AS 4156.1.1:2018

Australian STANDARD

Coal preparation

Part 1.1: Higher rank coal– Float and sink testing

STANDARDS Australia

AS 4156.1.1:2018

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The following are represented on Committee MN-001:

Australian Coal Preparation Society
Australian Energy Council
Coalfield Geology Council of NSW
CSIRO
Minerals Council of Australia
National Association of Testing Authorities Australia
University of Newcastle
University of Queensland

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Part 1.1: Higher rank coal—Float and sink testing

Originated as AS K205—1970.
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Revised and redesignated as AS 4156.1.1:2018.

Preface

This Standard was prepared by the Standards Australia Committee MN-001, Coal and Coke, to supersede AS 4156.1, *Coal preparation, Part 1: Higher rank coal — Float and sink testing*.

The objective of this Standard is to describe the approach for determining the float and sink characteristics of higher rank coal and provide methods suitable for coarse coal (indicative size range 125 mm to 0.5 mm) and fine coal (indicative size range less than 0.5 mm).

Float and sink testing is the standard laboratory method for determining, with respect to relative density, the washability characteristics of a wide range of coal samples, from bore core to mine production and coal preparation plant products. Data are derived for a number of different purposes and forms the basis on which to —

(a) establish limits theoretically attainable by density separations, often used as a reference basis and an initial assessment of resource potential during exploration of coal deposits;

(b) predict and compare results of simulated plant operations for various types and combinations of processing equipment, facilitating selection of optimum process arrangements;

(c) design commercial coal preparation plant (in conjunction with appropriate non-density-based washability data); and

(d) examine products from operating plant for routine control purposes, or to assess separation performance critically against established criteria.

In commercial practice, coal cleaning is conducted largely by processes that take advantage of a relationship between particle ash percentage and particle relative density. However, coal particles contain mineral matter not ash (ash being the residue remaining after combustion of coal), and the general relationship between ash percentage and particle relative density is therefore only an approximation.

A list of all parts in the AS 4156 series can be found in the Standards Australia online catalogue.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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Section 1 Scope and general

1.1 Scope

This Standard sets out the requirements for determining the float and sink characteristics of higher rank coal (refer to AS 2096) and sets out procedures for deriving test samples and methods for presenting the washability data.

NOTE This Standard does not purport to address the safety concerns, if any, associated with its use. It is the responsibility of the user of this Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

Float and sink testing is the division of a sample into relative density fractions within defined ranges. The proportions of the fractions are expressed as mass percentages of the total sample, commonly with an indication of the ash percentage (and other characteristics, if required) of each fraction.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents for informative purposes are listed in the Bibliography.

AS 1038, *Coal and coke — Analysis and testing (all parts)*

AS 2096, *Classification and coding systems for Australian coals*

AS 2418, *Coal and coke — Glossary of terms*

AS 2519, *Guide to the technical evaluation of higher rank coal deposits*

AS 2617, *Sampling from coal seams*

AS 4156.8, *Coal preparation, Part 8: Sample pre-treatment — Drop-shatter*

ISO 1953, *Hard coal – Size analysis by sieving*

ISO 13909, *Hard coal and coke — Mechanical sampling (all parts)*

1.3 Terms and definitions

For the purposes of this Standard the definition below and those given in AS 2418 apply.

1.3.1
measurement uncertainty
variable associated with the result of a measurement that characterizes the dispersion of the values that could be reasonably attributed to the measurand