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Jewellery and precious metals — Determination of silver — Potentiometry using sodium chloride or potassium chloride

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

Reference number
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Foreword

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This document was prepared by Technical Committee ISO/TC 174, *Jewellery and precious metals.*

This third edition cancels and replaces the second edition (ISO 13756:2015), 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 silver from 100 to 999 parts per thousand (‰) by mass;

— addition of oxygen content for reference pure silver in 5.5.

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Jewellery and precious metals — Determination of silver — Potentiometry using sodium chloride or potassium chloride

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 terminology 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 sodium chloride or potassium chloride standard 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 Sodium chloride solution, c(NaCl) = 0,1 mol/l.

Dissolve 5,84 g of sodium chloride (dried at 105 °C) in water and dilute to 1 000 ml.

5.3 Potassium chloride solution, c(KCl) = 0,1 mol/l.

Dissolve 7,44 g of potassium chloride (dried at 105 °C) in water and dilute to 1 000 ml.

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