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

GB/T 31948-2015

**Chromium ores - Determination of mercury content - Solid
sampling and direct mercury analysis method**

铬矿石 汞含量的测定 固体进样直接测定法

Issued on: September 11, 2015

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

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. The standard proposed by China Iron and Steel Association. This standard by the national pig iron and ferroalloy Standardization Technical Committee (SAC/TC318) centralized. This standard was drafted. Tianjin Entry-Exit Inspection and Quarantine Bureau of Metallurgical Industry Information Standards Institute. The main drafters of this standard. Guo Fen, Su Mingyue, Gu Songhai, Yangjin Kun, Li Quan Bin, Wang Hong, Song Yi, Wang Haoyun, newly Hood, Chenzi Bin. Determination of mercury content of chrome ore Direct solid sampling assay Warning

--- the use of this standard should have practical experience in regular laboratory work. This standard does not point out all possible security problem. Users have the responsibility to take appropriate safety and health practices and to ensure compliance with the conditions of the relevant provisions of the State.

1 Scope

China's national method for determining mercury in chromium ore by direct analysis of a solid sample. It specifies the principle, the reagents, the apparatus, the sampling and sample preparation, the procedure, the calculation of results and the precision, and it applies to the determination of mercury in chromium ore over the range from 0.001 to 5.00 micrograms per gram. Chromium ore is chromite, a spinel of chromium and iron, and it is imported into China in large quantity for the production of ferrochrome and stainless steel. Mercury in it follows the same path as in any ore smelted at high temperature: it is volatile, so it leaves the furnace with the off-gas rather than staying in the alloy or the slag, and it becomes an emission or a gas cleaning load. The method used here is the thermal decomposition, amalgamation and atomic absorption route, which avoids dissolving the sample at all - and for chromite that avoidance is worth more than for most ores. Chromite is one of the most chemically resistant minerals in commercial use: it does not dissolve in ordinary acids, and getting it into solution requires an alkali fusion at high temperature, which is precisely the operation during which a volatile element is lost. A digestion-based mercury method on chromite would therefore be measuring what survived the fusion rather

than what was in the ore. Direct solid analysis sidesteps the problem entirely: the sample is decomposed in a stream of oxygen inside the instrument, the mercury released is trapped on gold and then released and measured, and nothing is ever dissolved. The lower limit of 0.001 micrograms per gram is the lowest of the three ore methods in this group. Issued on 11 September 2015 and in force since 1 June 2016.

This standard specifies the method for determination of solid sampling mercury content measured directly. This standard applies to the determination of chromium ore mercury content measurement range. 0.001 μ g/g ~ 5.00 μ g/g.

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. Preparation of standard solution of

GB/T 602 Determination of impurities in chemical reagents

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 Laboratory use specifications and test methods GB/T 6682 Analysis

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

GB/T 24243 chrome ore samples taken part

GB/T 29517 bulk chrome ore manual sample preparation method JJG548 mercury analyzer test procedures Principle

3 In an oxygen atmosphere, the sample was dried in calciner and thermal decomposition, the decomposition products by the catalytic oxygen stream is supplied to the furnace, the addition After impurities and catalytic decomposition, sample pyrolysis mercury into mercury atoms, selective capture by the flow of oxygen into the gold amalgam vessel. After purification system was purged with oxygen, rapid heating amalgamation device, releasing mercury vapor. Mercury vapor is brought into the single-wavelength optical absorption cell at a wavelength 253.65nm mercury measured absorbance was quantified using the standard curve method.

4 Reagents and materials

Unless otherwise indicated in the analysis using only the gifted class pure reagents and in line with GB/T 6682 provisions of a homogeneous water or water.

4.1 nitric acid, ρ 1.42g/mL.

4.2 nitric acid solution, 119.

4.3 potassium dichromate.

4.4 potassium dichromate solution, 10g/L. Weigh 1g potassium dichromate (see 4.3) were dissolved in 100mL of water.

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