

ICS 71.100.10  
CCS D 52

**SN**

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

**SN/T 1404-2004**

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**Determination of manganese content in fluorspar for export.  
Flame atomic absorption spectrometric method**

出口氟石粉中锰含量测定方法 火焰原子吸收分光光度法

**(English Translation)**

**Issued on: June 1, 2004**

**Implemented on: December 1, 2004**

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**Issued by: General Administration of Quality Supervision, Inspection and  
Quarantine of the People Republic of China**

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### Foreword

Appendix A of this standard is an informative annex.

This standard is proposed and managed by the National Certification and Accreditation Administration.

This standard was drafted. Shanghai Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China.

### 1 Scope

This standard specifies the method for determination of manganese content in exported fluorspar powder.

This standard applies to the determination of manganese content in exported fluorspar powder. Measuring range. 0.0010% to 0.10%.

### 2 Normative references

The terms in the following documents become the terms of this standard by reference to this standard. All dated references, followed by all Modifications (not including errata content) or revisions do not apply to this standard, however, parties to agreements based on this standard are encouraged to study Whether the latest version of these documents can be used, and the most recent version of the undated reference document applies to this standard.

GB.2008 bulk fluorite sampling and sample preparation method GB/T 6682-1992 Analytical laboratory water specifications and test methods

### 3 Method summary

The sample is treated with hydrofluoric acid and perchloric acid, dissolved in hydrochloric acid and boric acid, and then subjected to atomic absorption spectrophotometer at 279.5 nm in a hydrochloric acid medium.

The absorbance of manganese is determined by an air-acetylene flame.

### 4 Reagents

#### 4.1

Unless otherwise specified, the reagents used in this standard are of analytical grade, and the test water should meet the secondary water of GB/T 6682-1992 laboratory.

Provisions.

#### 4.2

Hydrochloric acid (1+1).

#### 4.3

Hydrofluoric acid ( $\rho$ 1.15g/mL).

#### 4.4

Perchloric acid ( $\rho$ 1.67g/mL).

#### 4.5

Boric acid, the reference reagent.

#### 4.6

Calcium carbonate solution. Weigh 8g of reference calcium carbonate, dissolve it in 40mL hydrochloric acid (4.2) and dilute to 100mL with water, and mix.

### 4.7 Manganese standard solution

#### 4.7.1

Weigh 0.5000g of manganese metal (99.99%), place it in a 250mL beaker, add 10mL of hydrochloric acid (4.2), and dissolve it after it is dissolved.

Into a 500mL volumetric flask, dilute to the mark with water and shake well. 1 mL of this solution contained 1 mg of manganese.

#### 4.7.2

Pipette 5mL manganese standard solution (4.7.1) into a 500mL volumetric flask, dilute to the mark with water, and shake well. This solution contains 1mL 10  $\mu$ g of manganese.

### 5.1 Atomic absorption spectrophotometer

The atomic absorption spectrophotometer shall be equipped with a manganese hollow cathode lamp. See Appendix A for working condition parameters.

Under the best working conditions of the instrument, anyone who can achieve the following indicators can be used.

Characteristic concentration. in the solution consistent with the matrix of the measurement sample solution, the characteristic concentration of manganese should be no more than 0.037  $\mu\text{g/mL}$ ;

Precision. The absorbance is measured 10 times with the highest concentration standard solution, and the standard deviation should not exceed 1.0% of the average absorbance.

The concentration standard solution (not the "zero" standard solution) measures 10 absorbances, and the standard deviation should not exceed the highest concentration standard solution average absorbance.