

Australian Standard™

Coal and coke—Analysis and testing

**Part 9.1: Higher rank coal and coke—
Phosphorus—Ash digestion/
molybdenum blue method**

This Australian Standard was prepared by Committee MN/1, Coal and Coke. It was approved on behalf of the Council of Standards Australia on 30 November 1999 and published on 20 January 2000.

The following interests are represented on Committee MN/1:

Australian 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 Energy Technology
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PREFACE

This Standard was prepared by the Standards Australia Committee MN/1, Coal and Coke, to supersede AS 1038.9.1—1992.

In the preparation of this Standard reference was made to ISO 622:1981, *Solid mineral fuels—Determination of phosphorus content—Reduced molybdophosphate photometric method*.

This revision confirms the method for the spectrophotometric determination of phosphorus in coal and coke, as molybdenum blue.

Editorial changes have been made to bring the Standard into line with current style.

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STANDARDS AUSTRALIA

Australian Standard

Coal and coke—Analysis and testing

Part 9.1: Higher rank coal and coke—Phosphorus—Ash digestion/molybdenum blue method

1 SCOPE

This Standard sets out a method for the determination of phosphorus in higher rank coal and coke or in the ash of these materials, as molybdenum blue, by spectrophotometry.

This method is applicable also to the determination of phosphorus as phosphorus pentoxide in coal ash and coke ash.

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 |
| 2243 | Safety in laboratories (series) |
| 2418 | Coal and coke—Glossary of terms |
| 2508 | Safe storage and handling information card (series) |
| 2706 | Numerical value—Rounding and interpretation of limiting values |
| 3753 | Recommended practice for chemical analysis by ultraviolet/visible spectrophotometry |
| 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 and those below apply.

3.1 Higher rank coal

Coal having a gross calorific value of 21 MJ/kg or greater on an ash-free, moist basis *and* a gross calorific value of 27 MJ/kg or greater on a dry, ash-free basis.

4 PRINCIPLE

The carbonaceous matter of the coal or coke is removed by ashing and the phosphorus extracted from the ash by treatment with sulfuric and hydrofluoric acid, silicon being volatilized as silicon tetrafluoride. The addition of a reagent solution, containing ammonium molybdate and ascorbic acid as a reducing agent, to a measured quantity of the