



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

GB/T 6730.55-2019

**Iron ores - Determination of tin content - Flame atomic
absorption spectrometric method**

Issued on: March 25, 2019

Implemented on: February 1, 2020

Issued by: SAMR; SAC

Table of Contents

Foreword...	3
1 Scope...	5
2 Normative references...	5
3 Principle...	6
4 Reagents...	6
5 Apparatus...	7
6 Sampling and samples...	8
7 Procedure...	8
8 Expression of results...	10
9 Test report...	13

Foreword

GB/T 6730, Iron ores, comprises dozens of parts.

This Part is the 55th part of GB/T 6730.

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

This Part replaces GB/T 6730.55-2004, Iron ores - Determination of tin content - Flame atomic absorption spectrometric method. The significant technical changes with respect to GB/T 6730.55-2004, in addition to some editorial changes, are as follows:

- it adds in apparatus high temperature furnace suitable for heating to 1 000°C ~ 1 020°C (see 5.4);
- it changes the requirements for sample amount, accurate to 0.000 2 g (see 7.2;

7.2 of edition 2004);

- it changes the precision regression equation (see 8.2.1; 8.2.1 of edition 2004);
- it changes the trueness check equation (see 8.2.4; 8.2.4 of edition 2004).

This Part was redrafted by modifying and adopting ISO 11534:2006, Iron ores - Determination of tin - Flame atomic absorption spectrometric method.

The technical differences between this Part and ISO 11534:2006, and the reasons, are

as follows:

-- with respect to normative references, some adjustments are made in this Part resulting in some technical differences, in order to adapt to the technical conditions in China. The adjustments are intensively reflected in "Normative references" of Clause 2. This Part:

? adds the references including GB/T 6379.1, GB/T 6379.2, GB/T 7728, GB/T 8170, GB/T 12807, GB/T 12808 (see Clause 5, 8.2.1, 8.2.5);

? deletes ISO 648;

? uses GB/T 6682 modifying and adopting the international standard to replace ISO 3696 (see Clause 4);

? uses GB/T 6730.1 modifying and adopting the international standard to replace ISO 7764 (see 6.2);

? uses GB/T 10322.1 equivalently adopting the international standard to replace ISO 3082 (see 6.1);

? uses GB/T 12806 non-equivalently adopting the international standard to replace 1042 (see Clause 5);

-- it adjusts the sequence and numbers of the clauses in the "Reagents"

Iron ores - Determination of tin content - Flame

atomic absorption spectrometric method

Warning - The operators using this Part shall have practical experiences in the work in a normal laboratory. This Part does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this Part to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This Part of GB/T 6730 specifies the flame atomic absorption spectrometric method for the determination of the mass fraction in iron ores.

This Part applies to mass fractions of tin between 0.001% and 0.015% in natural ores,

iron ore concentrates and agglomerates, including sinter products.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced documents (including all amendments) applies to this document.

GB/T 6739.1, Accuracy (trueness and precision) of measurement methods and results - Part 1: General principles and definitions (GB/T 6739.1-2004, ISO 5725-1:1994, IDT)

GB/T 6739.2, Accuracy (trueness and precision) of measurement methods and results - Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method (GB/T 6739.1-2004, ISO 5725-1:1994, IDT)

GB/T 6682, Water for analytical laboratory use - Specification and test methods (GB/T 6682-2008, ISO 3696:1987, MOD)

GB/T 6730.1, Iron ores - Preparation of predried test samples for chemical analysis (GB/T 6730.1-2016, ISO 7764:2006, MOD)

4.10 Potassium iodide/ascorbic acid solution: dissolve 90 g of potassium iodide in

water, add 30 g of ascorbic acid and 30 mL of hydrochloric acid (4.3), and dilute with water to 200 mL. This solution shall be freshly prepared just prior to use.

4.11 Tri-n-octyl phosphine oxide (TOPO)/4-methyl-2 pentanone (MIBK) solution: dissolve 1 g of TOPO in 100 mL of MIBK.

4.12 Tin standard solution, 200 µg/mL.

Dissolve 0.1 000 g of tin metal (purity > 99.5%) in a platinum crucible (with cover) with

5 mL of hydrochloric acid (4.3). After cooling, transfer the solution to a 500 mL

volumetric flask, add 200 mL of hydrochloric acid (4.6), and dilute to volume with hydrochloric acid (4.6), and mix. A certified tin standard solution, which is commercially available, can also be used.

4.13 Tin standard solution, 20 µg/mL.

Transfer 10 mL of tin standard solution (4.12) to a 100 mL volumetric flask, dilute to volume with hydrochloric acid (4.6) and mix.

5 Apparatus

Unless specified otherwise, ordinary laboratory apparatus, including one-mark pipettes, graduated pipettes and one-mark volumetric flasks complying with the specifications of GB/T 12806, GB/T 12807 and GB/T 12808 respectively, and the following.

5.5 Atomic absorption spectrometer, equipped with a dinitrogen oxide/acetylene burner.

Carry out the analysis at least in duplicate in accordance with Annex A, independently, on one predried test sample.

NOTE: The expression "independently" means that the second and any subsequent result is

not affected by the previous result(s). For the particular analytical method, this condition implies

that the repetition of the procedure is carried out either by the same operator at a different time

or by a different operator including, in either case, appropriate recalibration.

7.2 Test portion

Taking several increments, weigh, to the nearest 0.000 2 g, approximately 1.00 g of the predried test sample obtained in accordance with 6.2. The test portion should be taken and weighed quickly to avoid re-absorption of moisture.

7.3.1 Blank test

When the analysis is carried out, carry out the blank test; all reagents are from the same reagent bottle.