

Australian Standard[®]

Coal and coke—Analysis and testing

Part 21.1.1 Higher rank coal and coke—Relative density—Analysis sample/density bottle 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 17 May 1994 and published on 15 August 1994.

The following interests are represented on Committee MN/1:

Australasian Institute of Mining and Metallurgy
Australian Chamber of Commerce and Industry
Australian Coal Association
Australian Coal Industry Research Laboratories
Australian Coal Preparation Society
Australian Institute of Energy
Australian Mining Industry Council
Bureau of Steel Manufacturers of Australia
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PREFACE

This Standard was prepared by the Standards Australia Subcommittee on Coal Evaluation, under the direction of the Committee on Coal and Coke, as a part revision of AS 1038.21—1983, *Methods for the analysis and testing of coal and coke*, Part 21: *Determination of the relative density and apparent relative density of hard coal*. The major differences from the 1983 edition are as follows:

- (a) The division of AS 1038.21 into a three-part Standard.
- (b) The inclusion of the density methods from AS 1038.13, *Methods for the analysis and testing of coal and coke*, Part 13: *Tests specific to coke*. These methods have been excluded from the revised version of that Standard.
- (c) Deletion of apparent relative density, which is replaced by relative density of a lump sample.

The following parts of the Standard now apply:

Part 21.1.1: Higher rank coal and coke—Relative density—Analysis sample/density bottle method

Part 21.1.2: Higher rank coal and coke—Relative density—Analysis sample/volumetric method

Part 21.2: Higher rank coal and coke—Relative density—Lump sample

The objective of this Standard is to provide those responsible for the analysis of coal and coke with a standardized method for determining relative density using a density bottle.

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

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STANDARDS AUSTRALIA

Australian Standard

Coal and coke—Analysis and testing

Part 21.1.1: Higher rank and coke—Relative density—
Analysis sample/density bottle method

1 SCOPE This Standard sets out a method for the determination of the relative density of air-dry coal and coke, by a relative density bottle.

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: Proximate analysis of coke
- 1038.16 Part 16: Acceptance and reporting of results
- 2096 Classification and coding systems for Australian coals
- 2243 Safety in laboratories
- 2378 Density bottles
- 2418 Solid mineral fuels—Glossary of terms
- 2508 Safe storage and handling information cards for hazardous materials
- 2646 Sampling of solid mineral fuels
- 2646.6 Part 6: Hard coal—Preparation of samples
- 2646.7 Part 7: Coke—Preparation of samples
- 2706 Numerical values—Rounding and interpretation of limiting values

3 DEFINITIONS For the purposes of this Standard, the definitions given in AS 2418 and those below apply.

3.1 Coke—the agglomerated product of coal carbonization, generally at a temperature in excess of 900°C.

3.2 Higher rank coal (as defined in AS 2096)—coal having a gross specific energy of 21 MJ/kg or greater on an ash-free, moist basis *and* a gross specific energy of 27 MJ/kg or greater on a dry, ash-free basis.

3.3 Relative density—the ratio between the mass of a unit volume of material and the mass of an equal volume of water, each measured under standard conditions.

4 PRINCIPLE The mass of water displaced by a known mass of air-dry coal or coke is determined in a density bottle.

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

6 REAGENTS

6.1 Distilled water—or water of equivalent purity.

6.2 Wetting agent solution—a solution of non-ionic liquid wetting agent prepared in either distilled or deionized water with a concentration of between 10 mL/L and 15 mL/L.