

Week 14 – SCIENCE NOTE PAGE

Chemical Reactions and Conservation of Mass



Chemical Reaction

- A **chemical reaction** is when bonds break between reactants and form again to **create products**.
 - _____ – the starting molecules in a chemical reaction
 - _____ – the molecules that result from a chemical reaction

Exothermic Reactions

- A chemical reaction where more energy is **released** than is needed to get the reaction started is an exothermic reaction.
 - The result is _____ is released.

Endothermic Reactions

- A chemical reaction where energy is **absorbed** to get the reaction started is an endothermic reaction.
 - The result is HEAT is absorbed and the container feels _____.

Types of Reactions

- Combustion Reactions: an exothermic reaction in which **oxides** are usually formed.
- Decomposition Reactions: a chemical reaction where a _____ compound is broken down into **two or more** simpler compounds.
- Forming a Precipitate: a chemical reaction where a _____ is formed from liquids

Indicators of Chemical Reactions

Don't Be Fooled

A chemical reaction has **not** occurred when you:

- See the _____ when a bottle of soft drink is opened.
 - This is not a chemical reaction because the carbon dioxide gas was already there, and it was just dissolved.
- Mix a yellow and a blue solution to give a green solution.
 - The pigments yellow and blue make green, but no chemical reaction has taken place.

How FAST does the reaction occur?

- All chemical reactions are processes that take place during a period of _____.
 - A chemical reaction is not instantaneous, even if it seems that way.
 - Even an explosion takes place over time.

Reaction Rate

- The reaction rate is the _____ of a reaction under specific conditions.
 - You can determine the reaction rate by figuring out how much of the _____ is used up over a period of time
 - or how much time it takes to form a certain amount of the _____.

Rate of Reaction

- Factors that determine reaction rate are:
 1. Temperature—the higher the temperature, the **faster** the reaction rate.
 2. Concentration—the more concentrated the reactants, the **faster** the reaction rate.
 3. Surface area—when the reaction involves solids, an increased surface area will result in an **increased** reaction rate.
 4. Catalyst—the presence of a catalyst **speeds** up the reaction rate.

Equilibrium

- Equilibrium is the state of chemical system in which the rates of the forward and reverse reactions are _____.

The Law of Conservation of Mass

- The Law of Conservation of Mass states: the mass of substances does _____ change during chemical reactions.