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

GB/T 31949-2015

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

锰矿石 汞含量的测定 固体进样直接测定法

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Quarantine;
Standardization Administration of the PRC**

Table of Contents

- 1 Scope
- 2 Normative references
- 4 Reagents and materials

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. Gu Songhai, Guo Fen, Su Mingyue, Yangjin Kun, Li Quan Bin, Wang Hong, Song Yi, Wang Haoyun, newly Hood, Chenzi Bin. Determination of mercury content of manganese 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 manganese 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 manganese ore over the range from 0.005 to 5.00 micrograms per gram. Manganese ore is imported into China in very large quantity, principally for ferromanganese and silicomanganese production and hence for steelmaking, where manganese is the most widely used alloying element after carbon. As in the companion methods for iron and chromium ore, the mercury question is one of volatility: mercury in the ore leaves the furnace with the off-gas rather than reporting to the alloy or the slag, so it becomes an emission or a gas cleaning load, and the amount arriving with a cargo is worth knowing. The method is the thermal decomposition, amalgamation and atomic absorption route common to the group: the solid sample is decomposed in oxygen inside the instrument, the mercury released is captured on a gold trap, and after purging the trap is heated and the released vapour measured at a single wavelength. What distinguishes manganese ore in this application is its chemistry rather than its resistance.

Manganese dioxide is a strong oxidising agent, and it decomposes on heating with the release of oxygen, so the sample contributes to the combustion atmosphere rather than merely being consumed by it. That makes the thermal programme and the catalyst duty different from those for an iron ore, which is why manganese ore has a method of its own rather than being covered by the iron ore one. 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 mercury content in ores, measuring range. 0.005µg/g ~ 5.00µg/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 2011 manganese ore bulk sampling and 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 Laboratory use specifications and test methods GB/T 6682 Analysis

GB/T 8170 repair value expressed about the rules and limit values \u200b\u200band judgment 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 of the amalgam, a mercury vapor released. 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. Nitric acid 4.1, rho = 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.

4.5 mercury standard stock solution, 100 μ g/mL. According to GB/T 602 method of preparation, or direct use of certified reference materials.

4.6 mercury standard solution, 20 μ g/mL. Pipette 20mL accurate mercury standard stock solution (see 4.5) in 100mL flask, add