
**Metallic powders - Determination of oxygen content by reduction methods - Part 4:
Total oxygen by reduction-extraction (ISO 4491-4:1989)**

Metallic powders - Determination of oxygen content by reduction methods - Part 4: Total oxygen by reduction-extraction (ISO 4491-4:1989)

Metallpulver - Bestimmung des Sauerstoffgehaltes durch Reduktionsverfahren - Teil 4: Gesamt-Sauerstoffgehalt durch Reduktionsextraktion (ISO 4491-4:1989)

Poudres métalliques - Dosage de l'oxygene par les méthodes de réduction - Partie 4: Oxygene total par réduction-extraction (ISO 4491-4:1989)

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ICS:

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Metalurgija prahov

Powder metallurgy

SIST EN 24491-4:2000**en**

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EUROPEAN STANDARD

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English version

Metallic powders - Determination of oxygen content by reduction methods - Part 4: Total oxygen by reduction-extraction (ISO 4491-4:1989)

Poudres métalliques - Dosage de l'oxygène par les méthodes de réduction - Partie 4: Oxygène total par réduction-extraction (ISO 4491-4:1989)

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This European Standard was approved by CEN on 1993-04-02. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

In 1992 ISO 4491-4:1989 "Metallic powders - Determination of oxygen content by reduction methods - Part 4: Total oxygen by reduction-extraction" was submitted to the CEN Primary Questionnaire procedure.

Following the positive result of the CEN/CS Proposal ISO 4491-4:1989 was submitted to the CEN Formal Vote. The result of the Formal Vote was positive.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 1993, and conflicting national standards shall be withdrawn at the latest by October 1993.

According to the Internal Regulations of CEN/CENELEC, the following countries are bound to implement this European Standard :

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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Endorsement notice

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The text of the International Standard ISO 4491-4:1989 was approved by CEN as a European Standard without any modification.

NOTE: The European references to international publications are given in annex ZA (normative).

Annex ZA (normative)
Normative references to international publications
with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 4491-1	1989	Metallic powders - Determination of oxygen content by reduction methods - Part 1: General guidelines	EN 24491-1	1993

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INTERNATIONAL STANDARD

**ISO
4491-4**

First edition
1989-10-01

Metallic powders — Determination of oxygen content by reduction methods —

Part 4:

Total oxygen by reduction-extraction

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Poudres métalliques — Dosage de l'oxygène par les méthodes de réduction —

Partie 4: Oxygène total par réduction-extraction

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Reference number
ISO 4491-4 : 1989 (E)

ISO 4491-4 : 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 4491-4 was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*.

SIST EN 24491-4:2000

ISO 4491 consists of the following parts, under the general title *Metallic powders – Determination of oxygen content by reduction methods*:

- *Part 1: General guidelines*
- *Part 2: Loss of mass on hydrogen reduction (hydrogen loss)*
- *Part 3: Hydrogen-reducible oxygen*
- *Part 4: Total oxygen by reduction-extraction*

Annex A of this part of ISO 4491 is for information only.

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Introduction

The determination of the oxygen content of metallic powders is of the utmost importance in many fields of powder metallurgy.

The standard methods described in parts 2 and 3 of this International Standard do not give the total oxygen content of the sample, as some oxygen-containing constituents are not reduced by hydrogen.

Therefore, a standard method for the determination of the total oxygen content is needed. The most frequently used method is reduction-extraction. It can be carried out with various commercially available instruments working according to different principles of extraction and measurement.

It should be emphasized that the results of the analysis depend on the type of equipment used and on the test parameters selected. However, as indicated in clauses 3 to 6, it is always possible, for a given type of metal powder, to optimize the test conditions to obtain reproducible and accurate results with any of the commercially available instruments, provided they are designed for testing the metal powder considered.

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It is not possible to standardize one or more particular instruments. However, certain basic points of procedure are recommended for the analysis of metallic powders (see clause 6).

NOTE — The reduction-extraction method is also applicable to nitrogen determination and certain instruments permit simultaneous measurement of oxygen and nitrogen contents. However, the determination of nitrogen is not covered by this International Standard.