
**Jewellery and precious metals —
Determination of very high purity gold
— Difference method using ICP-MS**

Joannerie, bijouterie et métaux précieux — Dosage de l'or de très haute pureté — Méthode par différence utilisant la spectrométrie de masse à plasma à couplage inductif (ICP-MS)





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Foreword

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

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Jewellery and precious metals — Determination of very high purity gold — Difference method using ICP-MS

1 Scope

This document specifies an analytical procedure for the determination of very high purity gold with a nominal content of and above 999,99 ‰ (parts per thousand, by mass), using an inductively coupled plasma mass spectrometer (ICP-MS).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11596, *Jewellery and precious metals — Sampling of precious metals and precious metal alloys*

3 Terms and definitions

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

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/>

3.1

very high purity gold

gold with a content of and above 999,99 ‰ (parts per thousand, by mass)

4 Principle

The sample is weighed and dissolved in diluted aqua regia to prepare a 2 g/l solution. A blank calibration curve is used to determine the impurities coming from the preparation procedures. The impurities in the sample are determined by ICP-MS using internal standards (see [Table B.1](#) for mass number and internal standards), and the gold content is obtained by subtraction of the total content of impurities in the sample from 1 000 ‰.

5 Reagents

During the analysis and for the preparation of all solutions, unless otherwise stated, use only reagents of recognized analytical grade suitable for ICP-MS and ultrapure water with a resistivity around 18,2 MΩ·cm.

5.1 Hydrochloric acid (HCl), with a mass fraction of approximately 30 % to 37 % of HCl.

5.2 Nitric acid (HNO₃), with a mass fraction of approximately 65 % to 70 % of HNO₃.

5.3 Sulfuric acid (H₂SO₄), with a mass fraction of approximately 95 % to 98 % of H₂SO₄.