Australian Standard™

Coal and coke—Analysis and testing

Part 12.3: Higher rank coal—Caking and coking properties—Dilatation

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 15 February 2002 and published on 11 March 2002.

The following interests are represented on Committee MN-001:

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.

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Part 12.3: Higher rank coal—Caking and coking properties—Dilatation

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PREFACE

This Standard was prepared by the Standards Australia Committee MN-001, Coal and Coke, to supersede AS 1038.12.3—1993, *Coal and coke—Analysis and testing*, Part 12.3: *Higher rank coal—Caking and coking properties—Dilatation*. This revision confirms the procedures for determining the dilatometer characteristics of higher rank coal using a metal-core furnace and has been editorially updated to the latest format. It is based on ISO 8264:1989, *Hard coal—Determination of the swelling properties using a dilatometer* and BS 1016.107.3:1990, *Methods for analysis and testing of coal and coke*, Section 107.3, *Determination of swelling properties using a dilatometer*, both of which are Ruhr dilatometer methods. Solid core furnaces are specified in all these standard methods.

This Standard is one of a series of Standards for assessing physical properties of coal. The other parts of this series are as follows:

AS		
1038	Coal and coke—Analysis and testing	
1038.12.1	Part 12.1:	Higher rank coal—Caking and coking properties—Crucible swelling number
1038.12.2	Part 12.2:	Higher rank coal—Caking and coking properties—Determination of Gray-King coke type
1038.12.4.1	Part 12.4.1:	Higher rank coal—Caking and coking properties—Plasticity—Continuous-torque Gieseler method
1038.12.4.2	Part 12.4.2:	Higher rank coal—Caking and coking properties—Plasticity—Discontinuous-torque Gieseler method

The precision data reported in Clause 10 have been taken directly from ISO 8264:1989.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

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1 SCOPE

This Standard sets out a method for the determination of the dilatation in higher rank coal by using a metal-core furnace.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1038	Coal and coke—Analysis and testing
1038.16	Part 16: Assessment and reporting of results
1152	Specification for test sieves
2243	Safety in laboratories (series)
2418	Coal and coke—Glossary of terms
2508	Safe storage and handling information card
4264	Coal and coke—Sampling
4264.1	Part 1: Higher rank coal—Sampling procedures

3 DEFINITIONS

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

3.1 Duplicate dilatation tests

Tests carried out at different times on two coal pencils prepared before each heating cycle from a single coal sample and treated in the same retort in the same furnace in independent heating cycles by the same operator.

3.2 Maximum contraction

The maximum downward movement of the dilatometer piston, measured from the zero point and expressed as a percentage of the initial pencil length (see Figure 1(c)). However, if the final trace of the curve is not truly horizontal but slopes downward, the maximum contraction is the value observed at 500°C (see Figure 1(d)).

3.3 Maximum dilatation

The maximum upward movement of the dilatometer piston after contraction, measured from the zero point and expressed as a percentage of the initial pencil length. The value can be either positive or negative (see Figure 1).

3.4 Temperature of initial contraction

The temperature at which the downward movement of the dilatometer piston is 0.5 mm (see T_1 in Figure 1).

