

Avogadro's Constant and the Mole

Chemical reactions depend on the number of atoms present, not their masses.

Since atoms are too small to count, Avogadro found a way to relate mass to # of atoms using a unit called the mole (mol).

1 mol = the # of atoms in 12 g of C-12 = 6.02×10^{23}

1 mol C = 6.02×10^{23} atoms

1 mol NaCl = 6.02×10^{23} formula units

1 mol CO₂ = 6.02×10^{23} molecules

$$N = n \times N_A$$

Ex.1 How many atoms does a 2.6 mol sample of silver have?

Ex.2 A sample contains 1.25 mol of NO₂

a) How many molecules are there?

b) How many atoms are there in the sample?

Ex.3 How many moles are there if a NaCl sample contains 3.21×10^{23} formula units?