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# INTERNATIONAL STANDARD



# 1018

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

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## Hard coal — Determination of moisture-holding capacity

*Houille — Détermination de la capacité de rétention d'humidité*

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## 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 1018 and found it technically suitable for transformation. International Standard ISO 1018 therefore replaces ISO Recommendation R 1018-1969 to which it is technically identical.

ISO Recommendation R 1018 was approved by the Member Bodies of the following countries :

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

The Member Bodies of the following countries expressed disapproval of the Recommendation on technical grounds :

Canada  
Japan  
U.S.A.

The Member Bodies of the following countries disapproved the transformation of ISO/R 1018 into an International Standard :

Czechoslovakia  
Japan

# Hard coal – Determination of moisture-holding capacity

## 0 INTRODUCTION

The moisture-holding capacity indicates the rank of hard coals and is used in coal classification for correcting the calorific value of the sample to the moist mineral matter-free basis. The full moisture holding capacity is that of the coal in equilibrium with an atmosphere saturated with water vapour. Since there are insuperable experimental difficulties in working with such an atmosphere, the determination is carried out at 96 % relative humidity.

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the moisture-holding capacity of hard coals.

## 2 REFERENCE

ISO 1988, *Hard coal – Sampling*.

## 3 PRINCIPLE

The coal is brought to equilibrium with an atmosphere of 96 % relative humidity at 30 °C and then dried to constant mass at 105 to 110 °C. The conditioning of the coal may be carried out either at atmospheric pressure or under reduced pressure. The moisture-holding capacity is reported as a percentage, by mass, of the conditioned moist coal.

## 4 REAGENT

**Potassium sulphate pulp.** Add sufficient potassium sulphate to water to form a pulp.

## 5 APPARATUS

### 5.1 Atmospheric pressure method

**5.1.1 Conditioning vessel** (see figure 1). A double-walled vessel, manufactured of copper sheet, with a double-walled lid made in two pieces. The lid and vessel are covered by a foam rubber insulation jacket. Each half of the lid is secured by three equally spaced clamps, or by the addition of a 2 kg weight.

**5.1.2 Electric motor**, capable of driving a two-blade propeller at approximately 1 500 rev/min.

**5.1.3 Pump**, for circulating water through the conditioning vessel to maintain it at a temperature of  $30 \pm 0,1$  °C.

**5.1.4 Dishes**, made of glass or corrosion-resistant metal, approximately 50 mm diameter by 10 mm deep, with well-fitting lids.

### 5.2 Reduced pressure method

**5.2.1 Conditioning vessel** (see figure 2). A vacuum desiccator weighted to overcome its buoyancy when immersed in water. The desiccator is fitted with a mercury vacuum manometer, and a glass or corrosion-resistant metal stand is provided to carry dishes above the level of the pulp, so that the dishes are protected from spray due to frothing. The volume of free space in the desiccator is kept to a minimum by the choice of a suitable design, by increasing the volume of the pulp material or by adding inert material such as glass beads or washed sand to the pulp.

**5.2.2 Water bath** (see figure 2), thermostatically controlled at a temperature of  $30 \pm 0,1$  °C.

**5.2.3 Dishes** made of glass or corrosion-resistant metal, approximately 22 mm diameter by 15 mm deep. The lids for these dishes should form a sliding fit.

### 5.3 For both methods

**5.3.1 Vacuum pump.**

**5.3.2 Filter crucible or funnel.**

**5.3.3 Filter flask.**

**5.3.4 Apparatus for determining moisture** by a method which precludes oxidation of the coal.<sup>1)</sup>

**5.3.5 Filter paper**, diameter about 200 mm.

1) The apparatus and procedure of Method B described in ISO 589, *Hard coal – Determination of total moisture*, are suitable for this purpose and the description is reproduced in annex A.