Tc 24

INTERNATIONAL STANDARD 1171

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Solid mineral fuels — Determination of ash

Combustibles minéraux solides — Détermination des cendres

First edition - 1976-06-15

UDC 662.62 : 662.613.112

Ref. No. ISO 1171-1976 (E)

Descriptors : solid fuels, coal, coke, chemical analysis, determination of content, ashes.

Price based on 2 pages

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 27 has reviewed ISO Recommendation R 1171 and found it technically suitable for transformation. International Standard ISO 1171 therefore replaces ISO Recommendation R 1171-1970 to which it is technically identical.

ISO Recommendation R 1171 was approved by the Member Bodies of the following countries :

Australia	Iran	Spain
Belgium	Israel	Sweden
Canada	Netherlands	Switzerland
Czechoslovakia	New Zealand	Turkey
Denmark	Peru	United Kingdom
Egypt, Arab Rep. of	Poland	U.S.A.
France	Portugal	U.S.S.R.
Germany	Romania	Yugoslavia
India	South Africa, Rep. of	

No Member Body expressed disapproval of the Recommendation.

The Member Body of the following country disapproved the transformation of ISO/R 1171 into an International Standard :

Czechoslovakia

Printed in Switzerland

Solid mineral fuels — Determination of ash

0 INTRODUCTION

The ash remaining after coal or coke has been incinerated in air is derived from inorganic complexes present in the original coal substance and from associated mineral matter. The amount of sulphur retained in the ash is in part dependent on the conditions of ashing and, in order to obtain values for the ash on a comparable basis, it is necessary to adhere strictly to these conditions.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the ash of all solid mineral fuels.

2 PRINCIPLE

The sample is heated in air at a specified rate up to a temperature of 815 ± 10 °C and maintained at this temperature until constant in mass. The characteristics of hard coal and coke differ from those of brown coal and lignite in such a manner that more rapid rates of heating are permitted for the former.

The percentage of ash is calculated from the mass of the residue after incineration.

3 REAGENT

Desiccant.

Either fresh or freshly regenerated, self-indicating, activated alumina, silica gel, anhydrous calcium sulphate or phosphorus(V) oxide, or fresh magnesium perchlorate may be used.

NOTE — Regeneration of magnesium perchlorate should not be attempted, owing to the risk of explosion; when exhausted, the magnesium perchlorate should be washed down the sink with water.

4 APPARATUS

4.1 Balance, accurate to 0,1 mg.

4.2 Muffle furnace, capable of giving a zone of substantially uniform temperature at the levels required by the procedure and of reaching these levels in the specified times. The ventilation through the muffle furnace shall be such as to give about five air changes per minute.

NOTE — The number of air changes per minute can be assessed by the measurement of the air flow in the muffle furnace flue by means of a pitot-static tube and sensitive manometer.

4.3 Dish of silica, porcelain, or platinum, 10 to 15 mm deep, with lid. The diameter of the dish shall be such that the mass per unit area of the sample layer does not exceed 0,15 g/cm² for coal or 0,10 g/cm² for coke.

4.4 Insulating plate, of silica, 6 mm thick, or its equivalent, of such size as to be an easy sliding fit into the muffle furnace (4.2).

5 SAMPLE

The coal or coke used for the determination of ash is the analysis sample ground to pass a sieve of 200 μm aperture. If necessary, the sample should be exposed in a thin layer for the minimum time required for the moisture content to reach approximate equilibrium with the laboratory atmosphere.

Before commencing the determination, mix the analysis sample thoroughly for at least 1 min, preferably by mechanical means.

6 PROCEDURE

Weigh accurately the clean, dry dish and lid (4.3) (see note), spread 1 to 2 g of sample evenly in the dish and re-weigh.

NOTE — If a silica dish is used, then before its initial mass is determined, it shall be heated to 815 ± 10 °C, maintained at this temperature for 15 min and then cooled under the conditions specified for the actual determination.

— *For brown coal and lignite*

Insert the uncovered dish in the muffle furnace (4.2) at room temperature. Raise the temperature to 250 °C in 30 min; from 250 to 500 °C in a further 30 min; from 500 to 815 ± 10 °C in a further 60 min and maintain at this temperature for a further 60 min.