Experiment Details

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| Department Name | CIVIL ENGINEERING |
| Class | T.Y. B.Tech.CiVIL |
| Semester | V |
| Subject Name | Geotechnical Engineering-I |
| Experiment No. | 1 |
| Experiment Name | Determination of water content |

Version History

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| Sr. No. | Version Number | Created By | Approved By | Date |
| 1 | v1.0 | Akshay Devalapurkar | Prof. S.B Mohite | 10/10/2020 |
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AIM:

Determine the natural content of the given soil sample.

THEORY:

**NEED AND SCOPE OF THE EXPERIMENT**: In almost all soil tests natural moisture content of the soil is to be determined. The knowledge of the natural moisture content is essential in all studies of soil mechanics. To sight a few, natural moisture content is used in determining the bearing capacity and settlement. The natural moisture content will give an idea of the state of soil in the field.

**DEFINITION:** The natural water content also called the natural moisture content is the ratio of the weight of water to the weight of the solids in a given mass of soil. This ratio is usually expressed as percentage.

PRE TEST:

1. The water content of a soil sample cannot be determined by \_\_\_\_\_ method.

a) oven drying

b) alcohol

c) calcium carbide

d) pipette

Answer: d

2. In oven drying method, the soil sample is kept for about \_\_\_\_\_\_ hours in the oven.

a) 1

b) 2

c) 24

d) 48

Answer: c

3. An organic soil sample is kept in oven for its water content determination. The temperature preferred is \_\_\_\_\_\_

a) 60°

b) 80°

c) 105°

d) 110°

Answer: a

4. \_\_\_\_\_\_ method is specially suited to a circumstance where water content is to be quickly determined for the purpose of proper field control.

a) Oven drying

b) Sand bath

c) Alcohol

d) Calcium carbide

Answer: d

5. In pycnometer method of water content determination, it is necessary to accurately know the specific gravity G of soil whose water content is to be determined.

a) True

b) False

Answer: a

PROCEDURE:

**1.** Clean the containers with lid dry it and weigh it (W1).   
**2.** Take a specimen of the sample in the container and weigh with lid (W2).

**3.** Keep the container in the oven with lid removed. Dry the specimen to constant weight maintaining the temperature in between 1050 C to 1100 C for a period varying with the type of soil but usually 16 to 24 hours.

**4.** Record the final constant weight (W3) of the container with dried soil sample. Peat and other organic soils are to be dried at lower temperature (say 600) possibly for a longer period.

POST TEST:

**1.** Which of following methods is most accurate for the determination of water content of soil?

A. oven drying method

B. sand bath method

C. calcium carbide method

D. pycnometer method

Answer: Option A

**2.** The maximum dry density up to which any soil can be compacted depends upon.

A. moisture content only

B.Amount of compaction energy only

C.both moisture content and amount of compaction energy

D. none of the above

Answer: Option C

**3.** The change of moisture content of soils, changes the

(A) Value of the angle of repose

(B) Amount of compaction required

(C) Cohesive strength of soil

(D) All the above

Answer: Option D

**4.** The density of soil can be increased

(A) By reducing the space occupied by air

(B) By elastic compression of soil grains

(C) By expelling water from pores

(D) All the above

Answer: Option D

**5.** Pick up the correct statement from the following:

(A) The range of water content between the liquid limit and plastic limit is called plasticity index

(B) The ratio of the liquid limit minus the natural water content to the plasticity index of soils, is called consistency index

(C) The ratio of natural water content minus its plastic limit to its plasticity index is called liquidity index

(D) All the above

Answer: Option D

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2. Soil Mechanics and Foundation Engg. By K.R.Arora

3. Soil Mechanics and Foundation Engg. by B.C. Punmia