

# Classification of Matter

**Everything**  
 Much of science involves describing the universe. To do this we must classify the things we encounter. Everything in the universe is made up of either energy or matter.

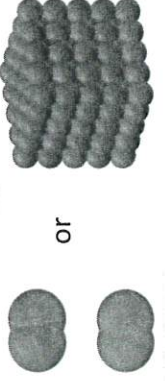
**Energy**  
 Energy is the capacity to do work.  
 • You can see energy (light) and feel energy (heat) but you cannot touch or smell it.

**Matter**  
 Anything that has mass and volume.  
 • You can feel it, taste it and smell it.

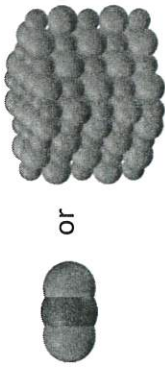
**Pure Substance**  
 • only 1 kind of matter  
 • Must be separated chemically. (Bonds broken).  
 "1 ingredient"

**Mixture**  
 • Formed when two or more substances are physically combined.  
 • All substances in a mixture retain their properties.  
 • Can be separated physically (picked apart).  
 "2+ ingredients"

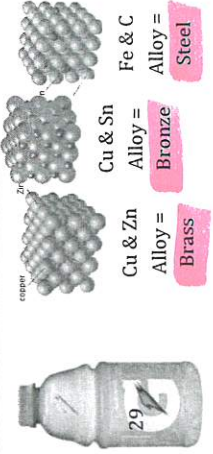
**Element**  
 • Found on the periodic table  
 • Made of 1 type of atom.  
 H<sub>2</sub>



**Compound**  
 • Two or more elements held together by chemical bonds.  
 • Has a uniform composition.  
 • Cannot be separated by physical means.  
 H<sub>2</sub>O



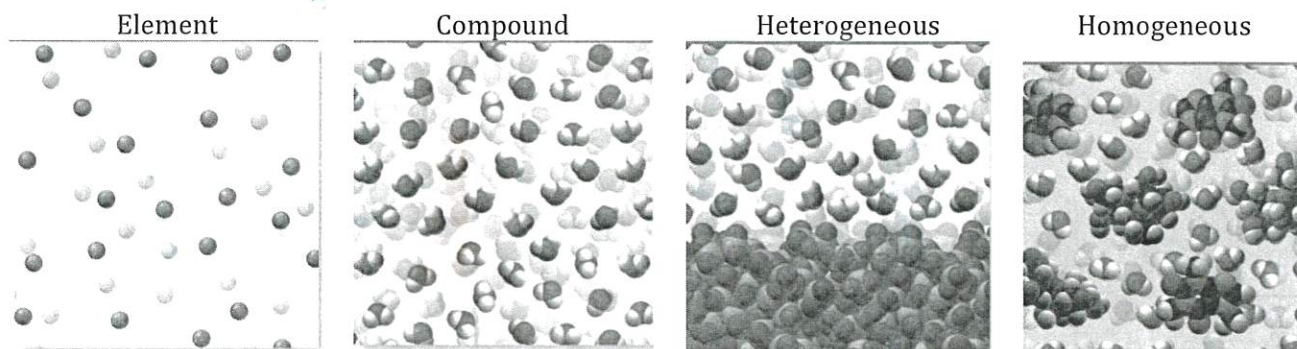
**Homogenous**  
 • The prefix "homo" means same.  
 • Each sample taken will be the same.  
 • Alloys are a mixture of two metals.  
 • Looks the same throughout. You cannot see differences.  
 • Well mixed



**Heterogeneous**  
 • The prefix "hetero" means different.  
 • Each sample taken will be different.  
 • Looks different throughout. You can see differences.  
 • Poorly mixed



**Guided Practice for Classification of Matter**



| Element Examples | Compound Examples | Heterogeneous Examples | Homogeneous Examples |
|------------------|-------------------|------------------------|----------------------|
|                  |                   |                        |                      |

Identify each of the following as: element (E), compound (C), heterogeneous mix (He) or homogeneous mix (Ho)

|   |    |   |   |                  |    |
|---|----|---|---|------------------|----|
| 1) Pizza  | He | 4) Water (H <sub>2</sub> O)                 | C | 7) Iced Tea      | He |
| 2) Gold (Au)  | E  | 5) Sodium bicarbonate (NaHCO <sub>3</sub> ) | C | 8) Pool water    | Ho |
| 3) Sugar (C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> ) | C  | 6) Iron (Fe)                                | E | 9) Brass (Cu/Zn) | Ho |