

Law of Conservation - Qualitative

Intro: The law of conservation of matter states that matter cannot be created or destroyed. This means that in both physical and chemical changes atoms/molecules must be conserved. We can represent this either through symbolic representations or through particulate drawings.

Changes in Matter

physical change

- ⊗ Substance remains the same before and after the change occurs
- ⊗ atoms/molecules will have the same chemical formula but states may be different

Ex: Ice melting



Chemical Change

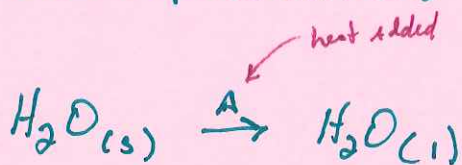
- ⊗ Substance changes, bonds are broken, new bonds are formed during the change
- ⊗ atoms/molecules will have new formulas in products

Ex: Combustion of Methane



2 Different ways to show changes :

1st: Symbolic representations (chemical equation) → molecular
→ Ionic
→ net-ionic



- or -



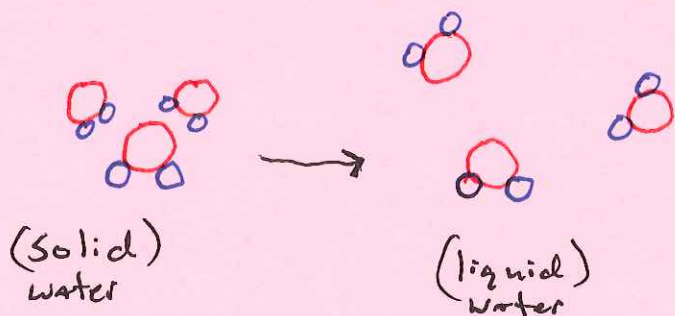
molecular equations = everything shown/written as a molecule

Ionic equation = All aqueous ionic compounds written as dissociated ions

* Covalent Compounds DON'T dissociate!

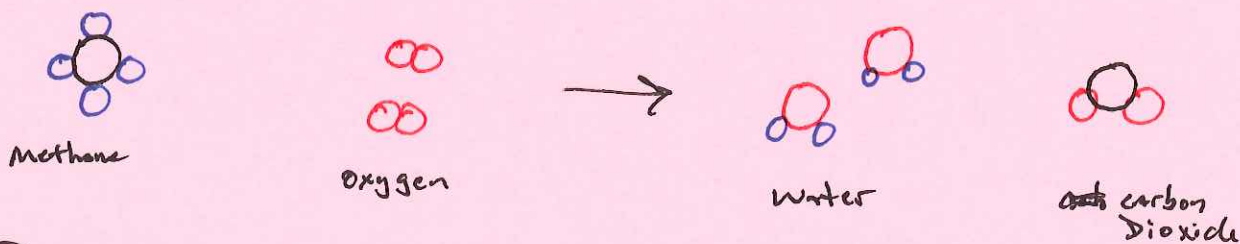
net-ionic equation = shows only ions involved in product formation (spectator ions removed)

2nd: Particulate representations → elements & molecules drawn out



⊗ Notice we Balance Based on # of molecules Drawn

⊗ State of matter denoted by molecular arrangement and spacing



⊗ ~~R~~ # of molecules = coefficients

↓

⊗ If ratios do not match you can visually determine limiting reactant, excess reactant