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ISO RECOMMENDATION

R 687

DETERMINATION OF MOISTURE IN THE ANALYSIS SAMPLE OF COKE

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For each individual country the only valid standard is the national standard of that country.

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BRIEF HISTORY

The ISO Recommendation R 687, *Determination of moisture in the analysis sample 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 1958 and led, in 1961, to the adoption of a Draft ISO Recommendation.

In March 1964, this Draft ISO Recommendation (No. 682) 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	France	Romania
Austria	Germany	South Africa, Rep. of
Belgium	India	Switzerland
Brazil	Italy	Turkey
Canada	Japan	U.A.R.
Chile	Korea, Rep. of	United Kingdom
Colombia	Netherlands	U.S.A.
Czechoslovakia	New Zealand	U.S.S.R.
Denmark	Poland	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in March 1968, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 687 March 1968

DETERMINATION OF MOISTURE IN THE ANALYSIS SAMPLE OF COKE

INTRODUCTION

Since coke is hygroscopic, its moisture will vary with change of humidity of the atmosphere. The moisture in the analysis sample should, therefore, be determined whenever portions are weighed out for other analytical determinations, for example, volatile matter, for calorific value or for carbon and hydrogen. If all the portions taken for analysis are weighed out on the same day and at about the same time and if the analyses are proceeded with without delay, one determination of moisture should suffice.

1. SCOPE

This ISO Recommendation describes the method of determining the moisture content of an analysis sample of coke.

2. PRINCIPLE

A sample of the coke is heated in air at a temperature between 190 and 210 °C (see Note 1) and maintained at this temperature until constant in mass. The percentage moisture content is calculated from the loss in mass of the sample.

3. REAGENT

Desiccant. Activated alumina, silica gel, anhydrous calcium sulphate, phosphorus pentoxide, or magnesium perchlorate (see Note 3), either fresh or freshly regenerated, preferably self-indicating.

4. APPARATUS

4.1 *Balance*, accurate to 0.1 mg.

4.2 *Air oven*, capable of maintaining a temperature within the range 190 to 210 °C (see Note 1) and in which the atmosphere changes from 3 to 8 times per hour.

4.3 *Weighing vessels.* Shallow vessels of glass with ground-on covers or of non-corrodible metal with well-fitting covers, of such a size that the concentration of the coke layer does not exceed 0.15 g/cm^2 (see Note 2). Silica or porcelain dishes, of the same size and 10 to 15 mm deep, having suitable covers, may also be used if precautions are taken to avoid the effect of absorption of moisture by the dishes.

4.4 *Desiccator*, containing a metal plate, preferably of aluminium, and a suitable desiccant (see section 3).

5. SAMPLE

The coke used for the determination is the analysis sample ground to pass a sieve of 0.2 mm aperture. The sample is exposed in a thin layer for the minimum time necessary for the moisture content to reach approximate equilibrium with the laboratory atmosphere.

6. PROCEDURE

Before commencing the determination, mix the analysis sample of coke (see Note 4) thoroughly for at least 1 minute, preferably by mechanical means.

Weigh accurately the clean, dry vessel with its cover. Add 1 to 2 g of the coke sample and reweigh. Place the cover in the desiccator and heat the uncovered vessel in the oven at a temperature between 190 and 210 °C (see Note 1) until constant in mass (see Note 5). Replace the cover on the vessel, cool it on a metal plate for 10 minutes, transfer it to the desiccator and weigh it after a further 10 minutes.

7. CALCULATION AND REPORTING OF RESULTS

If

m_1 is the mass of empty vessel plus cover, expressed in grammes,

m_2 is the mass of vessel plus cover plus coke before heating, expressed in grammes,

m_3 is the mass of vessel plus cover plus coke after heating, expressed in grammes,

and M_1 is the moisture in the coke as analysed, expressed in per cent,

then

$$M_1 = \frac{m_2 - m_3}{m_2 - m_1} \times 100$$

The result (preferably the mean of duplicate determinations - see section 8 below) should be reported to the nearest 0.1 %.

8. PRECISION OF DETERMINATION

Moisture	Maximum acceptable differences between results obtained	
	in the same laboratory	in different laboratories
	0.2 % absolute	(see clause 8.2)

8.1 In the same laboratory

The results of duplicate determinations carried out at different times in the same laboratory by the same operator with the same apparatus, on representative portions weighed out at the same time from the same analysis sample, should not differ by more than the above value.

8.2 In different laboratories

No tolerance is quoted for determinations carried out in different laboratories since the results obtained will depend on the humidity conditions which are not necessarily the same in different laboratories.