New Chapter 5

1

- Physical Change—any change that alters the form or appearance of a substance but does not change it into another substance

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Physical Changes

- Common Types: Smashing, Distilling, Distributing, Sorting, Mixing, Blending, Ripping, Phase Changes
- Stirring, Magnetizing, Straining

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Chemical Change

- Chemical change—the atoms rearrange to form new substances

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Chemical Changes:

- Common Types: Acidation Cooking, Oxidating, Rusting, Tarnishing, Photosynthesizing
- Common Indications: Changes of odor, color, temperature, energy; give off light, heat, or sound; formation of bubbles (gases), precipitates; decomposition of rotting matter
  - http://en.wikipedia.org/wiki/Chemical_change on 9/30/09

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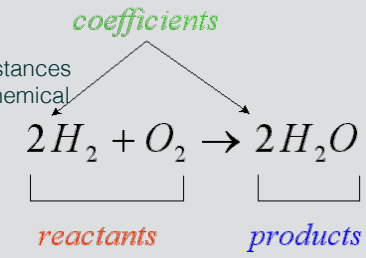
In a Chemical Reaction

- Reactants—The substances that undergo the chemical changes (BEFORE)
- Products—New substances formed (AFTER) a chemical change



Precipitate

- *A solid that comes out of a reaction (because it is not soluble with the mixture)*

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Endo vs. Exo

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Endo vs. Exo

- endothermic reactions —suck in energy to break the bonds of the reactants (get colder)
- exothermic reactions —release energy (get hotter)

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Chemical Equation

- Chemical equation—a way to show a chemical reaction

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Laws of Conservation

- Energy—energy can neither be created nor destroyed, but can and often does change forms
- Momentum—the momentum in a system can not be created or destroyed (but on earth is commonly reduced due to friction and gravity, which are part of the momentum)
- Mass—matter cannot be created or destroyed in a chemical reaction, so products must match reactants

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Open v Closed

- Open Systems—matter can enter from or escape to the surroundings
- Closed Systems—matter does not enter or leave

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Activation Energy

- the minimum amount of energy needed to start a chemical reaction

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Concentration

- the amount of a substance in a given volume

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Catalyst

- increases the reaction rate by lowering the activation energy needed

Enzymes

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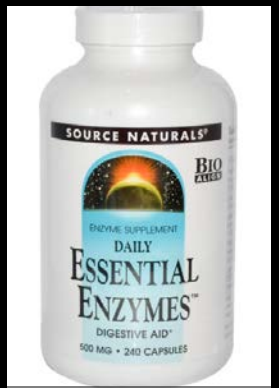
- Help reactions to occur at body temperature



Inhibitor

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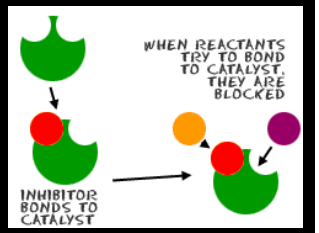
- A material used to decrease the rate of a chemical reaction



Synthesis Reaction

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- *Two or more substances COMBINE to form one new substance*
- $2H_2 + O_2 \rightarrow 2H_2O$

Decomposition Reaction

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- *Involves BREAKING a compound into two or more substances.*
- *$2HgO \rightarrow 2Hg + O_2$*

Replacement Reactions

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- *One atom or a group of atoms in a compound is REPLACED with another atom or group of atoms*
- *$Cu + 2AgNO_3 \rightarrow Cu(NO_3)_2 + 2Ag$*

Double Replacement Reaction

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- *Two different types of atoms or group of atoms EXCHANGE places in a reaction*
- *$2KCl + Pb(NO_3)_2 \rightarrow PbCl_2 + 2KNO_3$*