

Atomic Mass

The mass of an atom based on the mass of the protons, and neutrons.

Atomic Mass = Mass #p⁺ + #Mass n^o

Atomic Mass = # Particles in Mass #

Mass of an atom can be given in either grams (*actual mass*), or atomic mass unit (*amu*), a ratio mass unit

1 amu = Mass of p⁺ or Mass n^o

1amu = 1.67×10^{-27} kg = 1.67×10^{-24} g

Mass of an Atom



$$\text{Mass \#} = 12 \text{ amu}$$

$$1 \text{ amu} = 1.67 \times 10^{-24} \text{ g}$$

$$\begin{aligned} {}^12_6\text{C} &= 12 \cdot 1.67 \times 10^{-24} \text{ g} \\ &= \underline{2.004 \times 10^{-23} \text{ g}} \end{aligned}$$

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Mass of Electrons (e⁻)

The mass of an electron is very small

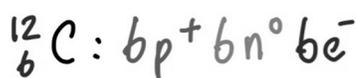
Mass e⁻ = 9.109×10^{-31} kg (9.109×10^{-28} g)

The electron mass is approx. 10000x smaller than the mass of a proton or neutron, and is not included due to mass difference in atom

Atomic Mass in includes the mass of atom either in grams or amu.

Mass Number is the count of the protons (p⁺) and neutrons (n^o) in atom

Atomic Mass w/ e⁻



$${}^12_6\text{C} (\text{no } e^-) = 2.004 \times 10^{-23} \text{ g}$$

$$\begin{aligned} 6e^- &: 6 \cdot 9.109 \times 10^{-28} \text{ g} \\ &= 5.465 \times 10^{-27} \text{ g} \end{aligned}$$

$$\begin{aligned} {}^12_6\text{C} (\text{w/ } e^-) &= 2.004 \times 10^{-23} \text{ g} \\ &+ 5.465 \times 10^{-27} \text{ g} \\ &= \underline{2.004 \times 10^{-23} \text{ g}} \end{aligned}$$

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