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CCS D41



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

GB/T 1819.12-2017

Replacing GB/T 1819.12-2004

**Methods for chemical analysis of tin concentrates - Part
12: Determination of silicon dioxide content - The silicomolybdenum
blue spectrophotometry and sodium hydroxide titration**

锡精矿化学分析方法 第12部分：二氧化硅量的测定 硅钼蓝分光光度法和氢氧化钠滴定法

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Foreword

GB/T 1819 "tin concentrate chemical analysis method" is divided into 21 parts.

- Part 1. Determination of moisture thermal drying method;
- Part 2. Determination of tin content potassium iodate titration;
- Part 3. Determination of iron content cerium sulfate titration method;
- Part 4. Determination of lead content by flame atomic absorption spectrometry and Na₂ EDTA titration;
- Part 5. Determination of arsenic Arsenic antimony molybdenum blue spectrophotometry and iodometric titration;
- Part 6. Determination of the amount of antimony; malachite green spectrophotometry and flame atomic absorption spectrometry;
- Part 7. Determination of bismuth content by flame atomic absorption spectrometry;
- Part 8. Determination of zinc content by flame atomic absorption spectrometry;
- Part 9. Determination of tungsten oxide content; thiocyanate spectrophotometry;
- Part 10. Determination of sulfur content High-frequency induction furnace combustion infrared absorption method and potassium iodate titration;
- Part 11. Determination of the amount of aluminum oxide chromium azure S spectrophotometry;
- Part 12. Determination of the amount of silica silicon molybdenum blue spectrophotometry and sodium hydroxide titration;
- Part 13. Determination of magnesia, calcium oxide content; Flame atomic absorption spectrometry;

1 Scope

GB/T 1819.12-2017 is the Chinese national standard on methods for chemical analysis of tin concentrates - part 12: determination of silicon dioxide content - the silicomolybdenum blue spectrophotometry and sodium hydroxide titration, in the field of mining and minerals. 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 29 September 2017 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 April 2018. Classification: ICS 73.060, CCS D41. 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 section GB/T 1819 specifies the determination of the amount of silica in tin concentrates. This section applies to the determination of silica content in tin concentrate method. Method

2 Method 1 silicon molybdenum blue spectrophotometry

2.1 Method summary The sample was melted and decomposed with sodium peroxide, leached with boiling water, and acidified with hydrochloric acid. In dilute hydrochloric acid medium, silicic acid and ammonium molybdate generated silicon molybdenum yellow; Add hydrochloric acid, add oxalic acid, tartaric acid to eliminate the interference of phosphorus, arsenic and other elements, and use ascorbic acid to reduce silicon molybdenum yellow to silicon molybdenum blue. In the light Meter wavelength 810nm, measuring the absorbance.

2.2 Reagents Unless otherwise specified, only reagents that are identified as analytically pure and secondary water are used in the analysis.

2.2.1 Sodium peroxide.

2.2.2 anhydrous ethanol.

2.2.3 Hydrochloric acid (1 1).

2.2.4 hydrochloric acid (1 3).

2.2.5 potassium permanganate solution (30g/L).

2.2.6 Ammonium molybdate solution $[(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}]$ (100g/L) After filtration, use and store in a plastic bottle.

2.2.7 oxalic acid - tartaric acid mixed solution Weigh 100g of oxalic acid ($\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$),

40g/L) - tartaric acid ($C_4H_6O_6$) dissolved in Water, diluted with water to 1000mL, stored in plastic bottles.

2.2.8 Ascorbic acid solution (20g/L) Preparation with time.

2.2.9 Silica standard stock solution Weigh 1.0000g silica ($wSiO_2 99.99\%$, pre-fired at $800\text{ }^{\circ}C$ to constant weight, placed in Dryer cooled to room temperature) placed in a platinum crucible, add 5g of anhydrous sodium carbonate, mix, and then covered with 1g of anhydrous sodium carbonate at $1000\text{ }^{\circ}C$ High temperature melting furnace 1h. Remove, cold, the water outside the crucible clean, placed in 100mL hot water Teflon beaker Leach melt (can be slowly heated). After the leaching is complete, wash the crucible and cool. The solution into 1000mL volumetric flask, diluted with water to Scale, mix well. 1 mL of this solution contains 1 mg of silica. Store in plastic bottle.

2.2.10 silica standard solution A. Pipette 25.00mL silica standard stock solution (2.2.9) in 500mL volumetric flask, water Dilute to the mark and mix well. 1 mL of this solution contains 50 μg of silica. Store in plastic bottle.

2.2.11 silica standard solution B. Pipette 50.00mL silica standard solution (2.2.10) in 250mL volumetric flask, diluted with water Release to the mark, mix well. 1 mL of this solution contains 10 μg of silica. Store in plastic bottle.