

Australian Standard™

Coal petrography

Part 2: Maceral analysis

This Australian Standard was prepared by Committee MN/1, Coal and Coke. It was approved on behalf of the Council of Standards Australia on 27 February 1998 and published on 5 May 1998.

The following interests are represented on Committee MN/1:

ACIRL

Australasian 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 Coal and Energy Technology

Department of Mines and Energy, Queensland

Electricity Supply Association of Australia

Institution of Engineers, Australia

Minerals Council of Australia

Royal Australian Chemical Institute

University of Newcastle

University of New South Wales

University of Queensland

Additional interests participating in preparation of Standard:

BHP Research

CSIRO, Division of Exploration and Mining

Department of Mineral Resources, N.S.W.

Swinburne University of Technology

University of Wollongong

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

Australian Standard™

Coal petrography

Part 2: Maceral analysis

Originated as AS 2856—1986.
Second edition 1998.

PREFACE

This Standard was prepared by the Standards Australia Committee MN/1, Coal and Coke to supersede AS 2856—1986, *Coal—Maceral analysis*. It sets out procedures for the maceral analysis of coal and classifies the different coal macerals.

This Standard provides a breakdown of maceral groups into subgroups and individual macerals, which are then classified by various properties.

The objective of this Standard is to provide a standardized procedure for the complete maceral analysis of coal.

The objective of the revision of the 1986 edition is to align with current terminology and to reflect the changes made by the International Committee for Coal and Organic Petrology (ICCP) in its 1994 handbook revision on *Vitrinite classification*.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
1 SCOPE	4
2 REFERENCED DOCUMENTS	4
3 PRINCIPLE	4
4 MATERIALS	4
5 APPARATUS	4
6 PROCEDURE	6
7 EXPRESSION OF RESULTS	8
8 EXPERIMENTAL ERROR	8
9 TEST REPORT	10
 APPENDICES	
A CLASSIFICATION OF COAL MACERALS	11
B ICCP SUBDIVISION OF THE VITRINITE MACERALS	31
C EXAMPLE OF A TEST REPORT	32

STANDARDS AUSTRALIA

Australian Standard

Coal petrography

Part 2: Maceral analysis

1 SCOPE This Standard sets out a procedure for the maceral analysis of coal, aimed at obtaining the proportion of each maceral occurring within a coal, expressed as a volume percentage. It covers coals of all ranks.

The classification of coal macerals is set out in Appendix A,

NOTE: The ICCP subdivision of the vitrinite maceral group is given in Appendix B.

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

AS

1038 Coal and coke—Analysis and testing

1038.22 Part 22: Higher rank coal—Mineral matter and water of constitution

2061 Preparation of coal samples for incident light microscopy

2418 Coal and coke—Glossary of terms

2486 Methods for microscopical determination of the reflectance of coal macerals

DIN

58884 Glass slides, glass cover slips and immersion oil for microscopy

3 PRINCIPLE A sample of coal is prepared as either a polished particulate block or a polished block in accordance with AS 2061. The block is examined using a reflected light microscope and the macerals are identified under an immersion medium by their relative reflectance, colour, morphology and fluorescence characteristics. The proportion of each maceral is determined by a point-count procedure.

4 MATERIALS A low-fluorescing immersion medium, having a suitable refractive index which is compatible with the microscope objective, is necessary. If the reflectance of the macerals is to be measured, an immersion oil as specified in AS 2486 should be used. The oil commonly used conforms to that specified in DIN 58884.

5 APPARATUS The following apparatus is required:

- (a) *Reflected light microscope*—as described in AS 2486, having an immersion objective of magnification between 25× and 63× and eyepiece of magnification between 5× and 12.5×. It is desirable that the total magnification, including the tube magnification factor, is nominally between 400× and 600×. The eyepiece shall incorporate a suitable graticule.

The recommended optical system is shown in Figure 1. Descriptions of the light source, light-controlling apertures and vertical illuminator are given in AS 2486.

- (b) *Fluorescence microscope*—having recommended optical system for fluorescence mode as shown in Figure 1.