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

GB/T 4699.8-2025

Replacing GB/T 5687.2-2007

**Ferrochromium, silicochromium, nitrogen-bearing ferrochromium and high nitrogen
ferrochromium - Determination of silicon content - Silicomolybdenum blue
spectrophotometric method, silicon potassium fluoride titrimetric method and perchloric
acid dehydration gravimetric method**

铬铁、硅铬合金、氮化铬铁和高氮铬铁 硅含量的测定 硅钼蓝分光光度法、氟硅
酸钾滴定法和高氯酸脱水重量法

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents". Drafting.

This document is Part 8 of GB/T 4699.GB/T 4699 has already published the following parts.

- Determination of Chromium Content in Ferrochromium, Silicon-Chromium Alloy, Ferrochromium Nitride, and High-Nitrogen Ferrochromium. Ammonium Persulfate Oxidation Titration and Potentiometric Titration (GB/T 4699.2);
- Determination of ferrochrome, silicon-chromium alloy, and ferrochrome nitride phosphorus content using bismuth-phosphorus-molybdenum blue spectrophotometry and molybdenum blue spectrophotometry (GB/T 4699.3);
- Determination of carbon content in ferrochrome and silicon-chromium alloys by infrared absorption and gravimetric methods (GB/T 4699.4);
- Determination of Sulfur Content in Ferrochrome and Silicon-Chromium Alloys. Infrared Absorption Method and Combustion Neutralization Titration Method (GB/T 4699.6);
- Determination of Silicon Content in Ferrochrome, Silicon-Chromium Alloy, Ferrochrome Nitride, and High-Nitrogen Ferrochrome. Silicate Molybdenum Blue Spectrophotometry and Potassium Fluorosilicate Titration Dehydration by perchloric acid gravimetric method (GB/T 4699.8).

This document replaces GB/T 5687.2-2007 "Determination of Silicon Content in Ferrochrome, Silicon-Chromium Alloys and Ferrochrome Nitride - Dehydration by Perchloric

Acid".

Compared with GB/T 5687.2-2007, the main technical changes in the "Law" are as follows, apart from structural adjustments and editorial modifications.

- a) The scope of application has been revised to include the determination of silicon content in high-nitrogen ferrochrome (see Chapter 1, Chapter 1 of the 2007 edition);
- b) Added Method 1. Silicate Molybdenum Blue Spectrophotometry, applicable to the determination of silicon content in ferrochrome, ferrochrome nitride, and high-nitrogen ferrochrome (see Chapter 4);
- c) A second method has been added. potassium fluorosilicate titration, which is suitable for determining the silicon content in silicon-chromium alloys (see Chapter 5);
- d) The sampling requirements in Method 3 have been modified, and sampling requirements for high-nitrogen ferrochrome samples have been added (see 6.4, Chapter 5 of the 2007 edition);
- e) The allowed difference content in Method 3 has been modified (see 6.7, Chapter 8 of the 2007 edition);
- f) A "Flowchart of the Experimental Analysis Result Acceptance Procedure" has been added (see Appendix A).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Iron and Steel Association.

This document is under the jurisdiction of the National Technical Committee on Standardization of Pig Iron and Ferroalloys (SAC/TC318).

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This document was first published in 1985, revised for the first time in 2007, and this is the second revision.

Introduction

Because the testing of ferrochrome, silicon-chromium alloys, ferrochrome nitride, and high-nitrogen ferrochrome involves many elements, the applicable range of these elements and...

The applicable methods differ. To ensure the convenience and accuracy of testing standards for ferrochrome, silicon-chromium alloys, ferrochrome nitride, and high-nitrogen ferrochrome, we have developed specific methods for...

The analytical methods for different elements in ferrochrome, silicon-chromium alloy, ferrochrome nitride, and high-nitrogen ferrochrome have been supported by a national standard system.

GB/T 4699 Analytical methods for ferrochrome, silicon-chromium alloys, ferrochrome nitride and high-nitrogen ferrochrome are the standard analytical methods for ferrochrome, silicon-chromium alloys, ferrochrome nitride and high-nitrogen ferrochrome in China.

The basic standards for nitrogen, chromium, and ferric oxide testing consist of the following five parts. However, some parts have been obsolete, and this should be noted during use.

- Determination of Chromium Content in Ferrochromium, Silicon-Chromium Alloy, Ferrochromium Nitride, and High-Nitrogen Ferrochromium. Ammonium Persulfate Oxidation Titration and Potentiometric Titration (GB/T 4699.2). The purpose is to measure the chromium content in ferrochrome, silicon-chromium alloys, ferrochrome nitride, and high-nitrogen ferrochrome, using a supersulfurized...

Ammonium acid oxidation titration and potentiometric titration.

- Determination of ferrochrome, silicon-chromium alloy, and ferrochrome nitride phosphorus content using bismuth-phosphorus-molybdenum blue spectrophotometry and molybdenum blue spectrophotometry (GB/T 4699.3). The purpose is to measure the silicon content in ferrochrome, silicon-chromium alloys, and ferrochrome nitride using bismuth-phosphorus-molybdenum blue spectrophotometry.

Molybdenum blue spectrophotometry and molybdenum blue spectrophotometry.

- Determination of Carbon Content in Ferrochrome and Silicon-Chromium Alloys. Infrared Absorption Method and Gravimetric Method (GB/T 4699.4). The purpose is to measure the carbon content of chromium.

The carbon content in iron and silicon-chromium alloys was determined using infrared absorption and gravimetric methods.

- Determination of Sulfur Content in Ferrochrome and Silicon-Chromium Alloys by Infrared Absorption Method and Combustion Neutralization Titration Method (GB/T 4699.6). The purpose is to...

The sulfur content in ferrochrome and silicon-chromium alloys was measured using infrared absorption and combustion neutralization titration methods.

- Determination of Silicon Content in Ferrochrome, Silicon-Chromium Alloy, Ferrochrome Nitride, and High-Nitrogen Ferrochrome. Silicate Molybdenum Blue Spectrophotometry and Potassium Fluorosilicate Titration The method involves dehydration by perchloric acid gravimetric method (GB/T 4699.8). The purpose is to determine the concentration of chromium in ferrochrome, silicon-chromium alloys, ferrochrome nitride, and high-nitrogen ferrochrome.

The silicon content was determined by the perchloric acid dehydration gravimetric method.

Ferrochrome, silicon-chromium alloy, ferrochrome nitride, and high-nitrogen ferrochrome Determination of silicon content using the silicomolybdenum blue spectrophotometric method Potassium fluorosilicate titration and perchloric acid dehydration gravimetric method Warning---Personnel using this document should have formal laboratory work experience. This document does not address all possible safety issues.

Users are responsible for taking appropriate safety and health measures and ensuring compliance with relevant national regulations.

1 Scope

This document specifies the methods for determining ferrochrome and silicon-chromium alloys using the silicomolybdenum blue spectrophotometric method, potassium fluorosilicate titration method, and perchloric acid dehydration gravimetric method.

Silicon content in ferrochrome nitride and high-nitrogen ferrochrome.

This document applies to the determination of silicon content in ferrochrome, silicon-chromium alloys, ferrochrome nitride, and high-nitrogen ferrochrome. Method 1.Silicon-molybdenum blue spectrophotometric method.

This method is suitable for determining the silicon content in ferrochrome, ferrochrome nitride, and high-nitrogen ferrochrome, with a determination range (mass fraction) of 0.10% to 6.00%. Method 2.Fluorine.

Potassium silicate titration is suitable for determining the silicon content in silicon-chromium alloys, with a determination range (mass fraction) of 30.00%~50.00%; Method 3.High The chloric acid dehydration gravimetric method is suitable for determining the silicon content in ferrochrome, silicon-chromium alloys, ferrochrome nitride, and high-nitrogen ferrochrome. The determination range (mass fraction) is as follows. 0.10%~60.00%.