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

GB/T 6730.10-2014

**Iron ores -- Determination of silicon content -- Gravimetric
methods**

(English Translation)

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Foreword

GB/T 6730 Iron Ores is divided into 64 parts.

This is Part 10 of GB/T 6730.

This Part was drafted in accordance with the rules provided in GB/T 1.1-2009.

This Part serves as a replacement of GB/T 6730.10-1986 Methods for Chemical Analysis of Iron Ores - The Gravimetric Method for the Determination of Silicon Content.

In comparison with GB/T 6730.10-1986, apart from editorial modifications, the main technical changes are as follows.

---In the previous version, the specimen is decomposed with hydrochloric acid, and the residue is melted with a mixed solvent of sodium carbonate and boric acid. In this Part, two methods are used for the decomposition of the test portion.

Method 1 uses sodium peroxide to melt and decompose, then, uses hydrochloric acid and perchloric acid for treatment; Method 2 uses hydrochloric acid, nitric acid and perchloric acid (if necessary, including boric acid) to dissolve, and evaporates, until it emits perchloric acid fumes; then, filters the silica precipitate together with all residues; uses sodium carbonate to melt it, and dissolves it in hydrochloric acid and perchloric acid.

---The range of determination is modified from 1.50% ~ 25.00% to 1.00% ~ 15.00%.

---In the previous version, in terms of data processing, rounding off the result data in accordance with the numerical rounding-off rules is only mentioned, without making a specific statement. After the revision, specific requirements are made for the data rounding-off rules.

---The clause of safety warning is added.

---Specific requirements for the content of the test report are added.

This Part uses the re-drafting method and takes ISO 2598-1.1992 Iron Ores - Determination of Silicon Content - Part 1.Gravimetric Methods as a reference in the formulation. The degree of consistency with ISO 2598-1.1992 is non-equivalent. In comparison with ISO 2598-1.1992, the technical differences and the causes for the differences are as follows.

---In terms of Normative References, this Part makes adjustments with technical differences to adapt to the technical conditions of China. The adjustment is intensively reflected in Chapter 2 "Normative References". See the specific adjustment below.

lambda The reference of GB/T 6682 is added (see Chapter 4);

lambda GB/T 6730.1, which equivalently adopts international standard, is used to replace ISO 7764 (see 6.1);

lambda GB/T 6730.3, which equivalently adopts international standard, is used to replace ISO 2596 (see 6.2.1);

lambda GB/T 10322.1, which equivalently adopts international standard, is used to replace ISO 3082 (see 6.1);

lambda GB/T 12806, which non-equivalently adopts international standard, is used to replace ISO 1042 (see Chapter 5);

lambda GB/T 12808, which equivalently adopts international standard, is used to replace ISO 648 (see Chapter 5).

---In the final result calculation in 8.2.3, the expression of ISO 2598-1.1992 is

modified in accordance with the expression mode of the current Chinese standard, so as to be more consistent with the customs of China and facilitate the application.

This Part was proposed by China Iron and Steel Association.

This Part shall be under the jurisdiction of National Technical Committee 317 on Iron Ores and Directly Reduced Iron of Standardization Administration of China (SAC/TC 317).

The drafting organizations of this Part. ANSTEEL Group Mining Corporation Limited; Shanghai Entry-Exit Inspection and Quarantine Bureau; Magang (Group) Holding Co., Ltd.; China Metallurgical Information and Standardization Institute.

1 Scope

This Part of GB/T 6730 specifies the gravimetric determination of silicon content in iron ores.

This Part is applicable to natural iron ores, iron concentrates and man-made ore agglomerates, including sintered products. The range of determination (mass fraction) is 1.00% ~ 15.00%.

Method 1. this method is not applicable to iron ores with a reducing agent content greater than 2% (mass fraction), for example, pyrite, or iron ores with fluorine content greater than 0.1% (mass fraction). This method is recommended for low-grade ores with a relatively high amphoteric element content.

Method 2. this method may be used for iron ores with fluorine content greater than 0.1% (mass fraction). This method is recommended for high-grade ores with low gangue content.

NOTE: for samples whose silicon content is less than 5% (mass fraction), the silico-molybdic acid reduction spectrophotometry is more suitable.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references,

the latest edition of the referenced document (including any amendments) applies.

GB/T 6682 Water for Analytical Laboratory Use - Specification and Test Methods (GB/T 6682-2008, ISO 3696.1987, MOD)

GB/T 6730.1 Methods for Chemical Analysis of Iron Ores - Preparation of Pre-dried Test Samples for Chemical Analysis (GB/T 6730.1-1986, idt ISO 7764.1985)

GB/T 6730.3 Methods for Chemical Analysis of Iron Ores - The Gravimetric Method for the Determination of Hygroscopic Moisture Content in Analytical Samples (GB/T 6730.3-1986, idt ISO 2596.1984)

GB/T 10322.1 Iron Ores - Sampling and Sample Preparation Procedures (GB/T 10322.1-2000, ISO 3082.1998, IDT)

3 Principle

Use Method 1 or Method 2 to decompose the specimen to be tested.

Method 1. use sodium peroxide to melt and decompose, then, use hydrochloric acid and perchloric acid for treatment.

4 Reagents and Materials

Unless it is otherwise stated in the analysis, only approved analytically pure reagents and Grade-2 water that complies with the stipulations of GB/T 6682 are used in the analysis.

5 Instruments

Commonly used laboratory instruments, including one-mark volumetric flasks and one-mark pipettes that comply with the stipulations of GB/T 12806 and GB/T 12808.

5.1 Nickel crucible, corundum crucible or graphite crucible. with a volume of about 40

mL.

6.1 Laboratory Specimens

In accordance with the stipulations of GB/T 10322.1, conduct sampling and specimen preparation. Generally speaking, the particle size of the specimen shall be less than