

METHOD FOR DETERMINATION OF THE
WATER CONTENT OF A ROCK SAMPLE

1. Scope

1.1 This test method covers the determination of the percentage of evaporable water in the pores of a rock sample as a percentage of the oven-dry sample mass.

2. Apparatus

(a) An oven capable of maintaining a temperature of 110 ± 5 °C for a period of at least 24 hr.

(b) A sample container of noncorrodible material, including an airtight lid.

(c) A desiccator to hold sample containers during cooling.

(d) A balance of adequate capacity, capable of weighing to an accuracy of 0.01 percent of the sample mass.

3. Procedure

(a) The container and lid is cleaned, dried, and its mass determined.

(b) A representative sample is selected, preferably comprising at least ten rock lumps each having a mass of at least 50 g to give a total sample mass of at least 500 g. For in situ water content determination, sampling, storage, and handling precautions should retain water content to within 1 percent of its in situ value.

(c) The sample is placed in the container, the lid replaced, and the mass of the sample plus container is determined.

(d) The lid is removed and the sample dried to constant mass. Constant mass is achieved when the mass loss is less than 0.1 percent of the sample mass in 4 hr of drying.

(e) The lid is replaced and the sample allowed to cool in the desiccator for 30 minutes. The mass of sample plus container is determined.

4. Calculation

$$\text{Water content } w = \frac{\text{pore water weight}}{\text{grain weight}} \cdot 100\% = \frac{Y-Z}{Z-X} \cdot 100\%$$

4.1 Calculate the water content of the rock sample as follows:

$$W = \frac{Y-Z}{Z-X} (100)$$

where

W - water content, percent

Y - original sample mass, g

Z - dried sample mass, g, and

X - sample container and lid mass, g

5. Reporting of Results

5.1 The water content should be reported to the nearest 0.1 percent stating whether this corresponds to in situ water content, in which case precautions taken to retain water during sampling and storage should be specified.