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Jewellery and precious metals — Determination of gold — Cupellation method (fire assay)

Joaillerie, bijouterie et métaux précieux — Dosage de l'or — Méthode de coupellation (essai au feu)

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Foreword

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This document was prepared by Technical Committee ISO/TC 174, *Jewellery and precious metals*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/SS M21, *Precious metals - Applications in jewellery and associated products,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 11426:2014), which has been technically revised.

The main changes compared to the previous edition are as follows:

— extension of the scope to cover determination of gold in multiple types of alloys, not only in jewellery ones;

— purity of proof samples was re-defined in Clause 5;

— specific procedures are described in Clause 8 for samples with large amount of base metals, containing platinum or palladium, or with a silver/gold ratio higher than 3;

— calculation was adapted to take into account the addition of pure gold and the fineness of the gold used in the proof sample;

— repeatability requirements were changed;

— the use of scorification was removed.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Jewellery and precious metals — Determination of gold — Cupellation method (fire assay)

1 Scope

This document specifies a cupellation method (fire assay) for the determination of gold on a material considered homogeneous. The gold content of the sample lies preferably between 100 and 999,5 parts per thousand (‰) by weight. Fineness above 999,5 ‰ can be determined using a spectroscopy method by difference (e.g. ISO 15093).

The procedure is applicable to most types of gold samples. Some modifications are indicated for specific cases (presence of large amount of base metals, platinum or palladium, silver). It is not compatible with the presence above trace levels of iridium, rhodium and ruthenium (more than 0,25 ‰ for the sum of all three elements).

This method is also intended to be used as the recommended method for the determination of fineness in jewellery alloys covered by ISO 9202.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
cornet
alloy of gold and precious metals shaped in a roll, prior the parting process

3.2
gold cornet
gold shaped in a roll, after the *parting* (3.3) process

3.3
parting
separation of silver and other metals from gold by digestion of those metals with nitric acid, in a chloride-free environment

3.4
proof sample
synthetic reference sample whose composition is as similar as possible to the sample; cupellation of the proof sample is performed together with the sample, and its result is used to correct the final assay

3.5
inquartation
addition of silver to gold alloys in a specific ratio in order to enable the *parting* (3.3) of gold from silver by means of nitric acid

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