

# SVENSK STANDARD

## SS-ISO 11323:2018

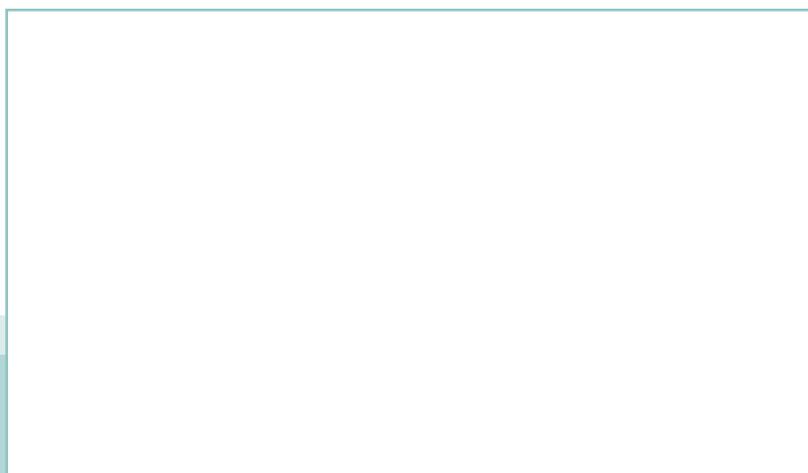


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### **Järnmalm och direktreducerat järn – Ordlista (ISO 11323:2010, IDT)**

### **Iron ore and direct-reduced iron – Vocabulary (ISO 11323:2010, IDT)**



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The International Standard ISO 11323:2010 has the status of a Swedish Standard. This document contains the official version of ISO 11323:2010.

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Denna standard är framtagen av kommittén för Järnmalm, SIS/TK 149.

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## SS-ISO 11323:2018 (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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11323 was prepared by Technical Committee ISO/TC 102, *Iron ore and direct reduced iron*.

This third edition cancels and replaces the second edition (ISO 11323:2002), which has been technically revised.

# Iron ore and direct reduced iron — Vocabulary

## 1 Scope

This International Standard gives the definitions for terms used in TC 102 standards for sampling, sample preparation, moisture and particle size analysis and physical testing of iron ore and direct reduced iron. Some specific analytical terms used in the relevant International Standards are also included.

## 2 Normative references

The following reference 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 reference document (including any amendments) applies.

ISO 565:1990, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

ISO 3310-1:2000, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3310-2:1999, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate*

## 3 Natural and processed iron ore

### 3.1 iron ore

any rocks, minerals or aggregates of minerals, natural or processed, from which iron can be produced commercially

NOTE The principal ferrous minerals occurring in iron ore either singly or severally are the following:

- a) red, brown and specular hematites, martite and maghemite;
- b) magnetite;
- c) hydrated iron oxides, including goethite, limonite and limnrite;
- d) iron carbonates, including siderite or chalybite, ankerite and other mixed carbonates;
- e) roasted iron pyrites or pyrite cinders;
- f) ferrites (e.g. calcium ferrite) occurring sometimes in natural ores, but mainly in fluxed pellets and sinters.

Also included are manganiferous iron ore and concentrates that contain not more than 8 % manganese by mass (dry basis after heating to 105 °C).

Excluded are finely ground ferrous minerals used for pigments, glazes, dense medium suspension and other materials not related to iron- and steel-making.

### 3.2 natural iron ore

ores as extracted from mines and not subjected to any processes of beneficiation other than sizing

NOTE Such ores are also called direct shipping ores or run-of-mine ores.

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### 3.3 lump ore ore lump

ores consisting of coarse particles, with a specified lower size limit in the range of 10 mm to 6,3 mm

### 3.4 sized ores

ores that have been prepared to meet specific size limits

### 3.5 fine ores ore fines

ores consisting entirely of small particles, with specified upper size limits in the range of 10 mm to 6,3 mm

### 3.6 processed ores

ores treated by physical or chemical processes to make them more suitable for the subsequent production of iron and steel

NOTE The main purposes of processing include the following:

- a) raising the iron content;
- b) decreasing slag-forming constituents;
- c) decreasing harmful impurities, such as phosphorus, arsenic or sulfur compounds;
- d) adjusting size distribution;
- e) improving metallurgical behaviour of the metallic furnace burden.

### 3.7 concentrates

**processed ores** (3.6) in which the percentage iron content has been raised

### 3.8 agglomerates

**processed ores** (3.6) formed into coherent pieces which are substantially larger than the original **particles** (6.1)

NOTE The industrial processes for making agglomerates include sintering and pelletizing.

### 3.9 sinter

type of **agglomerates** (3.8) made from **fine ores** (3.5) by means of forced draught combustion of an admixed fuel

NOTE Sinter forms through adhesion between particles due to superficial melting, diffusion and recrystallization. Sinters may be acid, fluxed or super-fluxed according to their acid and basic oxide contents.

### 3.10 pellets

spherical **agglomerates** (3.8) formed by balling **fine ores** (3.5), usually finer than 100 µm, with various additives followed sometimes by hot or cold bonding induration

NOTE Pellets may be acid, partially fluxed, fluxed or super-fluxed, according to their acid and basic oxide contents.

**3.11****hot bonded pellet****fired pellet**

**pellets** (3.10) hardened by sintering at temperatures higher than 1 200°C

NOTE Pellets hardened with cement without sintering are termed cold bonded pellets.

**4 Direct reduced iron****4.1****direct reduced iron****DRI**

high grade feed for iron- and steel-making obtained from the reduction of natural or processed iron ores, without reaching the melting temperature

NOTE DRI includes metallized products that have been further processed by hot or cold briquetting.

**4.2****briquettes**

product formed by compressing **direct reduced iron** (4.1) in moulds

**4.3****hot briquetted iron****HBI**

**direct reduced iron** (4.1) briquetted at a temperature greater than 650 °C and having an **apparent density** (7.1.2) greater than 5 g/cm<sup>3</sup>

**4.4****cold briquetted iron****CBI**

**direct reduced iron** (4.1) briquetted at a temperature lower than 650 °C and having an **apparent density** (7.1.2) lower than 5 g/cm<sup>3</sup>

**5 Sampling****5.1****lot**

discrete and defined quantity of **iron ore** (3.1) or **direct reduced iron** (4.1) for which quality characteristics are to be assessed

**5.2****strata**

approximately equal parts of a **lot** (5.1) based on time, mass or space

NOTE Examples of strata include production periods (e.g. 5 min), production masses (e.g. 1 000 t), holds in vessels, wagons in a train, containers and trucks representing a lot.

**5.3****sample**

relatively small quantity of **iron ore** (3.1) or **direct reduced iron** (4.1), so taken from a **lot** (5.1) as to be representative in respect of the quality characteristics to be assessed

**5.4****gross sample**

**sample** (5.3) comprising all **increments** (5.9), entirely representative of all quality characteristics of a **lot** (5.1)

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### 5.5

#### **partial sample**

**sample** (5.3) comprising less than the complete number of **increments** (5.9) needed for a **gross sample** (5.4)

### 5.6

#### **test sample**

**sample** (5.3) prepared to meet all specific conditions for a test

### 5.7

#### **test portion**

part of a **test sample** (5.6) that is actually and entirely subjected to the specific test

### 5.8

#### **reserve sample**

spare sample kept for use in case of additional tests or umpire judgment

### 5.9

#### **increment**

quantity of **iron ore** (3.1) or **direct reduced iron** (4.1) taken in a single operation of a device for sampling or **sample division** (5.16)

### 5.10

#### **cut**

amount of material taken in a single traverse of a sample cutter through a stream, bed or stratum of **iron ore** (3.1) or **direct reduced iron** (4.1), or such movement of the sample cutter

### 5.11

#### **sampling regime**

collection plan for constituting a **sample** (5.3) that defines the number of, mass of and interval between **increments** (5.9)

### 5.12

#### **sampling scheme**

methodical and detailed sequence of all **sampling stages** (5.14), defining successive sampling operations and all associated steps of preparation and division

### 5.13

#### **sampling procedure**

instructions specifying the operational requirements of a particular **sampling scheme** (5.12)

### 5.14

#### **sampling stage**

single **sample division** (5.16) operation, together with any associated **sample preparation** (5.15)

### 5.15

#### **sample preparation**

process of rendering a **sample** (5.3) suitable for the determination of specified quality characteristics

NOTE Preparation can include various processes, such as drying, mixing, sieving, sample division or comminution, which may be employed at several stages of sampling.

### 5.16

#### **sample division**

any procedure, without comminution, to decrease the mass of any **sample** (5.3) or **increment** (5.9) retained at any **sampling stage** (5.14)

NOTE Division should be controlled so that each divided sample or the total sum of the divided increments remains representative of the lot for the specific purposes of the tests.

**5.17****proportional mass division**

division of **samples** (5.3) or **increments** (5.9) such that the mass of each retained divided portion is a fixed proportion of the mass being divided

**5.18****constant mass division**

division of **sample** (5.3) or **increments** (5.9) such that the retained divided portions are of almost uniform mass, irrespective of variations in mass of the **samples** or **increments** divided

NOTE 1 This method is required for sampling on a mass basis.

NOTE 2 "Almost uniform" means that variations in mass are less than 20 % in terms of the coefficient of variation.

**5.19****minimum mass of divided gross sample**

minimum mass of a **gross sample** (5.4) necessary for determining its quality characteristics to a certain **precision** (5.36), dependent on the **particle size** (6.2) of the sample and the required measurement precision

**5.20****split use of sample**

separate use of parts of a **sample** (5.3), as **test samples** (5.6) for separate determinations of quality characteristics

**5.21****multiple use of sample**

use of a **sample** (5.3) in its entirety for the determination of one quality characteristic, followed by the use of the same sample in its entirety for the determination of one or more other quality characteristics

**5.22****interleaved samples**

**samples** (5.3) constituted by placing consecutive primary **increments** (5.9) alternately into two sample containers

**5.23****manual sampling**

collecting **samples** (5.3) or **increments** (5.9) by human effort

**5.24****mechanical sampling**

collecting **samples** (5.3) or **increments** (5.9) by mechanical means

**5.25****in-situ sampling**

direct extraction of a sample from a wagon, hold or stockpile

**5.26****stratified sampling**

sampling of a **lot** (5.1) carried out by taking **increments** (5.9) from specified positions and in appropriate proportions from **strata** (5.2)

**5.27****stratified random sampling**

**sampling** (5.26) of a **lot** (5.1) carried out by taking one or more **increments** (5.9) at random within each stratum

**5.28****systematic sampling**

sampling carried out by taking **increments** (5.9) from a **lot** (5.1) at regular intervals