex. After chloroform extraction after 420nm wavelength spectrophotometer measured absorbance.

Reductive elimination of iron (III), Cu (II) interfering with stannous chloride. 5mg high purity nickel and impurities present not interfere with the determination.

3 Reagents

Reagent preparation and analysis of water are deionized water and then purified by distillation quartz distiller.

3.1

ethanol, pure class distinctions.

3.2

chloroform.

3.3

hydrochloride ($\rho 1.19\text{g/mL}$), of high purity.

3.4

HCl (1 + 1). By quartz distiller purified by distillation.

3.5

hydrochloric acid (1 + 3), pure class distinctions.

3.6

ammonium thiocyanate solution (500g/L).

3.7

two antipyrine DAM solution (200g/L). Weigh 20g two antipyrine DAM in 200mL beaker, add hydrochloric acid (3.3) to make Dissolved and diluted to 100mL. The time is now equipped with.

3.8

stannous chloride solution (20g/L). Weigh 2g stannous chloride ($\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$) in 200mL beaker, add 17mL hydrochloric acid (3.3), heated briefly to dissolve completely, remove the cooling to room temperature, diluted with water to 100mL. The time is now equipped with.

3.9

nickel chloride ($\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$) solution (4g/L). 0.5mL per 100mL solution containing hydrochloric acid (3.4).

3.10

Titanium standard stock solution. Weigh 0.1000g of titanium scrap metal (99.9%) in the beaker, 100mL of hydrochloric acid (3.4), cover

Table dish at low temperature heating, completely dissolved, bromine oxide, boiled, expelled more than bromine. Cool to room temperature. Moved into 1L volumetric flask

1mol/L hydrochloric acid, dilute to the mark and mix. This solution 1mL containing 0.1mg titanium.

3.11

Titanium standard solution. Pipette 10.0mL titanium standard stock solution (3.10) in 100mL flask, diluted with 1mol/L hydrochloric acid to Volume, and mix. Then from this solution Pipette 10.0mL solution in 100mL flask, diluted with 1mol/L hydrochloric acid to volume, and mix.

This solution 1mL containing 1 μg titanium.

4 Instruments and equipment

Spectrophotometer.

5 Sample

Sample 5.1 with hydrochloric acid (3.5) soaked for more than 3h, washed with deionized water, and dried over anhydrous ethanol (3.1) a dip.

The sample was 5.2 (5.1) drying 2h ~ 3h at 70 °C ~ 80 °C, placed in a desiccator to cool to

room temperature.