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Jewellery and precious metals — Determination of silver — Potentiometry using potassium bromide

Joaillerie, bijouterie et métaux précieux — Dosage de l'argent — Méthode potentiométrique utilisant le bromure de potassium

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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/TC 410, *Consumer confidence and nomenclature in the diamond industry,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 11427:2014) which has been technically revised.

The main changes are as follows:

— deletion of “in silver alloys” in the title;

— change of the scope by extending it to alloys containing from 100 to 999 parts per thousand;

— addition of oxygen content for reference pure silver in 5.4.

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Jewellery and precious metals — Determination of silver — Potentiometry using potassium bromide

1 Scope

This document specifies a volumetric method for the determination of silver on a material considered homogeneous. The silver content of the sample lies preferably between (100 and 999,0) parts per thousand (‰) by mass. Fineness above 999,0 ‰ can be determined using a spectroscopy method by difference (e.g. ISO 15096).

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

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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 https://www.electropedia.org/

4 Principle

The sample is dissolved in dilute nitric acid. The silver content of the resulting solution is determined by titration with standard potassium bromide solution using a potentiometric indication of the equivalence point. Palladium can interfere with the measurement and is precipitated before commencing titration, other elements do not interfere with this method of determination.

5 Reagents

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

5.1 Nitric acid (HNO_3); 33 % (mass fraction), with sufficiently low content of halides (check with silver nitrate test).

5.2 Potassium bromide solution, c(KBr) = 0,1 mol/l.

Dissolve 11,901 g of potassium bromide (dried at 105 °C) in water and dilute to 1 000 ml.

5.3 Disodium dimethylglyoxime octahydrate solution.

Dissolve 10 g of disodium dimethylglyoxime octahydrate in 1 000 ml of water.

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