



**International
Standard**

ISO 8858-2

**Coal — Froth flotation testing —
Part 2:
Sequential evaluation**

*Charbon — Essais de flottation —
Partie 2: Évaluation séquentielle*

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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 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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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, *Coal and Coke*, Subcommittee SC 1, *Coal preparation: Terminology and performance*.

This second edition cancels and replaces the first edition (ISO 8858-2 2004), of which it constitutes a minor revision. The changes are as follows:

- updated title;
- document updated according to current ISO drafting rules.

A list of all parts in the ISO 8858 series can be found on the ISO website.

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 froth flotation of coal has a widespread application for the recovery of fine coal particles and their separation from unwanted mineral matter. The response of coal to the froth flotation process is measured initially by a laboratory scale test. ISO 8858-1 provides a means of evaluating the general flotation characteristics of a coal under a set of specified conditions and will not necessarily indicate the full potential of that coal. It is accepted that variation of the many parameters in the froth flotation process can be used to effect the beneficiation of the product. This document describes a procedure for the more complete determination of the flotation characteristics of a coal, using the apparatus and basic procedures described in ISO 8858-1. The purpose of this extended procedure is to provide information similar to that provided by the sink/float curve, which is the basis for density separations. The data obtained are expressed as a yield/ash curve. The information can be used to define the limitations on the cleaning of fine coal by froth flotation.

The procedures specified in this document are of practical significance in the development and evaluation of coal-preparation-plant flotation circuits, although engineering design aspects, such as flotation kinetics and the selection of size and type of cell, are not addressed.

The flotation response curve (yield/ash) indicates the maximum possible yield at any specified ash content. The general shape of the curve indicates the sensitivity of flotation performance to the nature of the coal and to operating conditions.

The procedure may be modified to test and compare the performance of different frother and collector types, the assessment of liberation by grinding, and the comparison of alternative feed size ranges. However, results of such tests should clearly indicate any use of non-standard procedures.

Coal — Froth flotation testing —

Part 2: Sequential evaluation

1 Scope

This document sets out a laboratory sequential procedure for the froth flotation testing of fine coal, e.g. coal having a particle size of less than 0,5 mm. The procedure provides a means of evaluating the flotation characteristics for coal (expressed as a yield/ash relationship) that can be expected from the froth flotation process.

This document does not apply to pulp samples that cannot be dewatered without the use of heat or chemical additives. This document does not apply to procedures for the investigation of flotation kinetics.

The test is not intended to provide plant design data.

This document is intended to be read in conjunction with ISO 8858-1.

2 Normative references

The following referenced documents are indispensable for the application 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 589, *Hard coal — Determination of total moisture*

ISO 1171, *Coal and coke — Determination of ash*

ISO 1213-1, *Coal and coke — Vocabulary — Part 1: Terms relating to coal preparation*

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

ISO 8858-1, *Hard coal — Froth flotation testing — Part 1: Laboratory procedure*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1213-1 apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Principle

A sequence of laboratory flotation tests is carried out on a single coal sample, using a procedure based on that described in ISO 8858-1. Variations on that procedure are made to generate a number of products, by refloating concentrates and tailings a number of times. The masses and ash mass fractions of the various products are used to construct a yield/ash curve showing the flotation response.