

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

## ISO RECOMMENDATION R 312

METHODS OF CHEMICAL ANALYSIS OF MANGANESE ORES  
DETERMINATION OF ACTIVE OXYGEN  
CONVENTIONALLY EXPRESSED AS MANGANESE DIOXIDE

1st EDITION

July 1963

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## BRIEF HISTORY

The ISO Recommendation R 312, *Methods of Chemical Analysis of Manganese Ores—Determination of Active Oxygen conventionally expressed as Manganese Dioxide*, was drawn up by Technical Committee ISO/TC 65, *Manganese Ores*, the Secretariat of which is held by the Komitet Standartov, Mer i Izmeritel'nyh Priborov pri Sovete Ministrov SSSR.

Work on this question by the Technical Committee began in 1954 and led, in 1957, to the adoption of a Draft ISO Recommendation.

In October 1958, this Draft ISO Recommendation (No. 245) was circulated to all the ISO Member Bodies for enquiry. It was approved by the following Member Bodies:

|                |             |                |
|----------------|-------------|----------------|
| Austria        | Hungary     | Portugal       |
| Bulgaria       | India       | Republic of    |
| Burma          | Ireland     | South Africa   |
| Chile          | Italy       | Romania        |
| Czechoslovakia | Japan       | Spain          |
| France         | Netherlands | United Kingdom |
| Germany        | Poland      | U.S.S.R.       |

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in July 1963, to accept it as an ISO RECOMMENDATION.

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## METHODS OF CHEMICAL ANALYSIS OF MANGANESE ORES

## DETERMINATION OF ACTIVE OXYGEN

## CONVENTIONALLY EXPRESSED AS MANGANESE DIOXIDE

(Atomic mass Mn: 54.94; molecular mass  $\text{MnO}_2$ : 86.94)

This ISO Recommendation contains two parts:

- I. Introduction. . . . . section 1,
- II. Volumetric method, by reducing with ferrous ammonium sulphate . . . sections 2 to 6.

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## I. INTRODUCTION

### 1. GENERAL INSTRUCTIONS

- 1.1 In the following analysis, use a sample for chemical analysis of air-dried manganese ore, which has been crushed to a size not exceeding 0.10 mm and checked on a sieve of appropriate size.

Simultaneously with the collection of samples for the determination of active oxygen (conventionally expressed as manganese dioxide), take three more test samples for the determination of hygroscopic moisture.

Calculate the content of active oxygen (conventionally expressed as manganese dioxide) in ore which is absolutely dry by multiplying the numerical results of the determination of active oxygen by the conversion factor  $K$ , as found from the following formula:

$$K = \frac{100}{100 - A}$$

where  $A$  = hygroscopic moisture content, per cent.

- 1.2 The determination of active oxygen (conventionally expressed as manganese dioxide) in manganese ore is carried out by simultaneously analysing three samples of ore, with two blank determinations to enable a corresponding correction in the result of the determination to be made.

Simultaneously and under the same conditions, carry out a check analysis of a standard sample of manganese ore, for active oxygen (conventionally expressed as manganese dioxide) content.

The arithmetical mean of the three results is accepted as the final result.