
International Standard



4523

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Metallic coatings — Electrodeposited gold and gold alloy coatings for engineering purposes

Revêtements métalliques — Dépôts électrolytiques d'or et d'alliages d'or pour applications industrielles

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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 4523 was prepared by Technical Committee ISO/TC 107, *Metallic and other non-organic coatings*.

Metallic coatings — Electrodeposited gold and gold alloy coatings for engineering purposes

0 Introduction

This International Standard specifies a range of electrodeposited gold and gold alloy coatings for electrical, electronic and other engineering purposes. Within this International Standard, engineering purposes are defined as those for which the coating has to fulfil primarily non-decorative functional tasks, while decorative purposes are defined as those for which the appearance of the finished article is of prime importance. However, protection against corrosion may be a requirement in both cases.

In this International Standard, no distinction is made between gold and gold alloy coatings, but the coatings shall have a minimum gold content of 58,5 % and, in the case of multi-layer coatings, a minimum gold content of 58,5 % in each layer. Gold coatings complying with the requirements of this International Standard are used for their corrosion and tarnish resistance, solderability, wear resistance, bondability, low and stable electrical contact resistance, and infra-red reflectivity. Attention is drawn to the fact that coatings produced from cyanide-free electrolytes based on complex sulfite ions, and coatings with the hardnesses lower than 90 HKN 25 produced from cyanide electrolytes, show a pronounced tendency to cold weld or gall. The use of such deposits on both surfaces forming mating connections or sliding contacts should therefore be avoided. Gold coatings containing lower than 99,0 % (*m/m*) by mass of gold can cause electrical resistance problems in high reliability low electrical impedance and voltage static contacts.

Attention is also drawn to the expression in certain contexts of gold contents in terms of parts per thousand (by mass), also known as “thousandths” (*millièmes*) or “fineness”. In this International Standard, percentages by mass to one decimal place are used.

1 Scope and field of application

This International Standard specifies requirements for electrodeposited coatings (single-layer, double-layer or multi-layer) of gold and its alloys for electrical, electronic and other engineering applications on metallic and non-metallic materials.

In the case of double-layer and multi-layer coatings (see 10.1), the thickness requirements apply to the total gold coating, but the requirements for gold content apply to each layer.

It does not apply to coatings on screw threads [see ISO 4042, *Threaded components — Electroplated coatings components* (at present at the stage of draft)] or to coatings on sheet or strip in the unfabricated form.

2 References

ISO 1463, *Metallic and oxide coatings — Measurement of coating thickness — Microscopical method*.

ISO 2064, *Metallic and other non-organic coatings — Definitions and conventions concerning the measurement of thickness*.

ISO 2177, *Metallic coatings — Measurement of coating thickness — Coulometric method by anodic dissolution*.¹⁾

ISO 4516, *Metallic and related coatings — Vickers and Knoop microhardness tests*.

ISO 4519, *Electrodeposited metallic coatings and related finishes — Sampling procedures for inspection by attributes*.

ISO 4524, *Metallic coatings — Test methods for electrodeposited gold and gold alloy coatings —*

Part 1 : Determination of coating thickness.

Part 2 : Environmental tests.

Part 3 : Electrographic tests for porosity.

Part 4 : Determination of gold content.

Part 5 : Adhesion tests.

Part 6 : Residual salts test.²⁾

Part 7 : Determination of sheet resistivity.²⁾

IEC Publication 68-2-20, *Basic environmental testing procedures — Test T : Soldering*.

1) At present at the stage of draft. (Revision of ISO 2177-1972.)

2) At present at the stage of draft.