Australian Standard™

Analysis of metals—Procedures for the setting up, calibration and standardization of atomic emission spectrometers using arc/spark discharge

This Australian Standard was prepared by Committee CH/10, Analysis of Metals. It was approved on behalf of the Council of Standards Australia on 14 December 1999 and published on 26 January 2000.

The following interests are represented on Committee CH/10:

Australasian Institute of Mining and Metallurgy

Australasian Railway Association

Australian Aluminium Council

Australian Industry Group

National Association of Testing Authorities, Australia

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 2883—1986, *Analysis of metals—Procedures for the setting up, calibration and standardization of atomic emission spectrometers using arc/spark discharge.*

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

The objective of this Standard is to standardize procedures and terms associated with the setting up and use of atomic emission spectrometers using arc/spark discharge for the analysis of metals. This edition provides details on modern instrumentation, instrument performance tests and performance values. A glossary of terms specific to spectrometric analysis of metals is included in this Standard as an Appendix.

Additional Standards describe methods for the atomic emission spectrometric analysis of specific metals or groups of metals.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

CONTENTS

Page

STANDARDS AUSTRALIA

Australian Standard

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies practices for the setting up, calibration and standardization of equipment for the atomic emission spectrometric analysis of metals using arc/spark discharge. This Standard details test procedures used to ensure optimum response from this equipment.

NOTE: A glossary of terms used in this Standard is included for reference in Appendix A.

1.2 PRINCIPLE OF THE ATOMIC EMISSION TECHNIQUE

When atoms of elements are excited using a suitable excitation source they emit electromagnetic radiation in the form of a spectrum. The spectrum of an element is determined primarily by the electronic configuration of its atoms and, as atoms of different elements have different electronic configurations, each element has a distinct and characteristic spectrum. The characteristic spectrum consists of a number of wavelengths which correspond to the emission of electromagnetic radiation arising from the transition of electrons in various excited states to lower energy states. The intensity of the electromagnetic radiation which is emitted at a characteristic wavelength is proportional to the concentration of the element in the sample.

1.3 REFERENCED DOCUMENT

The document below is referred to in this Standard:

AS
3641 Recommended practice for atomic emission spectrometric analysis
3641.1 Part 1: Principles and techniques