

Australian Standard<sup>®</sup>

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**Methods for the analysis of zinc  
and zinc alloys**

**Part 8: Determination of cadmium  
content—Flame atomic absorption  
spectrometric method**

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This Australian Standard was prepared by Committee CH/10, Analysis of Metals. It was approved on behalf of the Council of Standards Australia on 9 May 1994 and published on 19 September 1994.

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The following interests are represented on Committee CH/10:

Aluminium Development Council, Australia  
Australasian Institute of Mining and Metallurgy  
Australian Lead Development Association  
Bureau of Steel Manufacturers, Australia  
Copper Technical Data Centre, Australia  
National Association of Testing Authorities, Australia  
Railways of Australia Committee

Additional interests participating in preparation of Standard:

Analytical laboratories  
Department of Defence, Materials Research Laboratory  
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**RECONFIRMATION**

**OF**

**AS 1329.8—1994**

**Methods for the analysis of zinc and zinc alloys**

**Part 8: Determination of cadmium content—Flame atomic absorption  
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Australian Aluminium Council  
Bureau of Steel Manufacturers of Australia  
International Copper Association Australia  
International Precious Metals Institute  
National Association of Testing Authorities Australia

## NOTES

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PREFACE

This Standard was prepared by the Standards Australia Committee CH/10 on the Analysis of Metals to supersede AS 1329.8—1980, *Methods for the analysis of zinc and zinc alloys, Part 8: Determination of cadmium content—Flame atomic absorption spectrometric method.*

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## STANDARDS AUSTRALIA

## Australian Standard

## Methods for the analysis of zinc and zinc alloys

Part 8: Determination of cadmium content—  
Flame atomic absorption spectrometric method

**1 SCOPE** This Standard sets out a flame atomic absorption spectrometric method for the determination of the cadmium content in the range 0.0001% to 0.02% special high grade zinc and high grade zinc, and in diecast alloys containing a maximum of 4.3% aluminium, 0.06% magnesium and 1.3% copper.

**2 REFERENCED DOCUMENTS** The following documents are referred to in this Standard:

## AS

- 2134 Recommended practice for chemical analysis by atomic absorption spectrometry
- 2134.1 Part 1: Flame atomic absorption spectrometry
- 2162 Code of practice for the use of volumetric glassware
- 2164 One-mark volumetric flasks
- 2165 Burettes and bulb burettes
- 2166 One-mark pipettes
- 2347 Method for the sampling of zinc metal and zinc alloys for chemical analysis
- 2850 Chemical analysis—Interlaboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct

## BS

- 4237 Report on reproducibility of methods of chemical analysis used in the iron and steel industry

**3 PRINCIPLE** The sample is dissolved in sulfuric acid/nitric acid mixture. Sodium iodide is added and the cadmium iodide complex is extracted into n-butyl acetate containing 1% of tri-n-octylamine. The cadmium is determined in the organic phase by flame atomic absorption spectrometry.

**4 REAGENTS**

**4.1 General requirements** During the analysis, only reagents of recognized analytical reagent grade, and only distilled water or water of equivalent purity shall be used.

**4.2 Solutions**

**4.2.1 Sulfuric acid/nitric acid mixture** Add 150 mL of sulfuric acid ( $\rho_{20}$  1.84 g/mL) and 30 mL of nitric acid ( $\rho_{20}$  1.41 g/mL) to 700 mL of water, with constant stirring. Cool, dilute to 1 L, and mix.

**4.2.2 Sodium iodide solution (750 g/L)** Dissolve 75 g of sodium iodide and 4 g of ascorbic acid in water. Dilute to 100 mL and mix.

NOTE: Potassium iodide solution (830 g/L) may be used in lieu of sodium iodide solution.

**4.2.3 Urea solution (10 g/L)** Dissolve 10 g urea in water. Dilute to 1 L and mix.