AS 2347—1998

Australian Standard™

Zinc and zinc alloys—Sampling for chemical and spectrochemical analysis

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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

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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 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

SECTION 1 SCOPE AND GENERAL
1.1 SCOPE 4
1.2 DEFINITIONS 4
1.3 APPARATUS 4

SECTION 2 SAMPLING OF MOLTEN METAL
2.1 GENERAL 9
2.2 PROCEDURE 9
2.3 SAMPLE QUALITY 9

SECTION 3 SAMPLING OF CAST FORMS AND WROUGHT PRODUCT
3.1 GENERAL 10
3.2 INGOT SAMPLING BY DRILLING 10
3.3 SAMPLING OF OTHER SHAPES 10

SECTION 4 PREPARATION OF THE SAMPLE FOR SPECTROCHEMICAL ANALYSIS
4.1 GENERAL 12
4.2 PROCEDURE 12
4.3 ANALYSIS 12
4.4 DIRECT EXCITATION OF CAST FORMS 12

SECTION 5 PREPARATION OF THE SAMPLE FOR CHEMICAL ANALYSIS
5.1 FROM DISC SAMPLES 14
5.2 FROM OTHER SHAPES 14
5.3 FROM MOLTEN METAL OR MOLTEN ALLOY 14

STANDARDS AUSTRALIA

Australian Standard

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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.