Australian Standard™

Coal and coke—Analysis and testing

Part 10.2: Determination of trace elements—Coal and coke—Determination of arsenic, antimony and selenium—Hydride generation method

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The following interests are represented on Committee MN/1:

ACIRL

Australasian Institute of Mining and Metallurgy

Australian Coal Association

Australian Coal Preparation Society

Australian Institute of Energy

Bureau of Steel Manufacturers of Australia

Coalfield Geology Council of New South Wales

CSIRO, Division of Coal and Energy Technology

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PREFACE

This Standard was prepared by the Standards Australia Committee MN/1, Coal and Coke, as a revision of AS 1038.10, *Coal and Coke—Analysis and testing*, Part 10: *Arsenic in coal and coke*.

The objective of this revision is to include the determination of antimony and selenium and to update the method for determination of arsenic.

The determination of the trace elements in coal and coke is becoming more important due to the considerable emphasis being placed on the effect of these elements on the environment. International buyers are becoming increasingly aware of the need for more detailed knowledge of the coals that they are purchasing and may request trace element analysis. In order to have accurate and precise results for this analysis it is imperative that standard methods be available.

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1 SCOPE This Standard sets out a method for the determination of arsenic, antimony and selenium in higher rank coal and coke by hydride generation.

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

AS
1038 Coal and coke—Analysis and testing
1038.3 Part 3: Proximate analysis of higher rank coal
1038.4 Part 4: Coke—Proximate analysis
1038.16 Part 16: Assessment and reporting of results

2134 Recommended practice for chemical analysis by atomic absorption spectrometry
2134.3 Part 3: Vapour generation atomic absorption spectrometry

2243 Safety in laboratories (series)

2418 Coal and coke—Glossary of terms

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2706 Numerical values—Rounding and interpretation of limiting values

4264 Coal and coke—Sampling
4264.1 Part 1: Higher rank coal—Sampling procedures
4264.2 Part 2: Coke—Sampling procedures

3 DEFINITIONS For the purpose of this Standard, the definitions given in AS 2418 apply.

4 PRINCIPLE A known mass of sample is ignited in intimate contact with Eschka mixture in an oxidizing atmosphere at 800°C to decompose the organic matter. The residue is then extracted with hydrochloric acid and the analytes are determined by atomic absorption or atomic fluorescence spectrometry after conversion to their volatile hydrides.

5 SAFETY For information on laboratory safety, reference should be made to the relevant parts of AS 2243 and AS 2508.

Reagents used may be hazardous or toxic and reference should be made to the appropriate Material Safety Data Sheets.

6 REAGENTS

6.1 General Unless otherwise specified, all reagents shall be of analytical reagent grade, and only distilled water or water of equivalent purity shall be used.