AS 2434.1—1991

Australian Standard®

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

Part 1: Determination of the total moisture content of lower rank coal

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee MN/1, Coal and Coke. It was approved on behalf of the Council of Standards Australia on 21 September 1990 and published on 11 February 1991.

The following interests are represented on Committee MN/1:

Australasian Institute of Mining and Metallurgy
Australian Coal Association
Australian Coal Industry Research Laboratories
Australian Institute of Energy
Bureau of Steel Manufacturers of Australia
Australian Coal Preparation Society
Confederation of Australian Industry
CSIRO, Division of Coal and Energy Technology
Department of Minerals and Energy, N.S.W.
Department of Resource Industries, Qld
Electricity Supply Association of Australia
Institution of Engineers, Australia
Joint Coal Board
National Association of Testing Authorities, Australia
Queensland Coal Board
Royal Australian Chemical Institute
Standing Committee on Coalfield Geology of New South Wales
University of New South Wales
University of Queensland

This Standard was issued in draft form for comment as DR 89120.

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First published as AS 2434.1—1981.
Second edition 1991.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY NSW
ISBN 0 7262 6578 0

PREFACE

This Standard was prepared by the Standards Australia Subcommittee on Lower Rank Coal under the supervision of the Committee on Coal and Coke and the direction of the Minerals Standards Board, to supersede AS 2434.1, *Methods for the analysis and testing of brown coal and brown coal char* Part 1: *Determination of the moisture content of brown coal.*

This edition has been expanded to include a single-stage method, in which the sample is dried in nitrogen, and an azeotropic distillation method.

Procedures for the determination of the moisture in coal and coke as set out in AS 1038, *Methods for the analysis and testing of coal and coke,* are not applicable to lower rank coal, because of its high moisture content.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard sets out three methods for the determination of the total moisture content of lower rank coal. The first method is a two-stage procedure applicable to large (500 g) samples. The second method involves drying under a stream of flowing nitrogen, and is applicable only to laboratory samples of mass of about 10 g. The third method comprises an azeotropic distillation with toluene, and is applicable to a sample mass of 200 g to 500 g.

This Standard is applicable to bed-moist coals or analysis samples, where the moisture is expected to exceed 15 percent.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1038 Methods for the analysis and testing of coal and coke
1038.16 Part 16: Acceptance and reporting of results
1152 Test sieves
2243 Safety in laboratories
2418 Glossary of terms relating to solid mineral fuels
2434 Methods for the analysis and testing of lower rank coal and its chars
2434.7 Part 7: Determination of moisture in the analysis sample of lower rank coal
2508 Safe storage and handling information cards for hazardous materials
2706 Numerical values—Rounding and interpretation of limiting values

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

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

1.5 SAMPLING AND SAMPLE PREPARATION Where determinations on bed-moist coal are required, it is important that samples are taken as soon as the coal is mined or cored, and as close as possible to the extraction process. Sampling shall be in accordance with recognized sampling procedures.

Once the sample has been taken, it shall be stored immediately in moisture-tight containers, preferably in double-thickness plastic bags.

The gross sample shall then be mixed as well as possible within the bag and, if a soft coal, broken up into small pieces.

NOTE: Often, and particularly in the case of bore core samples enclosed in plastic tubing, water is visible on the plastic tubing/container walls. Generally, the quantity of water is not significant in terms of total moisture content of the sample; however, where the quantity of water is considered significant, its mass should be determined by air-drying, and it should be included in the 'free' or total moisture calculation.

The gross sample shall be crushed as soon as possible, so as to pass a sieve of 11.2 mm aperture.

A subsample of 1000 g shall be taken for the two-stage method. Where the moisture content is less than 20 percent, a similar subsample size shall be used for the azeotropic method. For greater than 20 percent moisture content, a 400 g to 500 g subsample only shall be used for the latter method.

For the single-stage method, a 100 g subsample of -11.2 mm shall be crushed as soon as possible, so as to pass a sieve having a 4.0 mm aperture and complying with AS 1152.

All subsamples shall be stored in moisture-tight containers prior to analysis. Precautions shall be taken to prevent loss of moisture during handling, crushing and subsampling operations.

1.6 REPORTING OF RESULTS The result, the mean of duplicate determinations, shall be reported to the nearest 0.1 percent, rounded in accordance with AS 2706.

1.7 PRECISION The repeatability should not exceed 0.5 percent absolute. Otherwise reference shall be made to AS 1038.16.

NOTE: No value for reproducibility is quoted for determinations carried out in different laboratories, because of the difficulty of maintaining constant moisture content during transportation between laboratories.