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# NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

# GB/T 24226-2009

## Chromium ores and concentrates - Determination of the calcium content - Flame atomic absorption spectrometry

铬矿石和铬精矿 钙含量的测定 火焰原子吸收光谱法

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**Standardization Administration of the PRC**

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## Foreword

Appendix A of this standard 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 Tianjin Entry-Exit Inspection and Quarantine Bureau, Metallurgical Industry Information Standards Institute. The main drafters of this standard. forest edge, Chenshao Hong, Zheng Lin, shall pine, slowly Fu, Gu Songhai, Chenzi Bin. Determination of Chromium ores and concentrates calcium content Flame Atomic Absorption 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 calcium in chromium ores and concentrates by flame atomic absorption spectrometry. It specifies the determination of the calcium content of chrome ore and concentrate. Calcium is not part of the chromite structure - it belongs to the gangue, in carbonate or silicate minerals accompanying the ore - and it is determined for what it does in the furnace rather than for what it says about the ore. In ferrochrome smelting the slag chemistry decides the recovery of chromium and the energy consumption, and calcium oxide is the principal basic component of that slag: it lowers the melting point and the viscosity of a slag otherwise dominated by refractory magnesia and alumina, it changes the activity of the chromium oxide and therefore how much chromium is reduced rather than lost to the slag, and it affects the sulfur distribution. A smelter therefore needs the calcium content of every ore it blends, and adds lime to make up what the ores do not supply - so an ore with useful calcium is worth more than its chromium grade alone suggests. Flame atomic absorption is the right technique for a single element at these

levels: it is simple, cheap, specific and precise enough, and a laboratory that runs it needs no more than a burner and a lamp. What the method must handle is the same decomposition problem as every chrome ore analysis - the mineral will not dissolve without fusion - and the specific interference that afflicts calcium in flame absorption, since aluminium, silicon and phosphate form refractory compounds with calcium in the flame and suppress the signal. The standard fixes the decomposition, the releasing agent used to overcome that suppression, the flame conditions, the calibration and the precision. Issued on 15 July 2009 and in force since 1 April 2010.

This standard specifies the flame atomic absorption spectrometry Chromium ores and concentrates calcium content. This standard applies to the determination of chromium ores and concentrates in calcium content. Measurement range (mass fraction, calcium oxide meter). 0.10% ~ 1.00%.

## 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 6682 analytical laboratory use specifications and test methods ( GB/T 6682-2008, ISO 3687. 1987, MOD)

GB/T 12806 Laboratory glassware single marking flask ( GB/T 12806-1991, eqv ISO 1042. 1983)

GB/T 12808 standard laboratory glassware single line pipette ( GB/T 12808-1991, eqv ISO 648. 1977)

GB/T 24243 chrome ore samples taken parts ( GB/T 24243-2009, ISO 6153. 1989, IDT)

ISO 6154. 1989 chrome ore sample preparation Principle

3 Sample sodium peroxide in a zirconium crucible of molten metal exploded. Melt dissolved in hot water, hydrochloric acid and rinsed acidified zirconium metal crucible, boiled Decompose excess sodium peroxide. EDTA as protective agent, strontium chloride and lanthanum chloride solution as release agents, interference suppression elements. In the atomic absorption On a take-spectrometer, the wavelength at 422.7nm, air - acetylene flame measured absorbance of calcium.

## 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

regulations.

### 4.1 Sodium peroxide. Warning

--- sodium peroxide has a strong oxidation, can not contact with organic matter and other reducing substances, or prone to fire and explosion. Sodium peroxide after waste paper or similar combustible materials shall not be thrown into the waste tank wrap, rinse with water discharged into the sewer, so as not to cause spontaneous combustion Fire.

### 4.2 Hydrochloride, rho1.19g/mL. HCl 4.3, 1 + 1. Solution

4.4 EDTA, disodium edetate dihydrate, C10H14N2O8Na2 · 2H2O, 100g/L. Weigh 50.0gEDTA, placed in 500mL beaker, add 400mL water, dissolved by heating, cooled to room temperature. The solution was transferred to 500mL volumetric flask, dilute with water to volume, and mix.

4.5 Sr solution, 50g/L. Weigh 30.43g high purity strontium chloride (SrCl2 · 6H2O, the mass fraction of 99.99%) in the 150mL beaker, dissolved in water, move