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

YS/T 360.4-2011

Replacing YS/T 360-1994

**Methods of chemical analysis for ilmenite concentrate. Part 4:
Determination of aluminum oxide content. EDTA titration**

钛铁矿精矿化学分析方法 第4部分：氧化铝量的测定 EDTA滴定法

(English Translation)

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Foreword

YS/T 360 "ilmenite concentrate chemical analysis method" is divided into six parts.

- Part 1. Determination of titanium dioxide - Ammonium sulfate titration;
- Part 2. Determination of total iron content - Potassium dichromate titration;
- Part 3. Determination of the amount of ferrous oxide - Potassium dichromate titration;
- Part 4. Determination of the amount of alumina - EDTA titration;
- Part 5. Determination of silicon dioxide - Mo - Mo - blue spectrophotometric method;
- Part 6. Determination of calcium oxide, magnesium oxide, and phosphorus content - Plasma emission spectrometric method.

This section is part 3 of YS/T 360.

This standard is owned by the National Committee for the Standardization of Nonferrous Metals (SAC/TC243).

The drafting unit of this standard. Zunyi Titanium Industry Co., Ltd., Jinchuan Group Co., Ltd., Yunnan Xinli Nonferrous Metals Co., Ltd., Fushun Titanium Industry Co., Ltd., China Nonferrous Metals Industry Standard Measurement Quality Institute.

1 Scope

This part of YS/T 360 specifies the determination method for the amount of alumina in ilmenite concentrates.

This part is applicable to the determination of alumina in ilmenite concentrate, the determination range is 0.50% ~ 5.00%.

2 Method summary

The sample was melted with sodium hydroxide and extracted with dilute hydrochloric acid. Hexamethylenetetramine precipitates aluminum, titanium and iron, and the separation of

magnesium, calcium and manganese and other elements.

Will precipitate low temperature ashing, and then melted by sodium hydroxide, hot water leaching. Separation and removal of titanium and other elements. Remove part of the test solution, in weak acid solution, Addition of excess EDTA complex aluminum. At pH 6.0 or so, with excess xylenol orange as an indicator, excess EDTA was titrated with a zinc standard solution. Then After replacing the EDTA in the complex with sodium fluoride, titration with zinc standard titration to stabilize the purple is the end point, so that oxygen the amount of aluminum.

Tin content of less than 0.2mg, chromium less than 1mg, vanadium less than 0.05mg does not affect the determination. When the amount of vanadium is more than 0.05 mg, sulfuric acid is used Ferrous ammonium elimination interference.

3 Reagent

3.1

sodium hydroxide, excellent grade pure.

3.2

Sodium peroxide.

3.3

Ethanol.

3.4

ammonia (rho about 0.90g/mL).

3.5

Ammonia (1 1).

3.6

Hydrochloric acid (1 1).

3.7

hexamethylenetetramine solution (250 g/L).

3.8

Ammonium chloride wash solution (20g/L). Add 1 to 2 drops of ammonia (3.5) per 100mL of washing solution.

3.9

ammonium ferrous sulfate solution (1g/L). When used with the current allocation.

3.10

Ethylenediamine tetraacetic acid disodium (EDTA) solution (0.02 mol/L). Weigh 3.72 g of disodium ethylenediaminetetraacetate ($\text{Na}_2\text{C}_{10}\text{H}_{16}\text{O}_8\text{N}_2 \cdot 2\text{H}_2\text{O}$), dissolved in 1000 mL of water and mixed.

3.11

methyl orange solution (1g/L).

3.12

xlenol orange solution (2g/L). stored in a brown bottle, effective within a week.

3.13

Sodium fluoride solution (40 g/L).

3.14

Acetic acid monoacetate buffer solution ($\text{pH } 6.0 \pm 0.2$). 300 g of ammonium acetate was weighed in 500 mL of water, filtered, 12.3 mL Glacial acetic acid, diluted with water to 1000mL, mix well. (Corrected with acidity meter).

3.15

zinc standard titration solution (0.01000mol/L). Weigh 1.6276g zinc oxide (spectral purity or reference reagent), placed in 300mL Beaker, wet with water, add 20mL hydrochloric acid (3.6), slowly dissolve the heat and evaporate to a volume of 3mL ~ 5mL, into the.2000mL