AS 2134.1—1999
Reconfirmed 2016

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.

The following interests are represented on Committee CH/16:

Australian Chamber of Commerce and Industry

CSIRO Energy Technology

CSIRO Manufacturing Science and Technology

Department of Defence (Australia)

Department of Natural Resources, Qld

National Association of Testing Authorities, Australia

Queensland Health Scientific Services

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This Standard was issued in draft form for comment as DR 98646.

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 2134.1—1999

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

RECONFIRMATION NOTICE

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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The following are represented on Technical Committee CH-016:

Australian Institute of Physics
Environmental Laboratory Industry Group
National Association of Testing Authorities Australia
National Measurement Institute

NOTES

Australian Standard™

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Part 1: Flame atomic absorption spectrometry

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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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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