

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

SN/T 1337.1-2003

**Methods for chemical analysis of titanium concentrate for
import and export. Determination of vanadium pentoxide
content**

进出口钛精矿化学分析方法 五氧化二钒含量的测定

(English Translation)

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Foreword

SN/T 1337 "Chemical Analysis Method for Import and Export Titanium Concentrate" is divided into the following two parts.

--- Part 1. Determination of vanadium pentoxide content;

--- Part 2. Determination of chromium oxide content.

This part is the first part of SN/T 1337.

This part is proposed and managed by the National Certification and Accreditation Administration.

This section drafted by. Hainan Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China.

1 Scope

This standard specifies the spectrophotometric method for the determination of vanadium pentoxide in titanium concentrates.

This standard applies to the determination of vanadium pentoxide content in the import and export of titanium concentrate. Measuring range. 0.04% to 0.80%.

2 Method summary

The sample is immersed in water after alkali fusion, and titanium, iron and most impurities are separated by precipitation and filtration, and vanadium and chromium enter the solution. In hydrochloric acid medium, five Valence vanadium and benzoyl benzoquinone (hydrazine reagent) to form a red-purple complex that can be extracted by chloroform, measured at a wavelength of 530 nm by a spectrophotometer the amount of absorbance.

Hexavalent chromium interferes with vanadium. Adding ferrous ammonium sulfate before color development reduces the hexavalent chromium to trivalent to eliminate interference.

3 Reagents

Unless otherwise stated, only analytically pure reagents and distilled or deionized water or water of comparable purity were used in the analysis.

3.1

Sodium hydroxide.

3.2

sodium peroxide.

3.3 Ethanol (95% volume fraction)

3.4 Phosphoric acid ($\rho=1.79\text{g/mL}$). Dilute with red potassium permanganate solution (30g/L) until it is reddish.

3.5 sodium hydroxide solution (50g/L).

3.6 Sulfuric acid (1+1).

3.7 Hydrochloric acid (1+1).

3.8 Ammonium ferrous sulfate solution (20 g/L). 2 g of ammonium ferrous sulfate was dissolved in 100 mL of sulfuric acid solution (5 + 95).

3.9 Potassium permanganate solution (3g/L, 0.5g/L).

3.10 Hydrazine reagent - chloroform solution (2 g/L). 0.2 g of benzoyl benzoquinone dissolved in 100 mL of chloroform.

3.11 Vanadium pentoxide standard solution.

3.11.1 Vanadium pentoxide standard solution (0.1mg/mL). Weigh 0.1000g of spectrally pure pentoxide prepared by drying at 110 ° C to dryness.

Vanadium is placed in a 250 mL beaker, added with 25 mL of sodium hydroxide solution (3.5), heated to complete dissolution, neutralized with sulfuric acid (3.6) to acidity and 20mL, heated to evaporate to smoke, cooled, add water to dissolve the salt, then cooled to room temperature, transferred to a 1000mL volumetric flask, diluted with water to the moment Shake well.

3.11.2 Vanadium pentoxide standard solution (20 $\mu\text{g/mL}$). Pipette the above solution (3.11.1) 50.00mL into a 250mL volumetric flask, Dilute to the mark with water and shake well.

3.12 Phenolphthalein indicator (1g/L). formulated with 70% ethanol.

4 Instruments

Spectrophotometer.

5 Sample

The sample shall be ground to a sieve of 74 μm (200 mesh), dried at 105 ° C to 110 ° C for 2 h, and then placed in a desiccator and cooled to room temperature for use.

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