

**Metallkatted. Katsemeetodid kullast ja
kullasulamist galvaanikatete korral.
Osa 3: Poorsuse elektrograafiline
mõõtmine**

Metallic coatings - Test methods for electrodeposited
gold and gold alloy coatings - Part 3: Electrographic
tests for porosity

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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Descriptors: Coatings, gold coatings, gold alloy coatings, testing.

English version

Metallic coatings

**Test methods for electrodeposited gold
and gold alloy coatings**

**Part 3: Electrographic tests for porosity
(ISO 4524-3:1985)**

Revêtements métalliques; méthodes
d'essai des dépôts électrolytiques d'or et
d'alliages d'or. Partie 3: Détermination
électrographique de la porosité
(ISO 4524-3:1985)

Metallische Überzüge; Prüfverfahren für
elektrolytisch abgeschiedene Überzüge
aus Gold und Goldlegierungen. Teil 3:
Elektrographische Prüfungen
(ISO 4524-3:1985)

This European Standard was approved by CEN on 1994-10-03 and is identical to the ISO Standard as referred to.

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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.

This European Standard exists 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.

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CEN

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

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

Foreword

International Standard

ISO 4524-3:1985 Metallic coatings; electrodeposited gold and gold alloy coatings; electrographic tests for porosity which was prepared by ISO/TC 107 'Metallic and other inorganic coatings' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 262 'Protection of metallic materials against corrosion' as a European Standard.

This document was submitted for Formal Vote and adopted as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by July 1995 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, 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.

Endorsement notice

The text of the International Standard ISO 4524-3:1985 was approved by CEN as a European Standard without any modification.

1 Scope and field of application

This part of ISO 4524 specifies five electrographic tests for assessing the porosity of electrodeposited gold and gold alloy coatings for engineering, and decorative and protective purposes.

2 Cadmium sulfide paper test

2.1 Applicability

This method is suitable for the examination of gold coatings on copper.

2.2 Materials

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

2.2.1 Cadmium sulfide paper.

Use filter or duplicating paper of adequate wet strength, with a texture that will produce sharp and uniform electrograms. Soak the paper for 10 min in a fresh 10 % (*m/m*) solution of cadmium chloride hemipentahydrate ($\text{CdCl}_2 \cdot 2,5 \text{ H}_2\text{O}$) containing 0,1 % (*V/V*) of hydrochloric acid (HCl , ρ 1,16 to 1,18 g/ml). Remove the excess solution with blotting paper.

Allow the paper to dry partially and then immerse it in a fresh 50 g/l solution of sodium sulfide (Na_2S) for 30 s, after which time the paper should be a uniform yellow colour (indicating complete precipitation of cadmium sulfide, CdS). Wash the paper in running water for approximately 1 h, then hang it up to dry.

2.2.2 Moistened blotting paper.

Soak a good quality white blotting paper in water and dry it to a degree that consistently produces sharply defined electrograms.

2.3 Procedure

Lightly brush the electroplated coating to remove loose dust and debris, then degrease it in 1,1,1-trichloroethane vapour or other suitable solvent.

Place a piece of the cadmium sulfide paper on the electroplated specimen (which acts as the anode). On the other face of the cadmium sulfide paper, place a piece of the moistened blotting paper (2.2.2), followed by a high purity clean aluminium or stainless steel platen (which acts as the cathode). Compress the assembly so that the pressure between the cadmium sulfide paper and the specimen is uniform and between 1,4 and 1,7 MPa. While under compression, pass a smooth ripple-free d.c. current from a source not exceeding 12 V. Set the current density initially at 7,5 mA/cm² of anode area and pass for 30 s.

Allow the electrogram produced on the cadmium sulfide paper to dry. The presence of any defect in the electroplated coating is revealed by a corresponding brown stain on the paper.

NOTE — If an overall black stain is obtained in this test, either the electrolyte content of the papers or the current density is too high.

3 Nioxime paper test

3.1 Applicability

This method is suitable for the examination of gold coatings on undercoats of nickel or tin-nickel alloy.

3.2 Materials

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

Nioxime paper.

Soak filter or duplicating paper for 10 min in an 8 g/l solution of nioxime (cyclohexan-1,2-dione dioxime).

Remove the excess solution by blotting and hang the paper up to dry.