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

GB/T 6730.46-2025

Replacing GB/T 6730.46-2006

**Iron ores - Determination of arsenic content -
Arseno-molybdenum blue spectrophotometric method after the
distillation separation**

铁矿石 砷含量的测定 蒸馏分离-砷钼蓝分光光度法
(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 46 of GB/T 6730. Previous parts of GB/T 6730 are listed in Appendix A.

This document replaces GB/T 6730.46-2006 "Determination of Arsenic Content in Iron Ore - Distillation Separation - Arsenic-Molybdenum Blue Spectrophotometric Method".

Compared with GB/T 6730.46-2006, apart from structural adjustments and editorial changes, the main technical changes are as follows.

a) The scope of the document has been changed from "natural iron ore, iron concentrate and agglomerates, including sintered products" to "iron ore".

Stone, iron concentrate, sinter and pellets (see Chapter 1, Chapter 1 of the 2006 edition);

b) Added a "Warning" section regarding the use of sodium peroxide in the "Reagents and Materials" section (see Chapter 5);

c) Analytical balances have been added to the "Instruments and Equipment" section (see 6.4);

d) Increased requirements for laboratory samples with high levels of bound water and easily oxidizable substances (see 7.1);

e) The descriptions regarding the use of cuvettes in spectrophotometric determinations have been revised (see 8.4.3, 7.4.3 in the 2006 edition);

f) The descriptions related to plotting calibration curves have been revised (see 8.5, 7.5 in

the 2006 edition);

g) The relevant wording of the precision regression equation has been changed (see 9.2.1, 8.2.1 in the 2006 version).

This document is modified to adopt ISO 7834:1987 "Determination of arsenic content in iron ore - Molybdenum blue spectrophotometric method".

This document includes a new chapter on "Terms and Definitions".

The technical differences between this document and ISO 7834:1987, and the reasons therefor, are as follows.

a) ISO 1042 has been replaced by the normatively referenced GB/T 12806, and ISO 648 has been replaced by GB/T 12808 (see GB/T 12806).

Chapter 6), replacing ISO 3082 with GB/T 10322.1 and ISO 7764 with GB/T 6730.1 (see Chapter 7);

Add normative references to GB/T 6682 (see Chapter 5), GB/T 8170 (see 9.2.5), and GB/T 12807 (see Chapter 6).

GB/T 7729 (see 6.3) and GB/T 6730.2 (see 7.2) are adapted to my country's national conditions;

b) The types of crucibles have been increased (see 6.1) to better suit my country's national conditions;

c) The relevant descriptions regarding the use of cuvettes in spectrophotometric determinations have been revised (see 8.4.3, 7.4.3 of ISO 7834:1987) to adapt to Chinese conditions.

National conditions;

d) The relevant descriptions for plotting calibration curves have been revised (see 8.5, 7.5 of ISO 7834:1987) to adapt to my country's national conditions;

e) The wording of "precision," "accuracy check," and "calculation of final result" has been revised to adopt the figures given in GB/T 8170.

The word rounding method should be used for rounding (see Chapter 9, Chapter 8 of ISO 7834:1987) to adapt to my country's national conditions.

The following editorial changes have been made to this document.

---The standard name has been changed to "Determination of Arsenic Content in Iron Ore. Distillation and Separation - Arsenic-Molybdenum Blue Spectrophotometric Method".

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Iron and Steel Association.

This document is under the jurisdiction of the National Technical Committee on Standardization of Iron Ore and Direct Reduced Iron (SAC/TC317).

Introduction

Iron ore is the main raw material for the steel industry. Within the steel industry's standard system, the standard system for determining the chemical composition of iron ore is its core component.

This series of method standards is a very important part of iron ore production and plays a vital role in ensuring the quality of iron ore products. It serves the production process of iron ore.

Production, trade, and application provide technical support for the high-quality development of my country's steel industry.

GB/T 6730 includes a series of standards for the determination of chemical composition of iron ore, specifying the methods for determining moisture, total iron, and metal content in iron ore products.

Iron, ferrous iron, silicon, aluminum, calcium, magnesium, sulfur, phosphorus, manganese, titanium, total rare earth elements, barium, chromium, vanadium, tin, copper, cobalt, nickel, zinc, niobium, bismuth, potassium, sodium, carbon, lead, arsenic.

Methods for determining chemical components such as cadmium, mercury, fluorine, chlorine, loss on ignition, and combined water.

In 1986, GB/T 6730 was the first national standard to release 51 methods for the determination of chemical composition of iron ore. This standard reflects the advancements in analytical techniques in the iron ore field.

Based on technological development and actual production needs, and through years of continuous revision and development, a relatively complete standard system has been formed.

For details of the constituent documents of GB/T 6730, please refer to Appendix A.

Determination of arsenic content in iron ore Distillation Separation-Arsenic-Molybdenum Blue Spectrophotometry Warning---Personnel using this document should have formal laboratory work experience. This document does not address all possible safety issues.

Users are responsible for taking appropriate safety and health measures and ensuring compliance with relevant national regulations.

1 Scope

This document specifies a method for determining the arsenic content in iron ore using the distillation-arsenic-molybdenum blue spectrophotometric method.

This document applies to the determination of arsenic content in iron ore, iron concentrate, sinter, and pellets. Determination range. 0.0001%~0.1% (mass content).

(Quantity fraction) (1 µg/g ~ 1000 µg/g).

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 6682 Specifications and test methods for water used in analytical laboratories (GB/T 6682-2008, ISO 3696:1987, MOD) GB/T 6730.1 Preparation of pre-dried samples for analysis of iron ore (GB/T 6730.1-2016, ISO 7764:2006, MOD) GB/T 6730.3 Determination of hygroscopic moisture content in iron ore analytical samples by gravimetric method, Karl Fischer method and mass loss method (GB/T 6730.3) 6730.3-2017, ISO 2596:2006, MOD) GB/T 7729 General Rules for Chemical Analysis of Metallurgical Products - Spectrophotometric Method GB/T 8170 Rules for rounding off numerical values and the representation and determination of limiting values GB/T 10322.1 Sampling and sample preparation methods for iron ore (GB/T 10322.1-2023, ISO 3082:2017, IDT) GB/T 12806 Laboratory glassware - Single-mark volumetric flasks (GB/T 12806-2011, ISO 1042:1998, NEQ) GB/T 12807 Graduated pipettes for laboratory glassware (GB/T 12807-2021, ISO 835:2007, NEQ) GB/T 12808 Laboratory Glassware - Single-mark Pipettes

3 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

4 Principles

The sample was melted and decomposed with sodium peroxide, then leached with water and hydrochloric acid. The solution was transferred to a distillation flask to evaporate part of the solution, and then treated with potassium bromide and...

The mixture was treated with hydrazine sulfate, followed by acidity adjustment. Arsenic trichloride was distilled and the distillate was collected in nitric acid, evaporated, and dried,