

SVENSK STANDARD

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Hårdmetall – Bestämning av bly och kadmiuminnehåll (ISO 26482:2010, IDT)

Hardmetals – Determination of lead and cadmium content (ISO 26482:2010, IDT)

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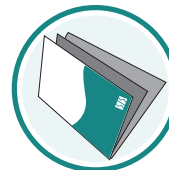
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Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standardpaket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

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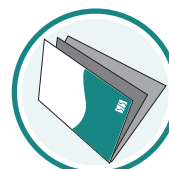
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Den internationella standarden ISO 26482:2010 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av ISO 26482:2010.

The International Standard ISO 26482:2010 has the status of a Swedish Standard. This document contains the official English version of ISO 26482:2010.

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Denna standard är framtagen av kommittén för Pulvermetallurgi, SIS/TK 133.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

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 26482 was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*, Subcommittee SC 4, *Sampling and testing methods for hardmetals*.

Hardmetals — Determination of lead and cadmium content

1 Scope

This International Standard specifies a flame atomic absorption spectrometric and inductively coupled plasma spectrometric method for the determination of the lead and cadmium contents in hardmetals.

The method is applicable to products having lead and cadmium contents between 0,000 1 % (mass fraction) and 0,1 % (mass fraction).

2 Normative references

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

ISO 385, *Laboratory glassware — Burettes*

ISO 648, *Laboratory glassware — Single-volume pipettes*

ISO 1042, *Laboratory glassware — One-mark volumetric flasks*

3 Principle

The sample is placed in a platinum dish or polytetrafluoroethylene (PTFE) breaker. After dissociation by hydrofluoric acid, dissolve precipitated tungstic acid with sodium hydroxide solution. Mask residual cobalt with potassium cyanide and selectively separate lead and cadmium with dithizone. Then perform dilution. Perform quantitative analysis by inductively coupled plasma atomic emission spectrometry (ICP-AES) and atomic absorption spectrometry (AAS).

4 Reagents

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

4.1 Perchloric acid, $\rho = 1,67$ g/ml.

4.2 Nitric acid (HNO₃), $\rho = 1,40$ g/ml, 69 % to 71 % diluted 1 + 1 with water.

4.3 Hydrofluoric acid, 40 % (mass fraction), $\rho = 1,14$ g/ml or 50 % (mass fraction), $\rho = 1,17$ g/ml.

4.4 Ammonium citrate, 250 g/l solution.

4.5 Sodium hydroxide, 250 g/l solution.

4.6 Potassium cyanide, 100 g/l.

4.7 Ammonia solution.

4.8 Dithizone, in chloroform, 0,02 %.

Dissolve 0,2 g of dithizone in 1 000 ml of chloroform. Prepare fresh, or store in a brown bottle.

4.9 Dithizone, in chloroform, 0,005 %.

Dissolve 0,05 g of dithizone in 1 000 ml of chloroform. Prepare fresh, or store in a brown bottle.

4.10 Standard lead stock solution, $\rho_{\text{Pb(II)}} = 1 \text{ mg/ml}$.

Weigh to the nearest 0,000 1 g, 0,5 g of high-purity lead [min. 99,95 % (mass fraction)] and dissolve in 30 ml of nitric acid (1 + 1) (4.2). Cool and transfer the solution quantitatively to a calibrated 500 ml one-mark volumetric flask. Keep the flask at the same temperature as the flask was calibrated at. Dilute to the mark with water and mix. The purchase and use of certified stock solutions is possible.

4.11 Standard cadmium stock solution, $\rho_{\text{Cd(II)}} = 1 \text{ mg/ml}$.

Weigh to the nearest 0,000 1 g, 0,5 g of high-purity cadmium [min. 99,95 % (mass fraction)] and dissolve in 30 ml of nitric acid (1 + 1) (4.2). Cool and transfer the solution quantitatively to a calibrated 500 ml one-mark volumetric flask. Keep the flask at the same temperature as the flask was calibrated at. Dilute to the mark with water and mix.

4.12 Mixed analyte standard solution, $\rho_{\text{Pb(II)}} 100 \text{ }\mu\text{g/ml}$; $\rho_{\text{Cd(II)}} 100 \text{ }\mu\text{g/ml}$.

To a 250 ml one-mark volumetric flask containing 30 ml of concentrated nitric acid, add 25 ml each of 1 000 mg/l stock standard solutions (4.10 and 4.11) of Pb and Cd, using a burette accurately. Make up to the mark with water and mix.

5 Apparatus

Usual laboratory apparatus and in particular the following.

5.1 Inductively coupled plasma atomic emission spectrometry (ICP-AES).

The ICP-AES used will be satisfactory after optimizing according to the manufacturer's instructions.

5.2 Flame atomic absorption spectrometer (FAAS).

The FAAS used will be satisfactory after optimizing according to the manufacturer's instructions.

5.3 Burette, of capacity 50 ml, according to ISO 385, class A.

5.4 Pipette, of capacities 1 ml, 3 ml, 5 ml, 25 ml, according to ISO 648, class A.

5.5 One-mark volumetric flasks, of capacities 100 ml, 250 ml, 500 ml, according to ISO 1042, class A.

5.6 Beaker, of capacities 250 ml, 1 000 ml, made of silica or borosilicate glass.

5.7 Platinum dish, of capacities 50 ml, 100 ml.

5.8 PTFE beaker, of capacities 50 ml, 100 ml.