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Hard coal and coke — Determination of volatile matter

Houille et coke — Détermination des matières volatiles

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 562 was prepared by Technical Committee ISO/TC 27, *Solid mineral fuels*, Subcommittee SC 5, *Methods of analysis*.

This third edition cancels and replaces the second edition (ISO 562:1998), of which it constitutes a minor revision.

Introduction

In this International Standard the volatile matter is determined as the loss in mass, less that due to moisture, when coal or coke is heated out of contact with air under standardized conditions. The test is empirical and, in order to ensure reproducible results, it is essential that the rate of heating, the final temperature and the overall duration of the test be carefully controlled. It is also essential to exclude air from the coal or coke during heating to prevent oxidation. The fit of the crucible lid is, therefore, critical. The moisture content of the sample is determined at the same time as the volatile matter so that the appropriate correction can be made.

Mineral matter associated with the sample can also lose mass under the conditions of the test, the magnitude of the loss being dependent on both the nature and the quantity of the minerals present.

NOTE When applying this International Standard for classification purposes, to samples obtained directly from coal seams, it is required to give special care to the ash.

The apparatus and procedure are specified so that one or more determinations can be performed simultaneously in the furnace.

Hard coal and coke — Determination of volatile matter

1 Scope

This International Standard specifies a method of determining the volatile matter of hard coal and of coke. It is not applicable to brown coals and lignites.

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 687, *Solid mineral fuels — Coke — Determination of moisture in the general analysis test sample*

ISO 11722, *Solid mineral fuels — Hard coal — Determination of moisture in the general analysis test sample by drying in nitrogen*

3 Principle

A portion of the sample is heated out of contact with air at 900 °C for 7 min. The percentage mass fraction of volatile matter is calculated from the loss in mass of the test portion after deducting the loss in mass due to moisture.

4 Reagents and materials

4.1 Cyclohexane, of recognized analytical grade.

5 Apparatus

5.1 Furnace, heated by electricity, in which a zone of uniform temperature of 900 °C ± 5 °C can be maintained.

It may be of the stop-ended type or fitted at the back with a flue approximately 25 mm in diameter and 150 mm long (see Figure 1).

It is important for furnaces with flues that the furnace door seal well. The flue should not reach far out of the oven and should be fitted with a butterfly valve to restrict airflow through the furnace.

Its heat capacity shall be such that, with an initial temperature of 900 °C, the temperature is regained within 4 min after insertion of a cold stand and its crucibles. The temperature is measured with a thermocouple (5.2).

Normally, the furnace is designed specifically either for multiple determinations using a number of crucibles in one stand or for receiving one crucible and its stand. In the first case, the zone of uniform temperature shall be at least 160 mm × 100 mm; in the latter case, a zone with a diameter of 40 mm is sufficient.