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

GB/T 14849.7-2015

**Methods for chemical analysis of silicon metal - Part 7:
Determination of phosphorus content - Phosphorus
molybdenum blue spectrophotometry**

工业硅化学分析方法 第7部分：磷含量的测定 磷钼蓝分光光度法

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Foreword

GB/T 14849 "industrial silicon chemical analysis method" is divided into 11 parts.

- Part 1. Determination of iron content 1,10 phenanthroline spectrophotometry;
- Part 2. Determination of aluminum content of chromium Azure -S spectrophotometry;
- Part 3. Determination of calcium content by flame atomic absorption spectrometry, spectrophotometry Chlorophonazo I;
- Part 4. Determination of impurity elements inductor coupled plasma atomic emission spectrometry;
- Part 5. Determination of impurity elements in the X-ray fluorescence spectrometry;
- Part 6. Determination of carbon content by infrared absorption method;
- Part 7. Determination of phosphorus content of phosphorus molybdenum blue spectrophotometric method;
- Part 8. Determination of copper content atomic absorption spectrometry;
- Part 9. Determination of titanium content security for DAM spectrophotometry;
- Part 10. Determination of mercury content by hydride generation - atomic fluorescence spectrometry;
- Part 11. Determination of hexavalent chromium content of diphenyl hydrazine spectrophotometry. This section GB/T 14849 Part 7. This section drafted in accordance with GB/T 1.1-2009 given rules. This part is proposed by the China Nonferrous Metals Industry Association. The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized. This section is responsible for drafting unit. Kunming Metallurgy Research Institute. Participated in the drafting of this section. CIQ Yunnan, Kunming Metallurgical Institute New Materials Co., Ltd., Zhejiang Sheng silicon industry have Ltd., Yunnan Yongchang Silicon Industry Co., Ltd., Tongzhou Standards Technical Services Co., Aluminum Corporation of China Zhengzhou Research Institute. The main

drafters of this section. Zhaode Ping, Yang Yi, Teng Yajun, An Zhongqing, Liuying Bo, Zhou Jie, to Portland, Maqi Kun, Huzhi Tao, Nie Changhong, Xue Ning, Zhou Ya, Richard Li, Zhao, for Yun Zhou, Zhang Yunhui, Cheng heap stronger, less Tan Ji, Tang Fei, Wang Xuexia. The method of chemical analysis of silicon Part 7. Determination of phosphorus content Phosphorus molybdenum blue spectrophotometry Warnings. Reagents used in this test method is corrosive, be careful when operating! As splashed on the skin should immediately wash with water, Yan In severe cases should be treated immediately.

1 Scope

GB/T 14849.7-2015 is the Chinese national standard on methods for chemical analysis of silicon metal - part 7: determination of phosphorus content - phosphorus molybdenum blue spectrophotometry, 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 11 September 2015 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 June 2016. Classification: ICS 77.120.10, CCS H12. 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 14849 specifies the method for determination of phosphorus content in the silicon industry. This section applies to the determination of phosphorus content in the silicon industry, measurement range (mass fraction). 0.0010% to 0.30%.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document. Laboratory use specifications and test methods GB/T 6682 Analysis

GB/T 8170 repair value expressed about the rules and limit values \u200b\u200band judgment

3 Method summary

Samples with hydrofluoric acid, nitric acid dissolution, heightening acid and evaporated to remove smoke silicon and fluorine, phosphorus oxidized to phosphoric acid, ascorbic acid solution Iron (III) reduction of iron (II), ammonium molybdate - hydrazine sulfate color liquid form phosphomolybdic blue, measuring absorbance at 825nm wavelength.

4 Reagents

Unless otherwise indicated, the use of analytical reagent only recognized in the analysis; the water is distilled or deionized water or equivalent purity, Shall comply with GB/T 6682's.

4.1 nitric acid ($\rho = 1.42\text{g/mL}$).

4.2 sulfate ($\rho = 1.84\text{g/mL}$).

4.3 Hydrofluoric acid ($\rho = 1.15\text{g/mL}$).

4.4 perchloric acid ($\rho = 1.67\text{g/mL}$).

4.5 nitric acid (11).

4.6 sulfate (11).

4.7 hydrazine sulfate solution (15g/L).

4.8 ascorbic acid solution (50g/L), the time is now equipped with.

4.9 ammonium molybdate solution. Weigh 200g ammonium molybdate was dissolved in 200mL of water, 700mL was added sulfuric acid (4.6), cooled to room temperature, diluted with water Diluted to 1000mL, and mix. Toner solution was 4.10. Pipette 10mL hydrazine sulfate solution (4.7), 25mL ammonium molybdate solution (4.9) and 65mL of water, and mix with a time of Now equipped.