

Tutorial 0010

A. Density

1. There is 500.0 mL of water in a container. When an object is immersed in water of the container, the level raises to 625.2 mL. What is the density of the object if its mass is 548.2 g ?

(3.602 g/cm³)

B. # of particles & empirical formulas

2. How many lithium atoms are present in 0.01456 g of lithium?

(1.263 × 10²¹ Li atoms)

3. a) How many oxygen atoms are there in 8.4 moles of C₃O₂H₅ ?

b) How many atoms are in 1 molecule of C₃O₂H₅?

(a) 1.0 × 10²⁵ oxygen atoms; b) 10 atoms)

4. How many atoms are there in 2.5 moles of oxygen molecule?

(3.0 × 10²⁴ oxygen atoms)

5. How many formula units are there in 80.1 g of H₂SO₄?

(4.92 × 10²³ formula units)

6. A compound contains 2.016 g of hydrogen and 32.00 g of oxygen. Determine the empirical formula of the compound.

7. A solution of AlCl₃ is 0.5 M. How many moles of Cl⁻ ions are in 2.0 mL?

(3.0 × 10⁻³ moles of Cl⁻)

8. What are STP conditions?

