INTERNATIONAL STANDARD

ISO 10753

Second edition
2019-06

Coal preparation plant — Assessment of the liability to breakdown in water of materials associated with coal seams

Ateliers de préparation du charbon — Évaluation de la fiabilité de la fragmentation dans l'eau de matériaux associés aux gisements de charbon

Reference number
ISO 10753:2019(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 documents 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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition (ISO 10753:1994), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— editorial corrections throughout the document.

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.

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Introduction

In this document, the materials associated with coal seams are collectively referred to as “shale”, although they may contain a variety of rocks and minerals. This document describes a method of assessing the liability of these materials to breakdown on agitation with water. Future activity on this subject could involve a method for simulating the breakdown that is likely to occur, in practice, in different types of coal preparation plants, to generate samples for further testing.

The liability of the shale to breakdown is measured by the proportion of the degraded material passing through a test sieve having a nominal size of openings of 500 µm.

The method described in this document also enables the liability of the shale to form slimes to be assessed, by determining the proportion that is below a nominal particle size of 10 µm. using a simplified sedimentation technique. This technique is based on the assumption that in the size range being examined, all the particles are spherical, have a relative density of 2,5, and fall freely through the suspending liquid according to Stokes's Law. These conditions are not entirely fulfilled in practice and the particle size is, therefore, referred to as a nominal value. The extent of breakdown, as measured by this method, will be affected by whether the shale exhibits any self-flocculation. In the described test, distilled water (or the equivalent) is used to avoid possible flocculation of the shale by any soluble salts in the water. The test may be adapted to assess the relative tendencies of shales to break down in a particular plant, by using the same water as is used in that plant. However, it is emphasized that the results of such tests, using plant water, have to be treated with caution because the extent of breakdown that will occur in practice is influenced by the interaction of all the components present during the washing process, including, for example, any accumulation of soluble salts in the circuit, and by other factors, such as the residence time in the plant.

The relationship between the proportion of degraded material passing a 500 µm test sieve and the proportion of slimes provides useful information on the character of the breakdown, and is therefore included in the results that are reported.

The amount of breakdown occurring in practice and in the test will be affected by the history of the sample. For this reason, the sample is placed in a sealed container as soon as is practicable after being taken.

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Coal preparation plant — Assessment of the liability to breakdown in water of materials associated with coal seams

1 Scope

This document specifies a method for assessing the liability of materials associated with coal seams to breakdown on agitation with water.

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. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Principle

Degradation of a test portion of shale in the size range 5,6 mm to 2,8 mm, by controlled agitation in water. Determination of the proportion of degraded material passing through a 500 µm sieve, and determination of the proportion of degraded material of nominal top size less than 10 µm by sedimentation.

5 Reagent

During the test, use only distilled water or water of equivalent purity.

6 Apparatus

6.1 Rigid cylindrical jar, of non-corrodible material and of capacity 1,0 l ± 0,1 l, with an internal height of approximately 170 mm (internal diameter approximately 85 mm) and a height/diameter ratio 2,0 ± 0,1.

The jar shall have a hard lid which can be secured to form a watertight seal.

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