AS 3515.2:2019

Australian STANDARD

Gold and gold bearing alloys

Part 2: Determination of gold content (30 % to 99.5 %)—Gravimetric (fire assay) method

STANDARDS Australia

AS 3515.2:2019

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Australasian Institute of Mining and Metallurgy
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

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Part 2: Determination of gold content (30 % to 99.5 %)—Gravimetric (fire assay) method

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Second edition 2002.
This edition 2019.

Preface

This Standard was prepared by Standards Australia Committee CH-010, Analysis of Metals, to supersede AS 3515.2—2002, *Gold and gold bearing alloys, Part 2: Determination of gold content (30% to 99.5%)—Gravimetric (fire assay) method*.

The objective of this Standard is to set out gravimetric procedures for the determination of gold content in the range from 30 % to 99.5 % in gold and gold bearing alloys with < 2 % nickel, < 0.05 % rhodium, < 0.05 % tungsten, < 1 % platinum and < 3 % palladium. This method is not suitable for alloys containing iridium.

The major changes in this edition are as follows:

(a) Exclusion of alloys containing iridium in the scope.

(b) The use of either vacuum tube sampling method or dip sampling as the preferred sampling techniques.

(c) A warning on appropriate safety protocols for end users of this Standard.

(d) Editorial amendments and consistency with other Standards in the series.

This Standard is part of a series for AS 3515, as follows:

AS 3515.1, *Gold and gold bearing alloys, Part 1: Determination of gold content (Less than 30 %) — Gravimetric (fire assay) method*

AS 3515.2, *Gold and gold bearing alloys, Part 2: Determination of gold content (30% to 99.5%)—Gravimetric (fire assay) method* (this Standard)

AS 3515.3, *Gold and gold bearing alloys, Part 3: Determination of gold content (greater than 99.5 %) — Gravimetric (fire assay) method*

AS 3515.4, *Gold and gold bearing alloys, Part 4: Determination of gold content (greater than 99.95%)—Inductively coupled plasma—Atomic emission spectrometry*

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:

Harrington's Metallurgists Limited

Johnson Matthey Pty Ltd

Australian Gold Refineries

Palloys Pty Ltd

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

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WARNING — THE USE OF THIS STANDARD MAY INVOLVE HAZARDOUS MATERIALS, OPERATIONS AND EQUIPMENT. THIS STANDARD DOES NOT PURPORT TO ADDRESS ALL OF THE SAFETY PROBLEMS ASSOCIATED WITH ITS USE. IT IS THE RESPONSIBILITY OF THE USER OF THIS STANDARD TO ESTABLISH APPROPRIATE SAFETY AND HEALTH PRACTICES AND DETERMINE THE APPLICABILITY OF REGULATORY LIMITATIONS PRIOR TO USE.

1 Scope

This Standard sets out gravimetric procedures for the determination of gold content in the range from 30 % to 99.5 % in gold and gold bearing alloys with < 2 % nickel, < 0.05 % rhodium, < 0.05 % tungsten, < 1 % platinum and < 3 % palladium. This method is not suitable for alloys containing Iridium.

NOTE 1 Recommended methods of sampling bullion for use with this Standard are provided in Appendix A.

NOTE 2 The presence of the following elements may cause difficulties in obtaining a homogeneous sample: iron, lead, antimony or arsenic.

NOTE 3 A preliminary assay may first be performed to determine the gold, silver and base metal present.

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.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

ISO 3696, *Water for analytical laboratory use—Specification and test methods*

3 Definitions

For the purpose of this Standard, the definitions below apply.

3.1
bullion
an alloy of gold and silver with variable amounts of one or more of the base metals

3.2
cornet
an alloy of gold and silver after it has been hammered, annealed and fashioned into a roll, prior to parting

3.3
cupellation
the process by which the precious metals are separated from the lead and other base metals with which they are alloyed. It is also the process whereby the sample, having been wrapped in lead sheet/foil with the necessary additives (i.e. silver or copper or both), is homogenized in the molten state prior to the separation of the gold and silver

3.4
gold cornet
a cornet that has been parted