INTERNATIONAL STANDARD

ISO 2598-2

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Iron ores — Determination of silicon content —

Part 2:
Reduced molybdosilicate spectrophotometric method

Minerais de fer — Dosage du silicium —

Partie 2: Méthode spectrophotométrique au molybdosilicate réduit

Reference number
ISO 2598-2:1992(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 2598-2 was prepared by Technical Committee ISO/TC 102, *Iron ores*, Sub-Committee SC 2, *Chemical analysis*.

This part of ISO 2598 cancels and replaces ISO 4686:1980, of which it constitutes a technical revision.

ISO 2598 consists of the following parts, under the general title *Iron ores — Determination of silicon content*:

— *Part 1: Gravimetric methods*

— *Part 2: Reduced molybdosilicate spectrophotometric method*

Annex A forms an integral part of this part of ISO 2598. Annexes B and C are for information only.

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Iron ores — Determination of silicon content —

Part 2:
Reduced molybdosilicate spectrophotometric method

1 Scope

This part of ISO 2598 specifies a reduced molybdosilicate spectrophotometric method for the determination of the silicon content of iron ores.

This method is applicable to silicon contents between 0,1 % (*m/m*) and 5,0 % (*m/m*) in natural iron ores, iron ore concentrates and agglomerates, including sinter products, especially for ores containing fluorine.

The fluorine content of the sample does not affect the determination.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 2598. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 2598 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 648:1977, *Laboratory glassware — One-mark pipettes.*

ISO 1042:1983, *Laboratory glassware — One-mark volumetric flasks.*

ISO 3081:1986, *Iron ores — Increment sampling — Manual method.*

ISO 3082:1987, *Iron ores — Increment sampling and sample preparation — Mechanical method.*

ISO 3083:1986, *Iron ores — Preparation of samples — Manual method.*

ISO 7764:1985, *Iron ores — Preparation of predried test samples for chemical analysis.*

3 Principle

Decomposition of the test portion by fusion with sodium tetraborate or a fusion mixture (carbonate and tetraborate) and treatment with dilute nitric acid.

Addition of ammonium molybdate to convert the silicate into a molybdosilicate complex and reduction to molybdenum blue with ascorbic acid.

Spectrophotometric measurement of the absorbance of the molybdenum blue complex at a wavelength of approximately 600 nm.

4 Reagents

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

4.1 Sodium tetraborate ($Na_2B_4O_7$), anhydrous.

4.2 Potassium nitrate (KNO_3).

To be used as in note 6 of 7.4.1.

4.3 Fusion mixture.

Mix 100 g of anhydrous sodium carbonate (Na_2CO_3)/anhydrous potassium carbonate (K_2CO_3) mixture (1 + 1) with 30 g of anhydrous sodium tetraborate (4.1) and 0,5 g of potassium nitrate (4.2).

4.4 Nitric acid, ρ 1,4 g/ml, diluted 1 + 9.