AS 2614—1998

Australian Standard™

Copper and copper alloys—Sampling for chemical and spectrochemical analysis, and physical testing

This Australian Standard was prepared by Committee CH/10, Analysis of Metals. It was approved on behalf of the Council of Standards Australia on 10 July 1998 and published on 5 September 1998.

The following interests are represented on Committee CH/10:

Australasian Institute of Mining and Metallurgy

Australasian Railway Association

Australian Aluminium Council

Australian Chamber of Manufactures

Copper Technical Data Centre, Australia

National Association of Testing Authorities, Australia

The Royal Australian Chemical Institute

University of New South Wales

Additional interests participating in preparation of Standard:

Superintendent Companies and Aluminium Smelters

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH/10, Analysis of Metals to supersede AS 2614—1983, *Copper and copper alloys—Sampling for chemical analysis and electrical resistivity.*

This Standard is the result of a consensus among representatives of the Joint Committee to produce it as an Australian Standard.

The technique used for taking samples is as important as the actual analytical method. Therefore sampling techniques for copper and copper alloys need to be defined in order to ensure that the procedures used in different laboratories analyzing these metals will be as uniform as possible.

Sampling is the major source of variation in the determination of metals content of an alloy or the pure metal. Sampling personnel are required under this Standard to follow prescribed sampling procedures. These procedures may be varied provided that the analytical laboratory has demonstrated that the analyte concentrations determined in the product of the alternative sampling procedure are comparable with that of the bulk.

Number of samples and sampling frequency are also considered outside of the scope of this Standard

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard sets out methods for obtaining a representative sample of copper and copper alloys and procedures for the preparation of laboratory samples required for the determination of their chemical composition by both chemical and spectrochemical analysis. The samples are taken either from molten metal, cathode, cast forms or wrought product. This Standard is also suitable for sampling copper and copper alloys for selective physical tests.

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

1.2.1 Batch—products of uniform chemical and physical composition derived as one of the following:

(a) The product from any discrete production period in which casting conditions remain substantially constant.

(b) A single furnace charge.

(c) Part or whole of a cathode shipment.

1.2.2 Cast forms—items of copper or copper alloy which have not been subject to deformation. Examples include ingot, semi-finished product obtained by continuous casting (e.g. billet, slab and cake) and shaped castings.

1.2.3 Chemical method of analysis—method for the determination of chemical composition in which the sample is subjected to chemical reaction.

1.2.4 Laboratory sample—part or all of the preliminary sample brought to a required condition for analysis.

1.2.5 Preliminary sample—the sample ladled from the molten metal or that taken from final products from which the laboratory sample is prepared, which is representative of the batch.

1.2.6 Spectrochemical method of analysis—method for the determination of chemical composition in which the determination of composition is carried out without subjecting the sample to chemical reaction, e.g. an atomic emission spectrometric method or an X-ray fluorescence spectrometric method.

1.2.7 Test portion—that part of the laboratory sample which is actually analysed.

1.2.8 Wrought product—items of copper or copper alloy which have been subject to deformation by rolling, drawing, forging or some other method. Examples include bar, billet, plate, strip, rod, tube and wire.

1.3 APPARATUS

1.3.1 Moulds—of steel or cast iron construction. A number of mould shapes are used in the industry comprising book moulds, centre-pour moulds, chill moulds, dip moulds and moulds unique to a specific manufacturer. The final mould shape is dependent upon the