

CHEM 1305 - Chapter 03 - Notes

Define the following terms; explain the following concepts, and answer the following questions:

1) Three states of matter

- a) Solid
- b) Liquid
- c) Gas

2) List and describe the two types of properties?

- a) Physical
- b) Chemical

3) What is the general rule for differentiating between Chemical and Physical properties/changes?

With a Chemical Change, a new substance is formed; with a Physical Change, no new substance is formed, it only changes in form ("you end up with the same chemicals as you started with")

4) Identify the following as Physical or Chemical property/change.

- a) [P] The boiling point of water is 100 °C.
- b) [P] Copper wire conducts electricity well.
- c) [C] Gasoline burns to produce water and carbon dioxide.
- d) [P] Steam condenses to water.
- e) [C, P] Leaves turn colors in Autumn.

5) List the four "basic" forms of matter. (The ultimate result of the separation/decomposition of matter by Physical and/or Chemical Methods.)

- a) Elements - substances that cannot be broken down by chemical means.
- b) Compounds - substances that can be broken down chemically, but not separated physically.
- c) Homogeneous Mixture - two or more materials, the same throughout (1-phase)
- d) Heterogeneous Mixture - two or more materials, composition varies throughout (2-phase)

6) Define the following:

- a) Mixture - Homogeneous & Heterogeneous; combination of materials that have variable composition (wine varies with brand and bottle; coffee can be hot or strong)

- b) Pure Substance - Elements & Compounds; material always has the same composition (gold always has the same composition, so does water)
- 7) List and describe two common methods for separating mixtures:
- a) Distillation - making distilled water
b) Filtration - e.g., coffee maker
- 8) Identify each of the following as a Homogeneous Mixture, Heterogeneous Mixture, Element, or Compound:
- a) coffee - homogeneous mixture
b) sugar - sucrose, a compound of C + H + O
c) water - compound of H + O
d) chocolate cookies - heterogeneous mixture
e) filtered apple juice - homogeneous mixture
f) copper - element
g) brass - homogeneous mixture (zinc and copper)
h) air - homogeneous mixture (O, N, ect.) -- debatable whether it is homogeneous