# EXPERIMENT 3 DETERMINATION OF MOISTURE IN FOOD PRODUCTS BY HOT AIR OVEN-DRYING METHOD

**Structure**



## 3.0 OBJECTIVES

After attending to this experiment, we shall be able to:

- perform moisture content determination in food products by hot air oven method.

## 3.1 INTRODUCTION

Most of the methods for the estimation of water in foods depend on the loss in weight on heating. This method is not suitable for the determination of moisture in foods like milk products or mineral mixture.

## 3.2 PRINCIPLE

Determination of the loss in mass on drying of a given material under specified condition gives a measure of moisture present in the material.

## 3.3 REQUIREMENTS

**Apparatus**

*Moisture Dish* - made of porcelain, silica, glass or aluminium.

*Oven* - maintained at 105°C.

*Desiccator*

## 3.4 PROCEDURE

Weigh accurately about 5 g of the prepared sample in the moisture dish, previously air dried in the oven and weighed. Place the dish in the oven maintained at 105±1°C for 4 hours. Cool in the desiccator and weigh. Repeat the process of drying, cooling and weighing at 30 min. intervals until the difference between the two consecutive weighing is less than 1 mg. Record the lowest weight.

$$\text{Moisture, \% by mass} = \frac{100 \times (W_1 - W_2)}{W}$$

Where,

$W_1$ = weight, in g, of the dish with the material before drying,

$W_2$ = weight, in g, of the dish with the material after drying, and

W = weight, in g, of the empty dish.

## 3.5 RESULTS AND INFERENCE

Calculate the arithmetic mean of the values obtained in the two determinations and express the result to the nearest 0.1 % *(m/m).* The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst (repeatability) shall be in the following order:

| Food Product | Max. Difference | Food Product | Max. Difference |
|---|---|---|---|
| Cocoabeans | 0.3% | Foodgrains | 0.5% |
| Meat products | 0.5% | Milk powder | 0.06% |

## 3.6 PRECAUTIONS

- Use a calibrated analytical balance capable of weighing to an accuracy of 0.001g.
- Use Grinding mill that is (a) made of material which does not absorb moisture; (b) easy to clean with as little dead space as possible; (c) able to grind rapidly and uniformly, without appreciable development of heat and, as far as possible, without contact with the outside air.
- Use dish having an effective surface area enabling the test portion to be distributed so as to give a mass per unit area of not more than 0.3 g/cm$^2$.