Australian Standard™

Coal petrography

Part 3: Methods for microscopical determination of the reflectance of coal macerals

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 29 February 2000 and published on 13 April 2000.

The following interests are represented on Committee MN/1:

Australasian Institute of Mining and Metallurgy

Australian Coal Association

Australian Coal Preparation Society

Australian Institute of Energy

Bureaus of Steel Manufacturers of Australia

Coalfield Geology Council of N.S.W.

CSIRO, Division Energy Technology

Department of Mines & Energy, Qld

Electricity Supply Association of Australia

Institution of Engineers, Australia

Minerals Council of Australia

University of Newcastle

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University of Queensland

Additional interests participating in the preparation of this Standard:

BHP Research

CSIRO, Division of Exploration and Mining

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PREFACE

This Standard was prepared by Standards Australia Committee MN/1, Coal and Coke to supersede AS 2486—1989, *Methods for microscopical determination of the reflectance of coal macerals*. It closely aligns with the methods set out in ISO 7404-5:1994, *Methods for the petrographic analysis of bituminous coal and anthracite*, Part 5: *Method of determining microscopically the reflectance of vitrinite*, but has been expanded to include reference to the measurement of the reflectance of all coal macerals.

This Standard is part of the suite of coal petrography Standards. The other Standards in this suite are:

AS	
2856	Coal petrography
2856.1	Part 1: Preparation of coal samples for incident light microscopy
2856.2	Part 2: Maceral analysis

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.

CONTENTS

FOREWORD

Most properties of a coal are determined by the proportions and associations of the petrographic components present and by the rank of the coal. One property that is widely used as a rank indicator is the reflectance of vitrinite. This Standard outlines methods specifically designed for the measurement of vitrinite reflectance in coal. These methods are also applicable to the measurement of reflectance of other coal macerals.

In addition to its use in assessing the rank of coal, vitrinite reflectance is measured for technological purposes such as determining the composition of coal blends and to help to predict behaviour of a coal when processed. The procedure adopted for measuring vitrinite reflectance differs depending on the purpose for which the measurement is made. Therefore, in reporting the results it is important to specify which procedure was used.

As the vitrinite reflectance varies in a coal, it is necessary to ensure that a representative sample is prepared either as a series of vertical lump sections from a seam or more commonly as a particulate block, and that a sufficient number of measurements is made in accordance with an unbiased sampling procedure.

STANDARDS AUSTRALIA

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Coal petrography

Part 3: Methods for microscopical determination of the reflectance of coal macerals

1 SCOPE

This Standard sets out methods for the microscopical determination of the maximum and random reflectance in oil of polished surfaces of coal macerals. The methods are applicable to all ranks of coal and may be used for the following purposes:

(a) Exploration and preliminary assessment of coal quality.

(b) Technological purposes and quality control.

(c) Determination of thermal maturation index of petroleum source rocks.

NOTES:

1 Reflectance measurements on coal macerals, obtained by interpreting the results of a computerized automated system of microscopic analysis, are outside the scope of this Standard.

2 If measurements are made in a medium other than oil, e.g. air, this should be stated.

2 REFERENCED DOCUMENT

The following documents are referred to in this Standard:

AS
2418 Coal and coke—Glossary of terms

2856 Coal petrography
2856.1 Part 1: Preparation of coal samples for incident light microscopy
2856.2 Part 2: Maceral analysis

3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 2418 and AS 2856.2 and those below, apply.

3.1 Repeatability of reflectance measurements

The absolute difference between the means of two sets of reflectance measurements, each based on the same number of observations, carried out within one laboratory on the same sample, within which 95 percent of such differences would be expected to lie.

3.2 Reproducibility of reflectance measurements

The absolute difference between the means of two sets of reflectance measurements, each based on the same number of observations, carried out in two different laboratories on different subsamples of the same sample, within which 95 percent of such differences would be expected to lie.