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

YS/T 360.1-2011

Replacing YS/T 360-1994

Methods of chemical analysis for ilmenite concentrate. Part 1: Determination of titanium dioxide content. Ferric ammonium sulfate titration

钛铁矿精矿化学分析方法 第1部分：二氧化钛量的测定 硫酸铁铵滴定法

(English Translation)

Issued on: December 20, 2011 **Implemented on: July 1, 2012**

Issued by: Ministry of Industry and Information Technology

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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 part is part 1 of YS/T 360.

This part replaces the second part of YS/T 360-1994 "Chemical Analysis of Ilmenite (Concentrate) Concentrate" (formerly YB878-76) Determination of Titanium Dioxide ".

Compared with YS/T 360-1994, the main changes are as follows.

- the provisions of the determination of the range. 30% to 70%;

- the formula used in international units of measurement;

--- increase the repeatability limit.

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.

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1 Scope

This part of YS/T 360 specifies the amount of titanium dioxide in ilmenite concentrates.

This part applies to the determination of titanium dioxide in ilmenite concentrates. The measurement range is 30.00% ~ 70.00%.

2 Method summary

The sample was melted with potassium pyrophosphate and acid leached. In an appropriate sulfuric acid and hydrochloric acid solution, titanium is aluminum foil under conditions of isolated air (IV) reduced to (III), ammonium thiocyanate solution as an indicator, with ammonium titanate standard titration solution titrated to a stable orange-red as the end.

3 Reagent

3.1
Potassium pyrophosphate.

3.2
Titanium dioxide (>=99.99%). Spectrum pure.

3.3
Sodium peroxide.

3.4
aluminum foil (mass fraction of not less than 99.5%).

3.5
hydrochloric acid (rho about 1.19 g/mL).

3.6
Hydrochloric acid (1 1).

3.7
Sulfuric acid (1 1).

3.8
Sulfuric acid (5 95).

3.9
sodium carbonate solution (10g/L).

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3.10
Saturated solution of sodium bicarbonate.

3.11
Ammonium thiocyanate solution (400 g/L).

3.12 Standard titration solution of ammonium ferric sulfate

3.12.1
Preparation. Weigh 24g ammonium ferric sulfate [NH4Fe (SO4) 2 · 12H2O], placed in a 1000mL beaker, add 500mL of water, Slowly poured into 100mL sulfuric acid (3.7), dissolved by heating, remove, drop 0.5% potassium permanganate solution to show reddish, heated to boil decomposition Amount of potassium permanganate. Cooled to room temperature, into the 1000mL volumetric flask, diluted with water to the mark, mix.

3.12.2
Calibration. Weigh 0.1000 g of titanium dioxide (3.2) 3 parts, placed in 3 porcelain crucible. The following according to 5.4.1 ~ 5.4.2 and 5.4.5 to 5.4.6. If the difference is more than 0.10mL, should be re-calibration, and with the blank test.

Calculate the concentration of ammonium ferric sulfate standard titration solution according to formula (1) c.

c = m79.88 (V-V0) x

1000 (1)

Where.

c - Concentration of ferric sulfate standard titration solution in mol/liter (mol/L);

m --- the amount of titanium dioxide (3.3), in grams (g);

79.88 --- molar mass of titanium dioxide in grams per mole (g/mol);

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