AS 3515.4—2007
Reconfirmed 2018

AS 3515.4—2007

Australian Standard®

Gold and gold bearing alloys

Part 4: Determination of gold content (greater than 99.95%)—Inductively coupled plasma—Atomic emission spectrometry

This Australian Standard® was prepared by Committee CH-010, Analysis of Metals. It was approved on behalf of the Council of Standards Australia on 25 October 2007.
This Standard was published on 20 December 2007.

The following are represented on Committee CH-010:

- Australasian Institute of Mining and Metallurgy
- Australian Aluminium Council
- Institute of Materials Engineering Australasia
- International Precious Metals Institute
- National Association of Testing Authority
- The Royal Australian Chemical Institute

This Standard was issued in draft form for comment as DR 06636.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 3515.4–2007

Gold and gold bearing alloys

Part 4: Determination of gold content (greater than 99.95 percent) – Inductively coupled plasma – Atomic emission spectrometry

RECONFIRMATION NOTICE

Technical Committee CH-010 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 26 April 2018.

The following are represented on Technical Committee CH-010:

Australian Chamber of Commerce and Industry
Bureau of Steel Manufacturers of Australia
Geoscience Australia
International Copper Association Australia
Jewellers Association of Australia
Materials Australia
National Association of Testing Authorities Australia
Perth Mint

NOTES

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First published as AS 3515.4—2007.

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Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 8495 X

PREFACE

The Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH-010, Analysis of Metals, as Part 4 of a series of Standards for the determination of gold content and gold bearing alloys. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

This Standard reflects the current gold trend towards the determination of high purity metals 'by difference' thereby making maximum use of modern, multi-element analyzers.

The objective of this Standard is to provide a procedure for the indirect determination of high purity gold after determination of impurities by inductively coupled plasma atomic emission spectrometry (ICP-AES). This method is suitable for gold containing more than 99.95% gold.

This Standard must be applied with caution, particularly where the gold test sample is of unknown composition; this Standard is based on the information supplied by the major gold refiners in Australia. It is the responsibility of the analyst to ensure that all elements present in the sample have been determined.

Reference should be made to other documents in the series:

AS
3515 Gold and gold bearing alloys
3515.1 Part 1: Determination of gold content (less than 30%)—Gravimetric (fire assay method)
3515.2 Part 2: Determination of gold content (30% to 99.5%—Gravimetric (fire assay) method
3515.3 Part 3: Determination of gold content (greater than 99.5%)—Gravimtric (fire assay) method

An interlaboratory test program was organized to provide information on the repeatability and reproducibility of the method. The following laboratories participated in the test program to provide the data given in Table 1:

AGR Matthey Newburn

AGR Matthey Thomastown

K&S Singapore

Spectrometer Services

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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1 SCOPE

This Standard sets out an instrumental procedure for the indirect determination of high purity gold after determination of impurities by Inductively Coupled Plasma–Atomic Emission Spectrometry (ICP–AES). The method is suitable for gold and gold alloys containing more than 99.95% gold.

Consideration should be given to the origin, manufacture and final use of the product in identifying the list elements to be tested. The following list of elements is not necessarily complete: Ag, Al, As, Be, Bi, Ca, Cr, Cu, Fe, Ir, Mg, Mn, Ni, Pb, Pd, Pt, Rh, Se, Si, Sn, Te, Ti, Zn.

It is recommended that a qualitative scan be carried out on unknown material to assist in identifying any elements additional to the list.

NOTE: This is an intricate procedure and should be performed only by an analyst familiar with the chemistry of the technique and the operational procedures of the instrument used.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
2162	Verification and use of volumetric apparatus
2162.1	Part 1: General—Volumetric glassware
2162.2	Part 2: Guide to the use of piston-operated volumetric apparatus (POVA)
2164	Laboratory glassware—One-mark volumetric flasks
2166	Laboratory glassware—One-mark pipettes
2167	Graduated straight pipettes
2508	Safe storage and handling information (series)
2850	Chemical analysis—Interlaboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct
3641	Recommended practice for atomic emission spectrometric analysis
3641.1	Part 1: Principles and techniques
3641.2	Part 2: Inductivity coupled plasma excitation
AS ISO/IEC	
17025	General requirements for the competence of testing and calibration laboratories
AS/NZS	
2243	Safety in laboratories
2243.1	Part 1: General
2243.2	Part 2: Chemical aspects

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