

Australian Standard™

Coal and coke—Analysis and testing

**Part 10.0: Determination of trace
elements—Guide to the determination of
trace elements**

This Australian Standard was prepared by Committee MN-001, Coal and Coke. It was approved on behalf of the Council of Standards Australia on 15 February 2002 and published on 11 March 2002.

The following interests are represented on Committee MN-001:

Australasian Institute of Mining and Metallurgy
Australian Coal Association
Australian Coal Preparation Society
Australian Institute of Energy
Coalfield Geology Council of N.S.W.
CSIRO Energy Technology
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PREFACE

This Guide was prepared by the Standards Australia Committee MN-001, Coal and Coke, as an introduction to the AS 1038.10 series relating to the determination of trace elements in coal.

The objective of this Guide is to assist in the selection of standard methods available to determine the common trace elements in coal, coke and fly-ash.

The determination of 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.

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.

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STANDARDS AUSTRALIA

Australian Standard

Coal and coke—Analysis and testing

Part 10.0: Determination of trace elements—Guide to the determination of trace elements

1 SCOPE

This Guide compares methods used for the determination of trace elements in coal and coal ash. The trace elements include those elements listed in the Australian National Pollutant Inventory: arsenic, beryllium, boron, cadmium, chlorine, chromium, cobalt, copper, fluorine, lead, manganese, mercury, nickel, selenium and zinc. Also included are vanadium and molybdenum; these trace elements are not listed in the National Pollutant Inventory Environment Australia,* but are listed as being of major or moderate concern by the United States Research Council. To this list can be added the radioactive trace elements, thorium and uranium.

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
- 1038.8.1 Part 8.1: Chlorine—Eschka method
- 1038.8.2 Part 8.2: Chlorine—High-temperature combustion method
- 1038.10.1 Part 10.1: Determination of eleven trace elements in coal, coke and fly-ash—Flame atomic absorption spectrometric method
- 1038.10.2 Part 10.2: Determination of arsenic, antimony and selenium—Hydride generation method
- 1038.10.3 Part 10.3: Determination of boron content—ICP-AES method
- 1038.10.4 Part 10.4: Determination of fluorine content—Pyrohydrolysis method
- 1038.10.5 Part 10.5: Determination of mercury content

- 2418 Coal and coke—Glossary of terms

ASTM

- D3684 Standard test method for total mercury in coal by the oxygen bomb combustion/atomic absorption method
- D3761 Standard test method for total fluorine in coal by the oxygen bomb combustion/ion selective electrode method
- D4606 Standard test method for determination of arsenic and selenium in coal by the hydride generation/atomic absorption method
- D5987 Standard test method for total fluorine in coal and coke by pyrohydrolytic extraction and ion selective electrode or ion chromatograph methods

3 DEFINITIONS

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

* Environment Australia, <http://www.environment.gov.au/epg/mpi/index.html>