
**Brown coals and lignites —
Determination of yield of benzene-
soluble extract — Semi-automatic
method**

*Charbons bruns et lignites — Détermination du rendement en extrait
de benzène soluble — Méthode semi-automatique*



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Foreword

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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.

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ISO 975 was prepared by Technical Committee ISO/TC 27, *Solid mineral fuels*, Subcommittee SC 5, *Methods of analysis*.

This fourth edition cancels and replaces the third edition (ISO 975:2000), of which this constitutes a minor revision.

Introduction

The determination of yield of benzene-soluble extract is carried out using a semi-automatic instrument; a system combining extraction, rinsing and evaporation. As long as the sample is put in the extraction chamber of the instrument, the test can be done automatically.

Brown coals and lignites — Determination of yield of benzene-soluble extract — Semi-automatic method

1 Scope

This International Standard specifies a semi-automatic method for determination of the yield of benzene-soluble extract in 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 5068-2, *Brown coals and lignites — Determination of moisture content — Part 2: Indirect gravimetric method for moisture in the analysis sample*

3 Principle

A test portion of the brown coal or lignite is extracted with benzene in a semi-automatic extraction instrument. The solvent is then removed by evaporation and the soluble residue dried to constant mass. The percentage of benzene-soluble extract is calculated from the mass of residue after drying and is reported on the dry basis.

4 Reagent

4.1 Benzene, of analytical reagent grade, $\rho_{20} = 0,876$ g/ml, distillation range 80 °C to 81 °C. At least 95 % shall distil within this range.

WARNING — Benzene is flammable and toxic by inhalation, ingestion or skin absorption. The test must be carried out in a hood and the benzene must be recovered as completely as possible.

5 Apparatus

5.1 Semi-automatic extraction instrument, containing mainly two units: the continuous extraction-evaporation device and the controller. The continuous extraction-evaporation device consists of a 100 ml conical flask, an extraction chamber and a condenser. The extraction chamber is 180 mm long and 30 mm in internal diameter and is provided with a water jacket through which the bath water is circulated in order to maintain the extraction temperature around the extraction chamber.

5.2 Extraction thimble, 25 mm × 80 mm. Cellulose or other thimbles are purchased or made as follows.

Cut filter paper into pieces of 75 mm × 75 mm and 25 mm × 25 mm. Moisten one large piece of the filter paper with distilled water and roll it snugly onto the external wall of a test tube of 25 mm diameter with a small hole pierced at the bottom. A small piece of filter paper is next moistened and rolled onto the bottom. Three large pieces and two small pieces are then rolled alternately onto the test tube. Remove the formed moist thimble by blowing at the mouth of the test tube and dry it in air or in an oven at 100 °C.

5.3 Air oven, capable of maintaining a temperature between 105 °C and 110 °C, or **vacuum oven**, electrically heated, in which a temperature of 80 °C ± 2 °C and a pressure of about 50 kPa can be maintained.