

EXPERIMENT 3 TRUE DENSITY

Structure

3.1 Introduction

Objective

3.2 Experiment

3.2.1 Principle

3.2.2 Requirements (Equipment/Machinery/Instrument and Chemicals/Material)

3.2.3 Procedure

3.2.4 Observations

3.2.5 Result

3.3 Precautions

3.1 INTRODUCTION

It is the actual volume occupied by the particles of food material. It is of the importance in the packaging, handling and other operations.

Objective

After studying this experiment, you should be able to:

- determine the true density of the food material.

3.2 EXPERIMENT

3.2.1 Principle

The material is filled in a container having a liquid already filled in it of known volume. The volume displaced by the sample particles is the true volume and ratio with its weight will give true density. It should be in kg per cubic meter.

3.2.2 Requirements (Equipment/Machinery/Instrument and Chemicals/ Material)

- Measuring cylinder (250 ml capacity)
- Analytical balance (Least count 0.001 g)
- Toluene

3.2.3 Procedure

- Accurately weigh a finely ground 100 g sample (W1).
- Now fill a 250 ml capacity measuring cylinder with toluene up to the 100 ml mark.
- Transfer the weighed sample into the liquid.
- Determine the change in volume (V1).
- Repeat above steps with two more lots of the same sample.

3.2.4 Observations

Parameters	Sample number		
	1	2	3
Weight of sample (W1), g			
Weight in the volume (V2), ml			

3.2.5 Result

Calculate true density using the formula given below. Take the average of three values and report the results in kg/m³.

$$\text{True Density} = \frac{w_1}{v_1} \times 1000$$

3.3 PRECAUTIONS

- Filling of the cylinder up to 100 ml mark should be accurate.