

# INTERNATIONAL STANDARD

**ISO**  
**4299**

Second edition  
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## **Manganese ores — Determination of moisture content**

*Minerais de manganèse — Détermination de l'humidité*



Reference number  
ISO 4299 : 1989 (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 approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4299 was prepared by Technical Committee ISO/TC 65, *Manganese and chromium ores*.

This second edition cancels and replaces the first edition (ISO 4299:1980) of which it constitutes a minor revision.

Annexes A and B form an integral part of this International Standard.

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# Manganese ores — Determination of moisture content

## 1 Scope

This International Standard specifies a method for determining the mean value of the moisture content of a consignment (lot) of manganese ores, whether natural or processed, including concentrates, pellets and agglomerates.

The method is intended to be applied at the places of dispatch and/or acceptance of the ore.

Annex A specifies a method to be used in the case of adhesive or wet manganese ores. Annex B specifies methods of correction for sprinkled water and/or rain-water.

## 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 listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4296-1 : 1984, *Manganese ores — Sampling — Part 1: Increment sampling*.

ISO 4296-2 : 1983, *Manganese ores — Sampling — Part 2: Preparation of samples*.

## 3 Definitions

For the purposes of this International Standard, the following definitions apply.

**3.1 moisture sample** : The sample taken for the determination of moisture content of the consignment or part of the consignment.

**3.2 test sample** : A sample prepared for moisture determination from each increment, from each sub-sample, or from the gross sample, in accordance with the method specified for the moisture sample.

**3.3 test portion** : A representative part of a test sample subjected to moisture measurement.

If the entire quantity of a test sample is subjected to moisture measurement, the test sample may also be called "test portion".

## 4 Principle

Drying of the test portion in an oven at 105 °C and determination of the moisture content, as a percentage by mass, from the initial and dried masses.

## 5 Apparatus

**5.1 Drying pans**, made of stainless material (for example, stainless steel or brass), having a smooth surface, free from contamination and capable of accommodating the specified quantity of moisture sample in a layer of thickness less than 30 mm.

**5.2 Drying oven**, equipped with a temperature-controlling device capable of regulating the temperature at all points in the oven to within  $\pm 5$  °C of the desired temperature.

**5.3 Weighing device**, accurate to at least 0,05 % of the initial mass of a sample.

## 6 Sampling and samples

Test samples which have been taken in accordance with ISO 4296-1 and prepared in accordance with ISO 4296-2 shall be used. The mass of a test portion in relation to its whole-through sieve size is specified in table 1.

Table 1 — Minimum mass of test portion

Whole-through sieve size of test portion (mm)	Minimum mass of test portion (kg)
22,4	5
10	1