Australian Standard™

Zinc and zinc alloys—Sampling for chemical and spectrochemical analysis

This Australian Standard was prepared by Committee CH/10, Analysis of Metals. It was approved on behalf of the Council of Standards Australia on 1 May 1998 and published on 5 August 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 Development Association of Australia

National Association of Testing Authorities, Australia

The Royal Australian Chemical Institute

University of New South Wales

Review of Australian Standards. *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 97369.

Australian Standard™

Zinc and zinc alloys—Sampling for chemical and spectrochemical analysis

Originated in part as AS 2347—1980.
Previous edition AS 2446—1981.
AS 2347—1980 and AS 2446—1981 revised, amalgamated and redesignated AS 2347—1998.

Published by Standards Australia
(Standards Association of Australia)
1 The Crescent, Homebush, NSW 2140

ISBN 0 7337 2010 2

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH/10, Analysis of Metals to supersede AS 2347—1980, *Method for the sampling of zinc metal and zinc alloys for chemical analysis* and AS 2446—1981, *Zinc metal and alloys—Sampling and the preparation of solid samples for optical emission spectrometry*.

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

The objective of this Standard is to combine AS 2347 and AS 2446 and update procedures in accordance with technological developments for the methods of sampling zinc and zinc alloys for chemical and spectrochemical analysis.

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.

The Committee recognized that there is considerable variation in the types of mould available and in current use for the provision of the ideal sample. Vacuum moulds are not widely used in Australia and they have not been included in the scope of this Standard.

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

CONTENTS

Page

STANDARDS AUSTRALIA

Australian Standard

Zinc and zinc alloys—Sampling for chemical and spectrochemical analysis

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard sets out methods for obtaining a representative sample of zinc and zinc alloys and procedures for the preparation of laboratory samples required for the determination of their chemical composition by both chemical and spectrochemical analyses. The procedures are suitable for use in manufacturing control, material and product acceptance, and research and development.

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 remained substantially constant.

(b) A single furnace charge.

1.2.2 Cast forms—items of zinc and zinc alloy which have not been subject to deformation. Examples include ingot, semi-finished product obtained by continuous casting and shaped casting.

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 taken from the ingot 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 zinc or zinc alloy which have been subject to deformation by extrusion, rolling, drawing, forging or some other method. Examples include bar, billet, plate, strip, tube and wire.

1.3 APPARATUS

1.3.1 Book mould—of steel or cast iron construction. A typical book mould is shown in Figure 1.

1.3.2 Centre-pour mould—of steel or cast iron construction. A typical centre-pour mould is shown in Figure 2.

1.3.3 Ladle—capable of holding a minimum of 250 g of molten metal.