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**BS ISO 11494:2014**



**BSI Standards Publication**

# **Jewellery — Determination of platinum in platinum jewellery alloys — ICP-OES method using yttrium as internal standard element**

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This British Standard is the UK implementation of ISO 11494:2014. It supersedes BS ISO 11494:2008 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee STI/53, Specifications and test methods for jewellery and horology.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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## **Jewellery — Determination of platinum in platinum jewellery alloys — ICP-OES method using yttrium as internal standard element**

*Joallerie, bijouterie — Dosage du platine dans les alliages de platine  
pour la joallerie, bijouterie — Méthode par ICP-OES utilisant  
l'yttrium comme étalon interne*



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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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 174, *Jewellery*.

This second edition cancels and replaces the first edition (ISO 11494:2008), which has been technically revised with the following changes:

- a) change in the scope that this method is the referee method;
- b) addition of a warning in [Clause 8](#) that suitable health and safety procedures should be followed;
- c) addition of a standard solution in [8.1](#);
- d) addition of an alternative calibration solution in [8.2.2](#);
- e) addition of an alternative sample solution in [8.3.2](#);
- f) addition of an alternative route for calculation in [8.6.4](#);
- g) International Standard editorially revised.

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## Introduction

The following definitions apply in understanding how to implement an ISO International Standard and other normative ISO deliverables (TS, PAS, IWA):

- “shall” indicates a requirement;
- “should” indicates a recommendation;
- “may” is used to indicate that something is permitted;
- “can” is used to indicate that something is possible, for example, that an organization or individual is able to do something.

ISO/IEC Directives, Part 2 (sixth edition, 2011), 3.3.1 defines a requirement as an “expression in the content of a document conveying criteria to be fulfilled if compliance with the document is to be claimed and from which no deviation is permitted.”

ISO/IEC Directives, Part 2 (sixth edition, 2011), 3.3.2 defines a recommendation as an “expression in the content of a document conveying that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required, or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.”

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# Jewellery — Determination of platinum in platinum jewellery alloys — ICP-OES method using yttrium as internal standard element

## 1 Scope

This International Standard describes a method for the determination of platinum in platinum jewellery alloys, preferably within the range of fineness specified in ISO 9202, by means of inductively coupled plasma optical emission spectrometry (ICP-OES).

This method applies to platinum jewellery alloys that might contain silver, indium, iridium, gallium, copper, cobalt, nickel, tin, and ruthenium. However, this list is not exhaustive and care is always to be taken to investigate potential interference effects.

This method is intended to be used as the recommended method for the determination of fineness in alloys covered by ISO 9202 up to 990 ‰.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 — Sampling of precious metal alloys for and in jewellery and associated products*

## 3 Terms and definitions

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

### 3.1

#### bracketing

running of standards and samples in the following sequence: low standard – sample – high standard – sample – low standard – sample – high standard – sample – low standard – sample – high standard

## 4 Principle

At least two accurately weighed samples are dissolved in aqua regia and made up to an exactly weighed mass. Exactly weighed portions (aliquots) of these sample solutions are mixed with the internal standard and made up to the standard measuring volume.

Using ICP-OES, the platinum content of the sample solution is measured by comparison of the ratio intensities of the spectral emission of platinum (recommended lines are 265,95 nm, 214,42 nm, 299,80 nm, or 306,47 nm) and appropriate yttrium lines with the ratios for solutions containing known masses of platinum and yttrium using the bracketing method.

Minor modifications are required when the alloy contains ruthenium, rhodium, iridium, or tungsten.

## 5 Reagents

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