

Chapter 16: Properties of Atoms and the Periodic Table

Section 2: Masses of Atoms

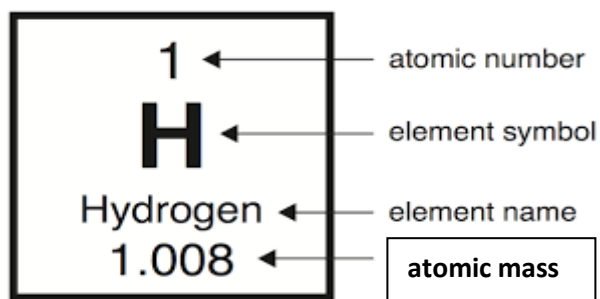
The nucleus contains much of the atom's mass because protons and neutrons are more massive than electrons.

Particle	Symbol	Charge	Mass (kg)	Mass
proton	p+	+1	1.6726×10^{-27}	1 amu
neutron	n	0	1.6749×10^{-27}	1 amu
electron	e-	-1	9.1093×10^{-31}	1/1840 amu

Particle size and mass

- All atoms are neutral in charge, so that means protons = electrons
- Most of the mass from an atom comes from the protons and neutrons
- amu = atomic mass unit – label for measuring small atoms

Atomic number: the number of protons in the nucleus of an atom



Mass number: sum of the protons and neutrons in the atom

- Also, the rounded atomic mass on the periodic table

Element	Atomic Number	Protons	Electrons	Mass Number	Neutrons
Hydrogen					
Carbon					
Oxygen					

Isotopes: atoms with the same number of protons and different numbers of neutrons

- Written with its name followed by its mass number
 - Example: Carbon – 12 and Carbon – 14
 - This is how we have radioactive atoms (Carbon-14 is radioactive)

Element	Atomic Number	Protons	Electrons	Mass Number	Neutrons
Hydrogen-1					
Hydrogen-2					
Hydrogen-3					

Average atomic mass: the weighted average mass of all naturally occurring isotopes of an element according to their natural abundances measured in atomic mass units (amu)