



SLOVENSKI STANDARD
SIST EN 23907:2000
01-december-2000

Hardmetals - Determination of total carbon content - Gravimetric method (ISO 3907:1985)

Hardmetals - Determination of total carbon content - Gravimetric method (ISO 3907:1985)

Hartmetalle - Bestimmung des Gesamtkohlenstoff-Gehaltes - Gravimetrisches Verfahren (ISO 3907:1985)

Métaux-durs - Dosage du carbone total - Méthode gravimétrique (ISO 3907:1985)

Ta slovenski standard je istoveten z: EN 23907:1993

ICS:

77.160 Metalurgija prahov Powder metallurgy

SIST EN 23907:2000 **en**

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EUROPEAN STANDARD

EN 23907:1993

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 1993

UDC 669.018.25:620.1:543.21:546.26

Descriptors: Powder metallurgy, hard metals, chemical analysis, determination of content, carbon, gravimetric analysis

English version

**Hardmetals - Determination of total carbon
content - Gravimetric method (ISO 3907:1985)**Métaux-durs - Dosage du carbone total - Méthode
gravimétrique (ISO 3907:1985)Hartmetalle - Bestimmung des
Gesamtkohlenstoff-Gehaltes - Gravimetrisches
Verfahren (ISO 3907:1985)**STANDARD PREVIEW**
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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.

CENEuropean 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 3907:1985 "Hardmetals - Determination of total carbon content - Gravimetric method" was submitted to the CEN Primary Questionnaire procedure.

Following the positive result of the CEN/CS Proposal ISO 3907:1985 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 3907:1985 was approved by CEN as a European Standard without any modification.

International Standard



3907

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Hardmetals — Determination of total carbon content — Gravimetric method

Métaux-durs — Dosage du carbone total — Méthode gravimétrique

Second edition — 1985-02-01

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UDC 621.762 : 546.26 : 543.21

Ref. No. ISO 3907-1985 (E)

Descriptors : powder metallurgy, carbides, sintered products, hardmetals, chemical analysis, determination of content, carbon, gravimetric analysis.

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.

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 3907 was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*.

ISO 3907 was first published in 1977. This second edition cancels and replaces the first edition, of which it constitutes a technical revision.

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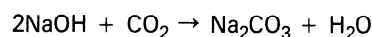
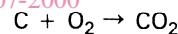
Hardmetals — Determination of total carbon content — Gravimetric method

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1 Scope

This International Standard specifies a gravimetric method for determination of the total carbon content of carbides and hardmetals.

of the ascarite, which corresponds to the quantity of carbon dioxide formed



2 Field of application

This method is applicable to

- carbides of chromium, hafnium, molybdenum, niobium, tantalum, titanium, vanadium, tungsten and zirconium,
- mixtures of these carbides and binder metals, free of lubricant,
- all grades of presintered or sintered hardmetals, produced from these carbides,

having a total carbon content exceeding 4 % (*m/m*).

3 Principle

Oxidation of carbon to carbon dioxide at high temperature in a stream of pure oxygen, with the addition of a flux if necessary.

Absorption of the carbon dioxide, carried by oxygen, by ascarite in a tared bulb. Determination of the increase in mass

4 Reagents

During the analysis, use only reagents of recognized analytical grade, and only distilled water or water of equivalent purity.

4.1 Oxygen, with a limitation of carbon-containing impurities $\leq 0,6$ ml of carbon per cubic metre of oxygen.

4.2 Magnesium perchlorate, anhydrous.

CAUTION — To prevent any possibility of explosion, contact of this reagent with organic materials should be avoided, especially when discarding it.

4.3 Flux, for example tin metal, copper metal or oxide, iron metal.

4.4 Ascarite.

ISO 3907-1985 (E)

5 Apparatus

Ordinary laboratory apparatus and

5.1 Apparatus, consisting of an electric furnace with a combustion tube, a purification train and a system to absorb carbon dioxide. If necessary to obtain oxygen of adequate purity, an oxygen purification train may also be used.

Successive parts of the apparatus shall be joined together with connecting tubes forming an airtight seal.

The apparatus is shown schematically in figure 1.

- A** — **Source of oxygen** (4.1), with pressure-regulating valve.
- B** — **Flow meter**.
- C** — **Electric furnace**, capable of operation at up to 1 350 °C, with a suitable device for temperature control.
- D** — **Combustion tube**, made of a non-porous refractory material. The internal diameter of the tube should be 18 to 30 mm and its length at least 650 mm, so that the ends of the tube do not reach a temperature higher than 60 °C during the operation.
- E** — **Boat**, made of a refractory material, pretreated in an oxygen stream at the test temperature for 10 min or, alternatively, at 800 to 1 000 °C for 1 h.

The boat shall be of suitable dimensions, for example length 80 to 100 mm, width 12 to 14 mm and depth 8 to 9 mm.

The pretreated boats shall be kept in a desiccator. The ground surfaces of the desiccator and its lid shall not be greased.

- F** — **Plug of silica wool**.
- G** — **Drying bulb**, containing anhydrous magnesium perchlorate (4.2).
- H** — **Absorption bulbs**, containing ascarite (4.4) and a small amount of anhydrous magnesium perchlorate (4.2).

An example of an absorption bulb is shown in figure 2.

- I** — **Absorption bulb**, facing the opposite way to H to avoid introduction of carbon dioxide and moisture from the air.

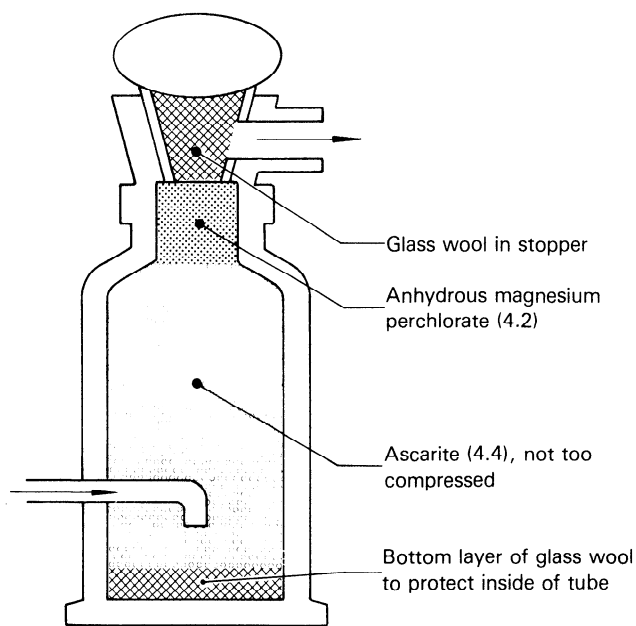


Figure 2

- 5.2 Hook**, made from heat-resisting metal wire with a carbon content less than 0,05 % (*m/m*). Its diameter should be approximately 3 mm and its length 500 to 600 mm.

6 Sampling

6.1 The sample shall be crushed to a powder in a mortar made of a material which does not alter the sample composition. The powder shall pass a 180 µm sieve.

6.2 The analysis shall be carried out on two or three test portions.

7 Procedure

Check the temperature in the combustion zone (1 200 to 1 350 °C and not less than 1 300 °C if chromium carbide is present), the gastightness of the apparatus and the efficiency of the oxygen purification. Pass oxygen through the apparatus for 10 to 15 min at a rate of 300 to 500 cm³/min depending on

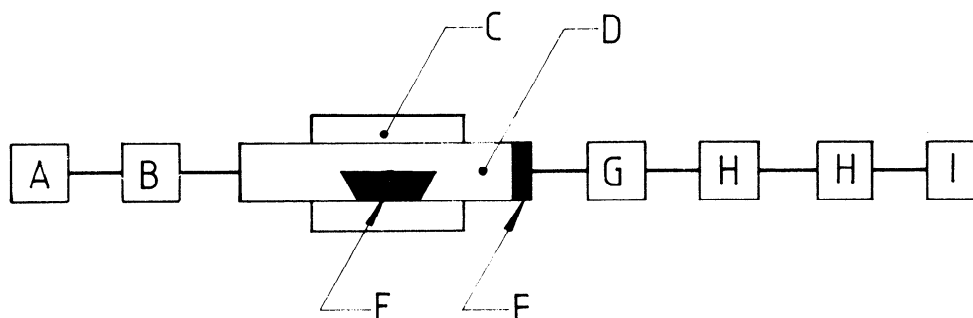


Figure 1