

Matter	Category	Type	Example		Represented in Particle Diagram By	Tips to Remember
Element	Atom	Pure Metal	Potassium	K	Single sphere	Monatomic; Cannot be broken down into something simpler
		Noble Gas	Helium	He		Group 8 elements
Atom	Ion	Cation	Calcium	Ca ²⁺	Single sphere with "+" inside	Group 1, 2, and 3 elements
		Anion	Nitride Ion	N ³⁻	Single sphere with "-" inside	Transition Metals and Group 5, 6, and 7 elements
Molecule of...	Element	Diatomic	Flourine gas	F ₂	2+ spheres of <u>same</u> size and color joined together	" <u>H</u> ave <u>N</u> o <u>F</u> ear <u>O</u> f <u>I</u> ce <u>C</u> old <u>B</u> eer" (H ₂ N ₂ F ₂ O ₂ I ₂ Cl ₂ Br ₂)
	Compound	Covalent	Diphosphorus pentoxide	P ₂ O ₅	2+ spheres of <u>different sizes</u> joined together	Non-metals share valence electrons
		Ionic	Magnesium chloride	MgCl ₂	2+ spheres of <u>different sizes and colors</u> joined together	Metal cation combines with Non-metal anion
Mixture		Homogeneous	Alloy (i.e. Gold, Brass, Steel), Air, Vinegar		Different spheres distributed evenly throughout	Tomato soup (uniform)
		Heterogenous	Granite, Oil & Water, Asphalt		Spheres of the same type clustered together	Vegetable soup (nonuniform)

Elements: Substances that cannot be separated into simpler substances

Atoms: Smallest particle of matter

Molecules: 2 or more atoms bonded together

Compounds: 2 or more different atoms bonded together

Mixtures: 2 or more substances mixed together but not chemically joined