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

YS/T 1075.5-2015

**Methods for chemical analysis of vanadium-aluminium and
molybdenum-aluminium master alloys - Part 5: Determination of
aluminum content - EDTA titration**

钒铝、钼铝中间合金化学分析方法 第5部分：铝量的测定 EDTA滴定法
(English Translation)

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Foreword

YS/T 1075 "aluminum vanadium, molybdenum intermediate aluminum alloy chemical analysis method" including a total of 8 sections.

- Part 1. Determination of iron content - 1,10-phenanthroline spectrophotometry;
- Part 2. Determination of molybdenum content of lead molybdate gravimetric method;
- Part 3. Determination of silicon content - Molybdenum blue spectrophotometric method;
- Part 4. vanadium content - Inductively coupled plasma atomic emission spectrometry and ferrous ammonium sulfate titration;
- Part 5. Determination of aluminum content EDTA titration;
- Part 6. Determination of carbon content in the high-frequency combustion - infrared absorption method;
- Part 7. Determination of the amount of oxygen in the inert gas fusion - infrared method;
- Part 8. molybdenum, aluminum X- determining the amount of fluorescence spectroscopy.

This section YS/T 1075 Part 5.

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) and focal points.

This section is drafted. Guangzhou Nonferrous Metal Research Institute, Western Metal Materials Co., Ltd., Chengde Vanadium big industry limited liability company, Northwest Nonferrous Metal Research Institute, Ltd. in Dalian financial Gaudet kinds of materials, high-tech metal Material Co., Ltd. Donggang East.

1 Scope

YS/T 1075 This section provides the aluminum vanadium, molybdenum determination of aluminum alloy with aluminum content.

This section applies to aluminum vanadium, molybdenum, aluminum master alloys
Determination of aluminum content. Measurement range. 15.00% - 50.00%.

2 Method summary

Sample with sulfuric acid, nitric acid decomposition. EDTA was added at a pH of 4 to 5 weakly acidic medium, the PAN as indicator, Zinc acetate titration standard solution titration of excess EDTA, sodium fluoride and aluminum complex quantitative release of EDTA, then zinc acetate standard Titration released EDTA, whereby the determination of aluminum content.

Hydroxylamine hydrochloride can eliminate the interference of coexisting elements vanadium, molybdenum coexisting elements, such as iron does not interfere with the determination of aluminum.

3 Reagents

3.1

sodium fluoride.

3.2

sulfate (11).

3.3

nitric acid (11).

3.4

hydroxylamine hydrochloride solution (100g/L).

3.5

Sodium hydroxide solution (150g/L).

3.6

hydrochloride (11).

3.7

copper chloride solution (10g/L).

3.8

EDTA solution (0.05mol/L).

3.9

hexamethylenetetramine buffer solution (pH value of about 5). Weigh 150g of hexamethylenetetramine dissolved in 350mL of water, was added 50mL Hydrochloric acid ($\rho = 1.19\text{g/mL}$). Adjusting the pH of the solution with hydrochloric acid (3.6) is about 5 (dipstick), dilute with water to 500mL volume, Mix well.

3.10

Aluminum Standard stock solution (1.0mg/mL). Weigh 1.0000g of aluminum ($w_{\text{Al}} \geq 99.95\%$) in a polytetrafluoroethylene beaker, add 20mL of water and 3g of sodium hydroxide, to be dissolved completely, with hydrochloric acid (3.6) slowly neutralized to precipitate, and excess 20mL, stirring constantly the precipitate was dissolved, cooled and transferred to 1000mL volumetric flask, dilute with water to volume, and mix.

3.11 Standard titration of zinc acetate solution (about 0.014mol/L)

3.11.1

preparation. Weigh 6.0g zinc acetate $[\text{Zn}(\text{CH}_3\text{COO})_2 \cdot 2\text{H}_2\text{O}]$ was dissolved in water and added to 4mL of glacial acetic acid and transferred to 2000mL Volumetric flask, dilute with water to volume, and mix.

3.11.2

Calibration. Pipette 5.00mL 3 parts of aluminum standard solution (3.10) in 300mL conical flask, along with the blank test. The following press 5.4.3 ~ 5.4.6 conduct. Zinc acetate parallel calibration standard titration solution volume consumed by poor should not exceed 0.10mL, averaged.

According to equation (1) calculate the mass per unit volume of zinc acetate equivalent standard titration solution of aluminum.

$$5 \times 10^{-3}$$

$$V_1 - V_0$$