Australian Standard™

Coal petrography

Part 1: Preparation of coal samples for incident light microscopy

Standards Australia

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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 N.S.W.

CSIRO, Division of Energy Technology

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PREFACE

This Standard was prepared by the Standards Australia Committee MN/1, Coal and Coke to supersede AS 2061—1989, *Preparation of coal samples for incident light microscopy*. It is one of a suite of Standards which applies specifically to coal petrography.

The other Standards in this suite are:

AS
2856 Coal petrography
2856.2 Part 2: Maceral analysis
2856.3 Part 3: Methods for microscopical determination of the reflectance of coal macerals

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STANDARDS AUSTRALIA

Australian Standard
Coal petrography

Part 1: Preparation of coal samples for incident light microscopy

1 SCOPE

This Standard describes recommended procedures for the preparation of polished coal samples. The procedures are suitable for all ranks of coal. The resulting polished samples are adequate for characterization of coals using various methods of incident light microscopy.

Coal samples prepared according to the procedures recommended in this Standard may be used for maceral or microlithotype analysis, for measuring maceral reflectance, or for fluorescence analysis.

The data obtained from such testing can be used to determine coal rank and coal composition, to correlate seams, and to provide information on the utilization characteristics of coal.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:
AS

1152 Specification for test sieves

4264 Coal and coke—Sampling
4264.1 Part 1: Higher rank coal—Sampling procedures

3 PRINCIPLE

A sample is crushed and sieved; the appropriate sieve aperture varies with the type of material being studied. A representative portion of the sized material is then split off, mixed with a binding agent, poured into moulds and formed into grain mounts. The grain mounts are ground to expose an adequate number of sample grains and, also, to form a very flat surface. This surface is then finely polished so that it is virtually free from scratches and suitable for analysis.

Lump sections may be mounted and polished using similar techniques.

4 MATERIALS

4.1 Binding material

Any suitable binder may be used. A suitable binder should have the following attributes:

(a) If a liquid, it should be fluid enough to impregnate the coal and to allow air bubbles to escape during mixing. When set, it should securely hold the coal grains during grinding and polishing and should be capable of being ground flat and substantially scratch-free as a result of the grinding and polishing procedure.

(b) It should not react with coal, minerals or immersion oil.

(c) Cold-setting binders are preferred, but if a thermo-setting binder is used it should be sufficiently fluid to impregnate the coal at a temperature not exceeding 80°C.

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