AS 1515.4—1978
Reconfirmed 2016

Australian Standard®

METHODS FOR THE ANALYSIS OF COPPER ALLOYS

Part 4—ELECTROLYTIC DETERMINATION OF COPPER IN WROUGHT AND CAST COPPER ALLOYS

The following industrial, scientific and governmental organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Aluminium Development Council
Australasian Institute of Mining and Metallurgy
Australian Lead Development Association
Australian Mineral Development Laboratories
Australian Tin Information Centre
Australian Zinc Development Association
Bureau of Steel Manufacturers of Australia
Confederation of Australian Industry
Copper Producers Association of Australia
Department of Defence
Electricity Supply Association of Australia
Metal Trades Industry Association of Australia
National Association of Testing Authorities
Railways of Australia Committee
Royal Australian Chemical Institute

This standard, prepared under the direction of Committee CH/10, Analysis of Metals, was approved on behalf of the Council of the Standards Association on 23 August 1978, and was published on 1 November 1978.

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This standard was issued in draft form for public review as DR 77002.

PREFACE

This standard method was prepared by the Association's Committee on Analysis of Metals as part of the program of standardizing methods for the determination of elements in non-ferrous metals.

It requires reference to the following standards:

AS 2134 Code of Practice for the Chemical Analysis of Materials by Flame Atomic Absorption Spectroscopy

BS 4237 Report on Reproducibility of Methods of Chemical Analysis Used in the Iron and Steel Industry

ASTM E88 Standard Method of Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition

STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 1515.4—1978
Methods for the analysis of copper alloys
Part 4: Electrolytic determination of copper in wrought and cast copper alloys

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.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 31 July 2016.

The following are represented on Technical Committee CH-010:

Australian Aluminium Council
Bureau of Steel Manufacturers of Australia
International Copper Association Australia
International Precious Metals Institute
National Association of Testing Authorities Australia

NOTES

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHOD FOR THE ELECTROLYTIC DETERMINATION OF COPPER IN WROUGHT AND CAST COPPER ALLOYS

1 SCOPE. This standard describes an electrolytic method for the determination of copper in wrought and cast copper alloys.

2 APPLICATION.

2.1 Range. The method is suitable for alloys with copper content from 50 percent to 95 percent.

2.2 Interfering Elements. The method has been found satisfactory in the presence of the following elements up to the percentage concentrations indicated: tin, 10; zinc, 35; lead, 3; nickel, 30; iron, 5; aluminium, 9; silicon, 3.

3 REPRODUCIBILITY. A planned trial of the method was carried out in accordance with BS 4237.

The reproducibility index ($2s$) is obtained from the formula:

$$2s = 2\sqrt{(s_b^2 + s_w^2)}$$

where

s_b = between-operator standard deviation

s_w = within-operator standard deviation.

95 percent of the results obtained by any one analyst should be reproducible to within two standard deviations of the overall mean value derived from all laboratories (i.e. $\bar{x} \pm 2s$).

For further information see BS 4237.

The planned trial was carried out by five analysts, each from a different laboratory. Five tests were carried out by each analyst on each of six samples. From the results obtained the 95 percent confidence limits ($2s$) have been calculated (see Table 1).

4 PRINCIPLE. The test portion is dissolved in a fluoroboric acid—nitric acid solution. The copper in the test portion is then determined by electrolytic deposition from this solution. The copper remaining in solution after deposition is complete is determined by atomic absorption spectroscopy.