

LAW OF CONSERVATION OF MASS NOTES

The Law of Conservation of Mass: for any system closed to all transfers of matter and energy, the mass of the system must remain constant over time, as the system's mass cannot change, so quantity can neither be added nor be removed.

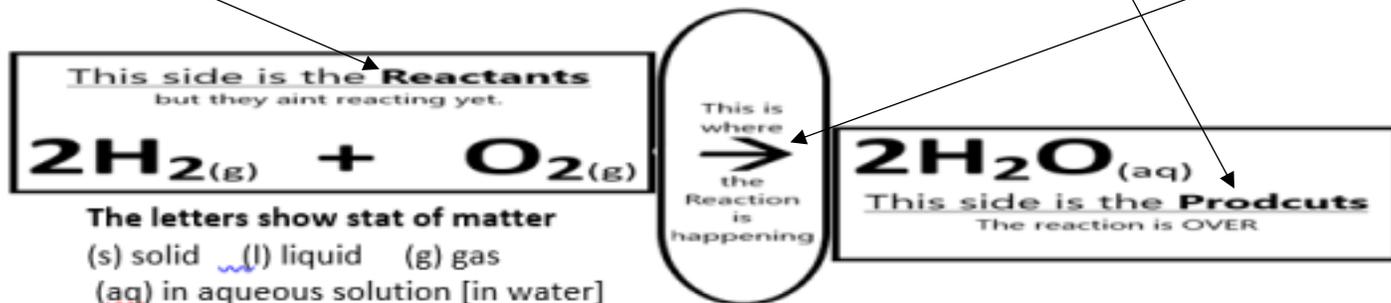
****We will focus on law of conservation of mass primarily with Chemical Reactions, so check out my definition....*

Coach Hyde's Definition: There must be equal mass before and after a reaction takes place. The mass may have changed appearance but the total amount of mass is still the same.

This is the Chemical Equation for making Water: $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{aq})$

First things First: You must understand the layout of a chemical reaction in equation form:

- ✓ There is a before anything has happened side, this is called the reactants.
- ✓ There is the \rightarrow sign which represents the time frame of the reaction actually happening.
- ✓ There is the after the reaction happened side, this is called the products.



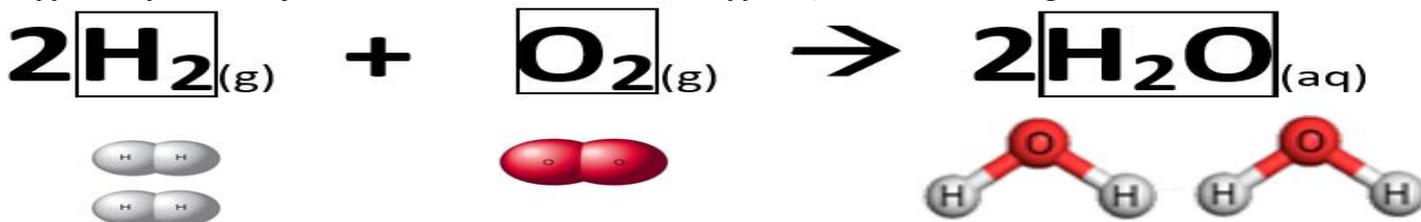
Some elements in the real world do not exist as single atoms, they exist as molecules.

- ✓ In real life if you find Hydrogen, it exists as a H₂ molecule.
- ✓ In Real life if you find Oxygen, it exists as an O₂ molecule.

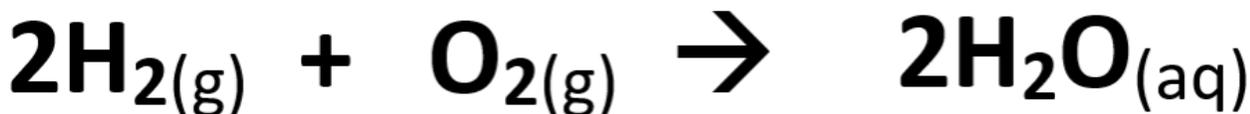
When two or more different elements come together, they form a compound, like water.

- ✓ H₂O is a compound formed with 2 Hydrogens and 1 Oxygen bonded together.

This is What happens: Two Hydrogen Molecules are mixed with One Oxygen Molecule. A reaction happens (represented by the arrow). After the reaction has happened, Two Water Compounds have been formed.



There is an equal amount of Hydrogens and Oxygens in the reactants (before) as there are in the Products (after). They have changed form, but there is still the same amount of them. This is what the **Law of Conservation of Mass** is all about.



2 kg

8 kg

10 kg

The total mass of all the reactants combined is 10 kg.

The total mass of all the products must be the same as the reactants = 10 kg.