

INTERNATIONAL STANDARD

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Hard coal — Froth flotation testing —

Part 1: Laboratory procedure

*Houille — Essais de flottation —
Partie 1: Méthode de laboratoire*



Reference number
ISO 8858-1:1990(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8858-1 was prepared by Technical Committee ISO/TC 27, *Solid mineral fuels*.

ISO 8858 consists of the following part, under the general title *Hard coal — Froth flotation testing*:

— *Part 1: Laboratory procedure*

ISO 8858-2 will be published later.

Annex A of this part of ISO 8858 is for information only.

Introduction

The froth flotation of coal has widespread application for the concentration and separation of fine coal particles from mineral matter. The response of coal to the froth flotation process is initially measured by a laboratory scale test. Although the principles used for the laboratory tests are generally similar, the precise type of equipment and techniques used vary considerably.

The procedure for the laboratory froth flotation test sets out, in detail, the type of equipment to be used and the methods to be adopted. The purpose of this procedure is to provide a standard method of test by which a preliminary evaluation of the froth flotation characteristics of a coal can be compared. This need is particularly important for exploration programmes. This part of ISO 8858 also serves as an introduction for operators who are not familiar with the techniques (and problems) associated with the laboratory froth flotation of coals.

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Hard coal — Froth flotation testing —

Part 1:

Laboratory procedure

1 Scope

This part of ISO 8858 sets out a laboratory procedure for the froth flotation testing of fine coal, e.g. coal of particle size less than 0,5 mm. The procedure provides a means of evaluating the general flotation characteristics of a coal under a set of specified standard conditions and will not necessarily indicate the full flotation potential of that coal.

The flotation characteristics of coals are sensitive to changes in flotation conditions. These conditions can be changed by varying such basic parameters as flotation time, reagent and dosage rate. Separate flotation tests are required to assess the effect of varying these parameters to determine the best flotation conditions for a particular coal. A method of evaluating flotation response will be given in a separate standard.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8858. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8858 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 331:1983, *Coal — Determination of moisture in the analysis sample — Direct gravimetric method.*

ISO 565:1990, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings.*

ISO 648:1977, *Laboratory glassware — One-mark pipettes.*

ISO 1171:1981, *Solid mineral fuels — Determination of ash.*

ISO 1213-1:1982, *Solid mineral fuels — Vocabulary Part 1: Terms relating to coal preparation.*

ISO 1953:1972, *Hard coals — Size analysis.*

ISO 1988:1975, *Hard coal — Sampling.*

3 Definitions

For the purposes of this part of ISO 8858, the definitions in ISO 1213-1 apply. The following definitions from ISO 1213-1 are repeated for information only.

3.1 collector; collecting agent: A reagent added to a pulp to bring about adhesion between solid particles and air bubbles.

3.2 flotation concentrate: The clean product recovered in froth flotation.

3.3 conditioning: The preparatory stage in the flotation process in which the reagents are brought into intimate contact with the solids of the pulp.

3.4 frother; frothing agent: A reagent used to control the size and stability of the air bubbles in the flotation process.

3.5 froth flotation: A process for cleaning fine coal in which the coal, with the aid of a reagent or reagents, becomes attached to air bubbles in a liquid medium and floats as a froth.

3.6 pulp: A mixture of solid particles and water.