Australian Standard™

# Methods for the analysis and testing of lower rank coal and its chars

## Part 5: Lower rank coal and its chars—Determination of moisture in bulk samples of lower rank coal and in analysis samples of char

Standards Australia

This Australian Standard was prepared by Committee MN-001, Coal and Coke. It was approved on behalf of the Council of Standards Australia on 16 September 2002 and published on 1 October 2002.

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*This Standard was issued in draft form for comment as DR 02275.*

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# Methods for the analysis and testing of lower rank coal and its chars

# Part 5: Lower rank coal and its chars—Determination of moisture in bulk samples of lower rank coal and in analysis samples of char

Originated as AS 2434.5—1984.
Second edition 2002.



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

ISBN 0 7337 4854 6

# PREFACE

This Standard was prepared by the Standards Australia Committee MN-001, Coal and Coke to supersede AS 2434.5—1984, *Methods for the analysis and testing of brown coal and char*, Part 5: *Determination of moisture in bulk samples and in analysis samples of char from lower rank coal*.

Procedures for the determination of moisture in coal and coke as set out in AS 1038, *Coal and Coke—Analysis and testing*, are not applicable to char from lower rank coal because some of the moisture is strongly adsorbed on to the char and is not completely removed at 110°C. Therefore the moisture content determined by the methods in AS 1038 tends to be lower than the amount of moisture actually present in the char.

Char from lower rank coal readily absorbs moisture from the air, to an equilibrium content of about 12 percent. If the moisture content of the char sample is much different from this equilibrium content, the moisture content will change during the sample preparation and analysis procedures specified for coal and coke, and so special procedures are necessary.

Char from lower rank coal is utilized often as a premium grade carbon and the moisture is a diluent of the carbon content. It may also be a source of undesirable hydrogen. Therefore it is important to know the moisture content of the bulk char sample.

The accurate determination of moisture content is also essential to the volatile matter determination which is the most frequently used commercial criterion of char quality. If the moisture content is erroneously low, the volatile matter result will be erroneously high by the same amount. The same consideration applies to the elemental hydrogen content.

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STANDARDS AUSTRALIA

# Australian Standard

# Methods for the analysis and testing of lower rank coal and its chars

## Part 5: Lower rank coal and its chars—Determination of moisture in bulk samples of lower rank coal and in analysis samples of char

## 1 SCOPE

This Standard sets out procedures for the determination of the moisture content of bulk samples and analysis samples of char from lower rank coal.

## 2 REFERENCED DOCUMENTS

The following Standards are referred to in this Standard:

| | |
|---|---|
| AS | |
| 1038 | Coal and coke—Analysis and testing |
| 1038.16 | Part 16: Assessment and reporting of results |
| 2243 | Safety in laboratories (series) |
| 2409 | Interchangeable conical ground glass joints |
| 2418 | Coal and coke—Glossary of terms |
| 2508 | Safe storage and handling information card (series) |
| 2706 | Numerical values—Rounding and interpretation of limiting values |
| 4333 | Dean and Stark apparatus |

## 3 DEFINITIONS

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

## 4 SAFETY

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

## 5 DETERMINATION OF THE MOISTURE CONTENT OF THE BULK SAMPLE

### 5.1 Principle

Azeotropic distillation of the bulk char sample with toluene is followed by measurement of the volume of water collected.

### 5.2 Sample preparation

A 1 kg subsample of the bulk sample is crushed quickly in a jaw crusher to a particle size of minus 5.6 mm.

NOTE: The sample must be taken and prepared, and the determination carried out, within 5 days of the bulk sample having been taken because, even when the char is stored in a closed container, its moisture content can change with prolonged storage.

 