ICS 73.060.30
CCS D 33

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 24193-2009

Chromium ores and concentrates - Determination of the aluminium, iron, magnesium and silicon contents - Inductively coupled plasma atomic emission spectrometry

铬矿石和铬精矿 铝、铁、镁和硅含量的测定 电感耦合等离子体原子发射光谱法

Issued on: July 8, 2009 **Implemented on: April 1, 2010**

Issued by: General Administration of Quality Supervision, Inspection and Quarantine;
Standardization Administration of the PRC

Table of Contents

1 Scope

2 Normative references

4 Reagents

16.0 Silicon

18.0 Magnesium

Foreword

Appendix A of this standard and Appendix B is an informative annex. The standard proposed by China Iron and Steel Association. This standard by the National Standardization Technical Committee of pig iron and ferroalloy. Drafting of this standard. Ningbo Inspection and Quarantine Institute of Science and Technology, People's Republic of China Shanghai Exit Inspection and Quarantine, the rule of Metallurgical Industry Information Standards Institute, People's Republic of China Tianjin Entry-Exit Inspection and Quarantine Bureau. The main drafters of this standard. Jinxian Zhong Zheng Lin, shall pine, Chen Jianguo, Liang Fan, Jiang Haining, Chenzi Bin, Gu Songhai. Chromium ores and concentrates of aluminum, iron, magnesium and silicon content Inductively coupled plasma atomic emission Spectrometry Warning

--- personnel should use this standard regular laboratory work experience. This standard does not point out all possible security asked question. Users have the responsibility to take appropriate safety and health practices and to ensure compliance with the conditions relevant national regulations.

1 Scope

China's national method for determining aluminium, iron, magnesium and silicon in chromium ores and concentrates by inductively coupled plasma atomic emission spectrometry. It specifies the determination of these four elements in chrome ore and concentrate. Chrome ore is bought and smelted on more than its chromium content, and these four elements are why. Chromite is a spinel in which chromium shares the structure with aluminium, iron and magnesium in proportions that vary with the deposit, so the ore is not a chromium mineral with impurities but a solid solution - and the ratio of chromium to iron is the single most important commercial parameter after the chromium grade itself, because it determines the grade of ferrochrome that can be made and therefore what the ore is worth. Aluminium and magnesium determine the slag chemistry in the furnace: they are refractory oxides that raise the melting point and the viscosity of the slag, and a smelter

matches ores to keep the slag workable. Silicon comes largely from the gangue and is both a diluent and a determinant of the reduction behaviour. So the four are determined together, and the reason for an emission method is that they are: a classical scheme would need four separate procedures on four separate portions. The difficulty is the sample rather than the measurement. Chromite is one of the most refractory minerals there is and does not dissolve in acid - it has to be brought into solution by fusion with an alkaline flux, or by a high-pressure acid digestion, and the flux itself then loads the solution with salts that suppress the plasma and interfere spectrally. The standard fixes that decomposition, the matrix matching, the analytical lines and the interference corrections, the calibration and the precision. Issued on 8 July 2009 and in force since 1 April 2010.

This standard specifies the determination of Chromium ores and concentrates of aluminum, iron, magnesium, silicon content by inductively coupled plasma atomic emission spectrometry. This standard applies to the determination of chrome ore and chrome ore in aluminum, iron, magnesium and silicon content. Determination of elements in the range shown in Table 1. Table

1 Determination of elements content range Determination of elements in the range (mass fraction) /% Aluminum

0.2 to

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 2007.1 bulk minerals sampling and sample preparation General manual sampling methods

GB/T 2007.2 bulk minerals sampling and sample preparation General manual sample preparation method

GB/T 6379.2 measurement methods and results of Accuracy (trueness and precision) - Part 2. Determine the standard measurement method to repeat Of the basic methods of reproduction (GB/T 6379.2-2004, ISO 5725-2.1994, IDT)

GB/T 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008,

ISO 3696. 1987, MOD) Principle

3 Sample molten sodium peroxide, hydrochloric acid in the leach zirconium crucible, and diluted to volume. Use of high resistance to salt spray and the corresponding fog Room,

after the sample solution is introduced into the inductively coupled plasma spray torch, which was measured by elemental analysis of each line of bare strong, according to the established school Standard curve, calculate the concentration of each element in the sample solution. Then depending on the concentration, sample quality and the volume of the sample solution is calculated for each test compound Content elements.

4 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled or deionized water or equivalent purity, in line with GB/T 6682 two water regulations.

4.1 sodium peroxide.

4.2 hydrochloride, rho1.19g/mL.

4.3 nitric acid, rho1.42g/mL.

16.0 Silicon

0.5 to 16.0

18.0 Magnesium

0.2 to