Equipment needed report examples

Environment, Water

Report

Introduction:

Greek mathematician Archimedes invented that an object at rest, and partially or completely merged in a fluid (gas or liquid) is acted upon by an upward buoyant force that is of equal magnitude as the weight of the displaced fluid by the object. This is known as Archimedes' principle of buoyancy. According to the principle, the volume of the displaced fluid is equivalent to the volume of an object that is immersed into a fluid or equivalent to the submerged portion of the object below the fluid surface, and magnitude of the buoyant force is equivalent to the weight of the displaced fluid. The buoyant force on a floating object in a liquid or gas is equivalent to the magnitude of the weight of the floating object acting in opposite direction, so that the object neither rises nor sinks.

Objective:

Objective of the experiment is practical verification of the Archimedes principle, and to establish graphically the relationship between the Mass and Volume of the object used.

- Beaker (250-500 ml).
- Graduated Cylinder (50 ml).
- Slotted Masses.
- Thread.
- Water.
- Overflow Cup.

Theory:

According to the Archimedes' Principle an immersed object is buoyed up by an upward force equal to the weight of the displaced fluid. In this experiment we are going to prove that slotted masses, when immersed into water will give rise to the quantity of water, so that, Volume of the slotted Masses = Volume of the displaced water.

Formula Used:

The slotted masses are cylindrical in shape, therefore the volume of a cylinder is [V = πR2H; π= 3. 14].

Where:

V = Volume of a cylinder.

R = Radius of the circular end of the cylinder.

H = Height of the cylinder.

We have to know that, Volume of mass = Volume of water left.

Procedure:

1. At first we take a beaker filled with water.

2. Now we pour the water in an overflow cup till the point from where the water starts dripping from its nozzle, and allow the water surface to be stable.

3. Now, we place a graduated cylinder under the overflow cup and immerse a slotted mass into it tied to a thread. Immediately as the mass enters the water surface the water starts dripping. We take the reading on the graduated cylinder to measure the amount of displaced water.

4. Repeated the same procedure for different masses and calculated the

volume of displaced water from the formula.

5. In a graph, we put the values of Mass in y-axis and values of the volume of displaced water in x-axis to find the slope.

6- Observations and calculations:

Graphical Calculations:

Slope=(y2-y1)/(x2-x1)= 8. 3 g/ml

Conclusion:

After the experiment we can say that the water exerts the force on an immersed object, which is equal to the weight of the displaced water. From Archimedes' principle, we can determine the density of an object in irregular shape, whose volume cannot be measured directly. The difference of weight of an object in air and in water is equal to the volume of the displaced water, which is also equal to the volume of the object. Thus, we can easily find out the weight density of an object (weight divided by volume). We took the exact weight in air and displaced water for accurate calculation of volume and density. From the mass and volume slope of the graph, we can say that the volume of water displacement is high, for greater mass of the object.