



INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 562

DETERMINATION OF THE VOLATILE MATTER OF HARD COAL AND OF COKE

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 562, *Determination of the Volatile Matter of Hard Coal and of Coke*, was drawn up by Technical Committee ISO/TC 27, *Solid Mineral Fuels*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question by the Technical Committee began in 1950 and led, in 1961, to the adoption of a Draft ISO Recommendation.

In October 1962, this Draft ISO Recommendation (No. 550) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Australia	Iran	Sweden
Austria	Italy	Switzerland
Belgium	Japan	Turkey
Brazil	Poland	United Kingdom
Chile	Portugal	U.S.A.
Czechoslovakia	Republic	U.S.S.R.
Germany	of South Africa	Yougoslavia
Greece	Romania	
India	Spain	

Two Member Bodies opposed the approval of the Draft:

France,
Netherlands

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in March 1967, to accept it as an ISO RECOMMENDATION.

DETERMINATION OF THE VOLATILE MATTER OF HARD COAL AND OF COKE

INTRODUCTION

The volatile matter content 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 should be carefully controlled. The moisture content of the sample should be determined at the same time as the volatile matter so that the appropriate correction can be made.

Mineral matter associated with the sample may also lose mass under the conditions of test, the magnitude of the loss being dependent on both the nature and the quantity of the minerals present. When the carbonate content of a coal is high or when the result is required for the purpose of classifying the coal, it is necessary to make a correction to the determined volatile matter for the loss of carbon dioxide occurring during the determination. A first approximation to this correction is obtained by the use of the third formula in section 6.

NOTE. — Insufficient experimental evidence is available to justify a correction for loss of carbon dioxide being recommended when determining the volatile matter of coke. On the other hand, the error from this source is unlikely to be great, as carbonates are decomposed in the coke oven in making coke, although some carbonates may be added subsequently if the coke is quenched with waste liquor.

The apparatus and procedure are so specified that one or more determinations may be carried out simultaneously in the muffle furnace.

1. SCOPE

This ISO Recommendation describes the method of determining the volatile matter of hard coal and of coke. It is not applicable to brown coals and lignites.

2. PRINCIPLE

The coal or coke is heated at 900 °C out of contact with air for 7 minutes. The percentage of volatile matter is calculated from the loss in mass of the sample after deducting the loss in mass due to moisture.

3. REAGENTS

- 3.1 **Desiccant.** Fresh or freshly regenerated and self indicating. Suitable desiccants are silica gel, activated alumina and anhydrous calcium sulphate.
- 3.2 **Benzene** (for use with coke samples).

4. APPARATUS

- 4.1 **Muffle furnace,** heated by gas or electricity in which an adequate zone of constant and uniform temperature of 900 ± 10 °C can be maintained. It may be of the stop-ended type or fitted at the back with a flue approximately 25 mm diameter by 150 mm long.