SLOVENSKI STANDARD
SIST ISO 8371:1998

01-november-1998

Železove rude - Ugotavljanje izgube teže pri segrevanju

Iron ores -- Determination of decrepitation index

Minerais de fer -- Détermination de l'indice de décrépitation

Ta slovenski standard je istoveten z: **ISO 8371:1994**

ICS:

73.060.10 Železove rude Iron ores

SIST ISO 8371:1998 **en**

INTERNATIONAL STANDARD

ISO 8371

First edition
1994-11-15

Iron ores — Determination of decrepitation index

Minerais de fer — Détermination de l'indice de décrépitation

Reference number
ISO 8371:1994(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 8371 was prepared by Technical Committee ISO/TC 102, *Iron ores*, Subcommittee SC 3, *Physical testing*.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Introduction

The decrepitation index test is used to evaluate the behaviour of lump iron ore when it is subject to rapid heating. The specific conditions involved in this test are

a) a sample having a specified size range;

b) a specified sample mass;

c) heating to 700 °C;

d) sieving to determine decrepitation index.

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Iron ores — Determination of decrepitation index

1 Scope

This International Standard specifies a method for the determination of the decrepitation index of lump iron ore.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 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 3310-1:1990, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth.*

ISO 3310-2:1990, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate.*

ISO 11323:—[1], *Iron ores — Vocabulary.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 11323 apply.

4 Principle

This method evaluates the effect of rapid heating from room temperature to 700 °C in 30 min on the sized test portion. This is done by measuring the mass of material passing a 6,30 mm screen after the heating cycle.

5 Apparatus

5.1 Electrically heated furnace, with heat capacity and thermal response characteristics sufficient to heat the sample from room temperature to 700 °C in 30 min.

5.2 Sample holder, made of non-scaling, heat-resistant metal capable of withstanding a temperature greater than 700 °C, equipped with a thermocouple to measure the temperature of the sample. The cover shall be of the loose fitting type and shall not provide a gas-tight seal.

5.3 Test sieves, with square mesh openings of 25,0 mm, 20,0 mm, 6,30 mm, 3,15 mm and 0,50 mm in accordance with ISO 3310-1 or ISO 3310-2.

1) To be published.

NOTE 1 It is recommended that the set of sieves used for sieving should include a sieve of suitable aperture size between 10,0 mm and 6,30 mm (for example 8,00 mm) in order to improve the efficiency of the 6,30 mm sieve by decreasing the test portion retained on it.

6 Preparation of test sample

Prepare the test sample according to ISO 3083 from the sample for physical testing which has been taken in accordance with ISO 3081 and ISO 3082. A quantity of sample sufficient to provide at least ten 500 g test portions shall be prepared.

Screen the sample on 25,0 mm and 20,0 mm sieves (5.3) and oven dry the 20 mm to 25 mm test sample at 105 °C ± 5 °C for at least 12 h. Screen the sized sample again on 25,0 mm and 20,0 mm sieves to remove any adhering fines and oven dry the sample again at 105 °C ± 5 °C for 12 h. After drying, keep the test material in a desiccator until testing. Only particles taken at random shall be used to constitute a test portion.

7 Procedure

7.1 Number of tests

Owing to the heterogeneity of natural ores, the test shall be carried out 10 times.

7.2 Test portions

Weigh the test portions each consisting of approximately 500 g (± 1 particle) of the predried test sample to provide the test portion (mass m_0).

7.3 Heating

WARNING — This test involves the handling of hot apparatus. In addition, for some iron ores, spitting may occur when loading the sample into the hot container. Suitable hand and eye protection shall be used by the operator.

Place the sample holder (5.2) in the furnace (5.1) and begin heating. When the temperature of the holder has reached 700 °C keep it in the furnace for a further 20 min. Place the test portion in the sample holder and cover. After 30 min remove the holder and test portion from the furnace and allow to cool to room temperature. Discharge the test portion carefully from the sample holder and determine its mass (m_1). Hand sieve with care in 6,30 mm, 3,15 mm and 0,50 mm sieves (5.3). Determine and record the masses of the 6,30 mm, 3,15 mm and 0,50 mm fractions (m_2).

NOTE 2 Mechanical sieving may be used provided that preliminary tests give results similar to those obtained by hand sieving, within the permissible tolerance of 2 % absolute.

8 Expression of results

Calculate the decrepitation index ($DI_{6,3}$), expressed as a percentage by mass, from the following formula:

$$DI_{6,3} = \frac{m_2 \times 100}{m_1}$$

where

m_1 is the mass, in grams, of the test portion after thermal treatment;

m_2 is the mass, in grams, of the − 6,30 mm fraction obtained after sieving.

Express the result to one decimal place. Report also the percentage mass passing 3,15 mm and 0,50 mm.

9 Test report

The test report shall include the following information:

a) reference to this International Standard;

b) description of the sample;

c) the decrepitation index and the individual results of the 10 tests;

d) the mean values of the decrepitation index for the whole 10 tests, for each sieve size;

e) reference number of the results;

f) any characteristics noted during the test and any operations which may have had an influence on the results, for example sampling point, scalping sieves used, method of sieving or loss of mass during tests.