



Class: 2nd stage

Subject: Materials Science lab



**Ministry of Higher Education and Scientific Research
Al-Mustaqbal University College**

**Chemical engineering and petroleum industries
(Materials Science lab)**

**Experiment No.5
(Moisture content measurement)**

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Aim of the experiment: To measure the moisture content in materials

Theory

Moisture content (or water content) refers to the amount of water that is contained in the pores (voids) of a material.

It is usually expressed as the percentage by mass of the water present relative to the material's dry weight.

In most substances, the amount of water present will vary due to conditions such as relative humidity and temperature. For example, in most cases, including wood, as the humidity increases, so does the moisture content, while a decrease in humidity leads to a decrease in moisture content.

Materials such as glass, most plastics and steel have no pores and so have almost zero porosity. This means moisture cannot penetrate.

Tools

Drying oven , sample , electronic balance, plate.

Procedure

- Weigh an empty ,clean and dry plate and record this weight
- Place the wet sample (10-20)gm in the plate and record this weight as (wet sample +plate)
- Place the wet sample in the drying oven that is set at (80)°C
- Weigh the sample each 10 min , record the weight until the weight remains constant
- Empty the container and clean it



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Calculations:

Moisture content (%) = (wet mass – dry mass) / dry mass

Weight of plate (W_p) =

Weight of plate + wet sample (W_{pw}) =

Weight of plate + dry sample (W_{pd}) =

Weight of water in the sample, $M_w = (W_{pw} - W_{pd}) =$

Weight of the dry sample. $M_s = (W_{pd} - W_p) =$

Moisture content of the given sample = $\frac{M_w}{M_s} \times 100\%$

Discussion

- 1- What is moisture content?
- 2- Why does moisture cannot penetrate in glass, most plastics and steel?