



BSI Standards Publication

Coal preparation — Determination of dust/moisture relationship for coal

National foreword

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dust/moisture relationship for coal**

*Préparation du charbon — Détermination de la relation
particules/humidité du charbon*

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 27, *Coal and Coke*, Subcommittee SC 1, *Coal preparation: Terminology and performance*.

This second edition cancels and replaces the first edition (ISO 20905:2004), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

- the title of ISO/TC 27 was changed from "Solid mineral fuels" to "Coal";
- some terminology was changed to align with ISO rules, for example the terms "percentage", "weight" and "weighing".

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The development of the dust/moisture curve provides an indication of the likely response of different coal types to drying or water addition during mining and handling processes. The dust/moisture curve provides a good basis for comparing the response of different coal types. Understanding the dust/moisture characteristics of a coal allows minimized water addition to the product for dust suppression. This in turn assists in water conservation at mines and other handling facilities, as well as minimizing the total moisture of the product.

This document describes a reliable measurement of dustiness of coal and extends to cover the relationship between dust and total moisture utilizing the Rio Tinto Dust Tumbler Test. This test provides a quantitative measure of the dustiness of a coal that can be used to predict operational dust problems and is also suitable for the assessment of dust suppression chemicals.

The Rio Tinto Dust Tumbler Test was developed using rotating equipment in a controlled temperature and humidity environment and uses a stream of air to remove particles which become airborne during the tumbling process. It is a batch test in which dust particles ($\sim 150\text{ }\mu\text{m}$ particles) are collected in a filter bag of known mass and their mass is determined. From this mass, a dust number, calculated as the mass yield of dust multiplied by 100 000, is determined for the test total moisture. Only 1 kg of sample is required for each dust test, but eight sample lots are required to develop the dust/moisture curve for a particular coal, i.e. approximately 10 kg is required for each coal type.

This dust test can be repeated with subsamples at different coal total moisture levels to develop a dust/moisture curve. The slope of the curve provides information on how sensitive the dustiness is to changes in total moisture and a dust number of 10 has been used to provide a comparison between coals.

The test has been successfully used for several years on many coals and other bulk materials. The results have been correlated with the operating practice. The method has been applied to the evaluation of dust-control products and the determination of dust-elimination total moisture requirements for coal-handling systems.