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

GB/T 15076.16-2008

**Methods for chemical analysis of tantalum and niobium -
Determination of sodium and potassium contents**

钽铌化学分析方法 钠量和钾量的测定

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Table of Contents

- 1 Scope
- 2 Principle of the method
- 3 Reagents
- 4 Instrument

Foreword

GB/T 15076 "Methods for chemical analysis of tantalum and niobium" is divided into 16 parts.

--- GB/T 15076.1 Methods for chemical analysis of tantalum and niobium, tantalum and niobium - Determination of the amount of

--- Determination of GB/T 15076.2 Methods for chemical analysis of tantalum and niobium and tantalum niobium content

--- Determination of GB/T 15076.3 chemical analysis of tantalum and niobium copper content

--- Determination of GB/T 15076.4 chemical analysis of tantalum and niobium iron content

--- GB T 15076.5 Methods for chemical analysis of molybdenum, tantalum, niobium and tungsten contents - / Determination

--- GB/T 15076.6 chemical analysis of tantalum and niobium and tantalum silicon content

--- GB/T 15076.7 chemical analysis of tantalum and niobium and niobium determination of phosphorus content Determination

--- GB/T 15076.8 Methods for chemical analysis of tantalum and niobium carbon and sulfur content

--- Determination of GB/T 15076.9 chemical analysis of tantalum and niobium and tantalum iron, chromium, nickel, manganese, titanium, aluminum, copper, tin, lead and zirconium quantity

--- Determination of GB/T 15076.10 chemical analysis of tantalum and niobium and niobium iron, nickel, chromium, titanium, zirconium, aluminum and manganese contents

--- GB/T 15076.11 chemical analysis of tantalum and niobium and niobium arsenic, antimony, lead, tin and bismuth contents

--- Determination of GB/T 15076.12 chemical analysis of tantalum and niobium and

tantalum of phosphorus content Determination

--- GB/T 15076.13 chemical analysis of tantalum and niobium tantalum nitrogen content

1 Scope

GB/T 15076.16-2008 is the Chinese national standard on methods for chemical analysis of tantalum and niobium - determination of sodium and potassium contents, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 31 March 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 September 2008. Classification: ICS 77.120.99, CCS H14. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This method specifies the method for the determination of tantalum content of sodium and potassium content. This method is applicable to the determination of sodium content and potassium content in tantalum. Measuring range. $\geq 0.0005\%$ ~ 0.020%.

2 Principle of the method

Sample with hydrofluoric acid, nitric acid dissolved in dilute nitric acid medium, aluminum trichloride masking fluorine, atomic absorption spectrometer wavelength 766.5nm, 589.0nm at using air - acetylene flame were measured potassium, sodium absorbance.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled water or equivalent purity.

3.1 Hydrofluoric acid ($\rho 1.14\text{g/mL}$), MOS level. Nitrate 3.2 ($\rho 1.42\text{g/mL}$), MOS level.

3.3 and Tantalum (Ta content of not less than 99.99%, the potassium content is not more than 0.0001%, a sodium content of not more than 0.0001%).

3.4 aluminum chloride solution (77g/L). Weigh 14g crystalline aluminum chloride ($\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$) (potassium content of not more than 0.0001%, containing sodium Not more than 0.0001%) in the 200mL beaker, add 60mL water to dissolve, dilute with water to 100mL.

3.5 Sodium standard stock solution. Weigh accurately 2.5421g reference sodium chloride (without pre-ignition to explosion in a muffle furnace $450\text{ }^\circ\text{C}$ ~ $500\text{ }^\circ\text{C}$ in Cracking sound) into 300mL polyethylene beaker, dissolved in water and transferred to 1000mL volumetric

flask, dilute to the mark with water, mix, stored in a Plastic bottle. 1mL solution containing 1mg sodium.

3.6 Sodium standard solution. Pipette 20.00mL sodium standard stock solution in 200mL volumetric flask, dilute to the mark with water, shake, stored in a Plastic bottle. This solution 1mL containing 100 μ g sodium.

3.7 Potassium standard stock solution. Weigh accurately 1.9068g superior grade pure potassium chloride (without pre-ignition in a muffle furnace to 450 °C ~ 500 °C in Crackles) in 300mL polyethylene beaker, dissolved in water and transferred to 1000mL volumetric flask, dilute to the mark with water, mix, stored in a Plastic bottle. This solution 1mL 1mg containing potassium.

3.8 Potassium standard solution. Pipette 20.00mL potassium standard stock solution in 200mL volumetric flask, dilute to the mark with water, shake, stored in a Plastic bottle. This solution 1mL containing 100 μ g potassium.

3.9 sodium, potassium mixed standard solution. Pipette respectively sodium standard solution (3.6) and potassium standard solution (3.8) to each 10.00mL 200mL capacity Bottle, diluted with water to the mark, shake, stored in a plastic bottle. This solution 1mL containing 5 μ g 5 μ g sodium and potassium.

4 Instrument

Atomic absorption spectrometer, with sodium, potassium hollow cathode lamp. Under optimum working conditions for those who can reach the following indicators can be used.

--- Characteristic concentration. In line with the measuring solution matrix solution, characteristic concentration of sodium and potassium is not greater than 0.0186 μ g/mL, respectively And 0.0355 μ g/mL.

--- Precision. standard solution with the highest concentration of 10 times the absorbance measurements, the standard deviation should not exceed 1.5% of the average absorbance; With the lowest concentration of standard solution (not "zero" concentration of the standard) measuring the absorbance of 10 times, the standard deviation should not exceed the maximum