

Australian Standard™

**Coal and coke—Analysis and testing**

**Part 10.1: Determination of trace  
elements—Coal, coke and fly-ash—  
Determination of eleven trace  
elements—Flame atomic absorption  
spectrometric method**

This Australian Standard was prepared by Committee MN-001, Coal and Coke. It was approved on behalf of the Council of Standards Australia on 28 February 2003 and published on 5 March 2003.

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The following are represented on Committee MN-001:

Australasian Institute of Mining and Metallurgy  
Australian Building Codes Board  
Australian Coal Association  
Australian Coal Preparation Society  
Australian Institute of Energy  
Coalfield Geology Council of N.S.W.  
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*This Standard was issued in draft form for comment as DR 02518.*

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Originated as AS 1038.10.1—1986.  
Second edition 2003.

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Published by Standards Australia International Ltd  
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5092 3

## PREFACE

This Standard was prepared by the Standards Australia Committee MN-001, Coal and Coke, to supersede AS 1038.10.1—1986, *Coal and coke—Analysis and testing, Part 10.1: Determination of trace elements—Coal, coke and fly-ash—Determination of eleven trace elements—Flame atomic absorption spectrometric method.*

This revision confirms the flame atomic absorption spectrometric method for the determination of eleven trace elements in coal, coke and fly-ash. Editorial changes have been made to bring the Standard into line with current style.

The objective of this Standard is to provide those responsible for testing coal, coke and fly-ash with a standardized method for measuring eleven trace elements by flame atomic absorption spectrometry and to provide an alternative flame atomic emission spectrometric method for measuring barium in an ashed sample.

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 10.1: Determination of trace elements—Coal, coke and fly-ash—  
Determination of eleven trace elements—Flame atomic absorption  
spectrometric method****1 SCOPE**

This Standard sets out a method for the preparation of the ash and a flame atomic absorption spectrometric method for the determination of barium, beryllium, chromium, copper, lead, lithium, manganese, nickel, strontium, vanadium and zinc in ash prepared in the laboratory from higher rank coal, coke and fly-ash.

The Standard also provides an optional flame atomic emission spectrometric method for the determination of barium, as it gives improved sensitivity over flame atomic absorption spectrometry and it is not possible to determine barium by the latter technique with some instruments.

NOTE: Two approaches, gravimetric and volumetric, have been specified for solution preparation, both give the same results provided that, in the volumetric approach, plastics volumetric ware is used.

**2 REFERENCED DOCUMENTS**

The following standards 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
2134.1	Part 1: Flame atomic absorption spectrometry
2243	Safety in laboratories (series)
2418	Coal and coke—Glossary of terms
2508	Safe storage and handling information card (series)
2850	Chemical analysis—Interlaboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct
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 in AS 2418 apply.