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

GB/T 23274.1-2009

**Methods for chemical analysis of stannic oxide - Part 1:
Determination of stannic oxide content - Potassium iodate
titrimetric method**

二氧化锡化学分析方法 第1部分：二氧化锡量的测定 碘酸钾滴定法

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Foreword

GB/T 23274-2009 "tin dioxide chemical analysis method" is divided into eight parts. - Part 1. Determination of the amount of tin oxide Potassium iodate titration; - Part 2. Determination of iron content - 1,10 - phenanthroline spectrophotometric method; - Part 3. Determination of arsenic content - Arsenic antimony molybdenum blue spectrophotometric method; - Part 4. Determination of lead and copper - Flame atomic absorption spectrometric method; - Part 5. Determination of antimony content - Malachite green spectrophotometric method; - Part 6. Determination of sulphate - Visual turbidimetric method; - Part 7. Determination of hydrochloric acid soluble matter - Gravimetric method; Part 8. Determination of ignition weight loss - Weight method. This section is part 1. This part is made by China Nonferrous Metals Industry Association. This part of the National Standardization Technical Committee of Nonferrous Metals. This part is drafted by Yunnan tin industry group limited liability company. This part is drafted by Liuzhou Huaxi Group Co., Ltd. and Yunnan Honghe State Entry-Exit Inspection and Quarantine Bureau. The main drafters of this part. Ding Xibo, Gao Chunxia, Li Hongying, Lin Wenfeng, Jiang Zhai, Tan Liuping, Wang Lixian. Methods for chemical analysis of tin dioxide Part 1. determination of the amount of tin dioxide Potassium iodate titration

1 Scope

GB/T 23274.1-2009 is the Chinese national standard on methods for chemical analysis of stannic oxide - part 1: determination of stannic oxide content - potassium iodate titrimetric method, in the field of chemical technology. 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 5 January 2009 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 November 2009. Classification: ICS 71.040.40, CCS G10. 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 part of GB/T 23274 specifies the method for the determination of tin dioxide in tin dioxide. This part applies to the determination of tin dioxide in tin dioxide, the determination of the range of > 95%.

2 Method summary

Samples with zinc powder - sodium hydroxide melting, hydrochloric acid leaching, with iron powder and metal aluminum to tin reduced to divalent. To starch as an indicator, with iodic acid Potassium titration solution titration test solution was light blue for the end.

3 Reagents and devices

Test water for the three distilled water.

3.1 Zinc powder.

3.2 metal tin (tin mass fraction $\geq 99.85\%$).

3.3 reduced iron powder (0.074mm).

3.4 Aluminum (aluminum mass fraction $\geq 99.5\%$).

3.5 Sodium hydroxide.

3.6 Sodium chloride.

3.7 Hydrochloric acid (1 + 1).

3.8 Potassium iodate standard titration solution [$c(1/6KIO_3) = 0.05\text{mol/L}$].

3.8.1 Preparation. Weigh

17.9 g of potassium iodate in 500 mL of water, add

89.5 g of potassium iodide and 10 g of anhydrous sodium carbonate to dissolve, Dilute to 10L, shake well. Hydrochloric acid (3.7), the conical flask connected to the reduction device. Low temperature heating to dissolve tin, add 20mL water, add 1.5g metal aluminum (3.4). continuous Shake the conical flask to most of the metal aluminum dissolved, continue to heat the boiling test solution to produce large bubbles 1min. Under the protection of carbon dioxide, the cone will be The flask is placed in a cold water tank and cooled to room temperature. Remove the conical flask and immediately add 5 mL of the starch solution (3.9) and titrate the solution with potassium iodate (3.8) titrated to light blue for the end (V 1). At the same time do blank test (V 0). Calculate the actual concentration of potassium iodate standard titration solution according to formula (1) (c). $C = 59.35 (V_1 - V_0) \times 10^{-3}$ (1) Where. The actual concentration of potassium titanate titration solution in moles per liter (mol/L); (SnO₂) - the mass fraction of tin; V 1

--- titration, the titration of tin standard solution consumed by potassium iodate standard titration solution volume, in milliliters (mL); When the calibration is carried out, the volume of the potassium titanate standard titration solution consumed in the titration blank test solution is in milliliters (mL); 59.35 - The molar mass of tin ($1/2\text{Sn}$) in grams per mole (g/mol).

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