

Australian Standard™

**Recommended practice for chemical  
analysis by atomic absorption  
spectrometry**

**Part 1: Flame atomic absorption  
spectrometry**

This Australian Standard was prepared by Committee CH/16, Spectroscopy. It was approved on behalf of the Council of Standards Australia on 29 October 1999 and published on 5 December 1999.

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STANDARDS AUSTRALIA

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**RECONFIRMATION**

**OF**

**AS 2134.1—1999**

**Recommended practice for chemical analysis by atomic absorption spectrometry  
Part 1: Flame atomic absorption spectrometry**

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Technical Committee CH-016 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.

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## NOTES

Australian Standard™

**Recommended practice for chemical  
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Originated as AS CK18—1970.  
Final edition AS 2134.1—1988.  
Second edition 1999.

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Published by Standards Australia International Ltd  
PO Box 1055, Strathfield, NSW 2135, Australia

ISBN 0 7337 3063 9

## PREFACE

This Standard was prepared by the Standards Australia Committee CH/16, Spectroscopy, to supersede AS 2134.1—1988.

This Standard will be Part 1 of a series comprising:

AS

2134 Recommended practice for chemical analysis by atomic absorption spectrometry

2134.1 Part 1: Flame atomic absorption spectrometry

2134.2 Part 2: Graphite furnace atomic absorption spectrometry

2134.3 Part 3: Vapour generation atomic absorption spectrometry

The objective of this Standard is to set out recommended practices for the operation of flame atomic absorption spectrometers used in chemical analysis. The Standard includes a description of instrumentation, optimization procedures, calibration, test procedures and information on factors affecting atomic absorption. A section on analytical quality assurance has been added to the Standard.

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## STANDARDS AUSTRALIA

## Australian Standard

## Recommended practice for chemical analysis by atomic absorption spectrometry

## Part 1: Flame atomic absorption spectrometry

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE** This Standard sets out recommendations for instrumentation and operating techniques suitable for chemical analysis by flame atomic absorption spectrometry (FAAS) and includes a summary of testing procedures and recommendations for safe operation.

## NOTES:

- 1 Graphite furnace atomization and vapour generation techniques are dealt with in Parts 2 and 3 of the AS 2134 series of Standards.
- 2 This Standard should be read in conjunction with the instrument manufacturer's recommendations.
- 3 A flowsheet on the procedure for the acceptance of analytical values for test samples is given in Appendix A.

**1.2 PRINCIPLE** Flame atomic absorption spectrometry (FAAS) relies upon—

- (a) heating a sample sufficiently to produce free atoms;
- (b) free atoms of an element being able to absorb energy only at certain discrete wavelengths (usually resonance wavelengths: refer Appendix B); and
- (c) the energy absorbed being a function of the concentration of the absorbing atoms.

The technique described in this Standard involves nebulizing a solution of the sample into a flame and measuring the absorption of energy at a specified wavelength. The apparatus is so designed that the absorption measurement is independent of any radiation emitted by the flame.

**1.3 REFERENCED DOCUMENTS** The documents below are referred to in this Standard:

## AS

1674	Safety in welding and allied processes
1674.1	Part 1: Fire precautions
1940	The storage and handling of flammable and combustible liquids
2134	Recommended practice for chemical analysis by atomic absorption spectrometry
2134.2	Part 2: Graphite furnace spectrometry
2134.3	Part 3: Vapour generation atomic absorption spectrometry
2162	Verification and use of volumetric apparatus
2162.1	Part 1: General—Volumetric glassware