Australian Standard™

Coal and coke—Analysis and testing

Part 25: Coal—Durham cone handleability test

Standards Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee MN-001, Coal and Coke, as part of the AS 1038, *Coal and coke—Analysis and testing* series.

This Standard has been based on a procedure originally prepared by the Queensland electricity supply industry and subsequently adopted by a number of laboratories in Queensland and New South Wales.

The objective of this Standard is to provide the users of the Durham cone apparatus with a procedure that will allow a determination of the specific flow time of a coal. The specific flow time of coal allows comparison of the relative handleability of different coals or a coal at a range of moisture content. It does not provide information on how a particular coal will perform in a given physical flow situation.

The Standard on bin flow of coal provides a more rigorous relationship between coal properties and bin design parameters. It enables evaluation of how a particular coal will perform in a given bin configuration.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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FOREWORD

The flow or handleability characteristics of a given coal are dependent on a number of variables, including:

(a) Coal properties such as—

(i) size distribution, and in particular the proportion of fines (<4 mm material);

(ii) particle shape;

(iii) bulk density;

(iv) moisture content, and in particular free moisture content;

(v) proportion and type of minerals present, and in particular clay minerals; and

(vi) chemistry at the coal surface.

(b) The configuration of the handling system.

The Durham cone apparatus was developed in the United Kingdom as an empirical method for assessing the flow properties of coals, and in particular, the effects of fines and moisture content [1].

The test (refer to references [2],[3],[4]) has been used in Australia as a means of—

(i) comparing the flow behaviour of coals;

(ii) assessing the effect of free moisture on the handleability of a particular coal; and

(iii) assessing the effects of type and proportion of clays present on coal handleability.

Because of the empirical nature of the test, particular attention should be given to the following operations in order to minimize testing errors:

(A) Subdivision of the bulk coal sample into an appropriate number of test portions.

(B) Conditioning of the test portions after either stage drying or wetting.

(C) Avoidance of spillage of material throughout the testing process.

It is also emphasized that the Durham cone test is intended for testing of −37.5 mm size fraction of the test coal. In many cases, samples prepared from bore cores of less than 100 mm diameter are unsuitable for testing because of a tendency for some coals to produce elongated coal particles atypical of the normal particle shapes of broken coal.

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