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

GB/T 24190-2009

**Iron ores -- Determination of combined water -- Karl Fischer
method**

铁矿石 化合水含量的测定 卡尔费休滴定法

(English Translation)

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Foreword

This revised standard adopts ISO 7335. 1987 "Determination of combined water iron ore KarlFischer Law" (in English).

This standard and ISO 7335. 1987 comparison, there are the following changes on the technical content.

--- Combined water in accordance with the definition of "Iron ore and direct reduced iron term" standard words "after the removal of the absorbent water, at a temperature of 950 °C plus Iron is hot before the full release of that part of the water. "

--- Increasing the Karl Fischer method and the calibration solution formula.

--- Increasing the standard substance calibration methods and formulas Karl Fischer solution.

--- According to the actual situation of commercially available heating pipe sizes to 700mm ~ 800mm.

--- Increasing the magnetic stirrer and stir materials and rate requirements.

--- According to the actual situation of commercially available sample boat sizes to 55mm x 20mm x 15mm.

--- Add a description of the use of automatic potentiometric titrator.

--- Rounding off according to GB/T 8170 rounding off rules.

--- ISO 7335. 1987 approval method 8.2.2 Analysis of values \u200b\u200bprovided between laboratory standard deviation of the iron ore requirements of the standard sample and laboratory standard deviation, standard samples due to the current domestic supply is no standard sample validation interlaboratory bias Difference and standard deviation of the laboratory validation, generally only the sample standard deviation Ju data standards, so that the analysis can not be performed acceptance value Row this way, it was decided to adopt a standard sample standard deviation of alternative laboratory standard samples and the laboratory standard deviation.

Because ISO standards for measuring atomic absorption spectrometry in standard version published after 1998 have been used in a standard sample Variance Vp (A Ba), it will change the Ju Vp (A Ba).

Appendix A of this standard is a normative appendix, Appendix B and Appendix C are informative appendices.

The standard proposed by China Iron and Steel Association.

This standard by the National Standardization Technical Committee of the reduced iron ore and direct.

1 Scope

This standard specifies the determination of iron compounds in the water by the Karl Fischer titration method.

This method is applicable to the combined water content in the range of 0.05% to 10% (by mass) of natural ore, iron ore concentrate, and agglomeration, including roast Junction products.

Note: The iron ore term "combined water" means only after the removal of hygroscopic water, when heated at a temperature of 950 °C before the full release of that part of the water.

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 3696. 1987, MOD) GB/T 6730.1 Method for analysis of chemical analysis of iron pre-drying of the sample preparation (GB/T 6730.1-1986, idt ISO 7764. 1985) GB/T 8170 repair value expressed about the rules and limit values \u200b\u200band judgment GB/T 10322.1 mechanical ore sampling and sample preparation method (GB/T 10322.1-2000, idtISO 3082.1998) GB/T 12805 Laboratory glassware burette (GB/T 12805-1991, neqISO 385. 1984) Principle 3 105 °C in a heating furnace, and heated in an atmosphere of dry nitrogen predried test samples, so that the water released from the absorbent. In another continues 950 °C heating furnace, with ethylene glycol - a mixture of methanol and water collection release compounds.

Endpoint detection potentiometric titration, Karl Fischer solution in order to determine the content of the compound of water.

4 Reagents

Analysis Unless otherwise stated, use only reagents of recognized analytical grade, deionized water or water of equivalent purity, in line with GB/T 6682 of Provisions.

4.1

desiccant. silica gel, granular, tips from the blue.

4.2

Desiccant. particle size 0.8mm ~ 1.25mm anhydrous magnesium perchlorate $[\text{Mg}(\text{ClO}_4)_2]$ or other suitable desiccant.

NOTE: magnesium perchlorate is a strong oxidant, NO contact with organic matter. Processing residues, required a large flow of water into the sump.

4.3

Nitrogen. filtered, pre-dried oil-free nitrogen, oxygen per liter less than 10 μL , a pressure higher than the atmospheric pressure is about 35kPa.

4.4

glycol ($\text{OHCH}_2\text{-CH}_2\text{OH}$) - methanol (CH_3OH) a mixture of (1 + 1). Before each use of the mixed solution, the test should be run from water content, such as free water is greater than 0.05% (mass fraction), it should not be used.

Note: The dry ethylene glycol in place of the mixed solution can be used. But in this case, the Karl Fischer solution must contain an appropriate amount of methanol.

4.5

Karl Fischer solution (2.5mg/mL ~ 3.0mg/mL). The solution should be used in the day with one of the following substances calibration.

a) Water - methanol standard solution.