

Chemical Reactions

Physical Science chapter 21



Objectives

- **Identify** reactants and products in a chemical reaction
- **Represent** chemical reactions with equations
- **Describe** the role of conservation of mass in a chemical reaction
- **Classify** chemical reaction
- **Balance** chemical equations



Review

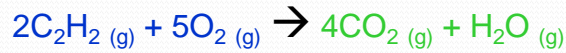
- **Chemical Change:** a process involving one or more substances changing into a new substance
- **Oxidation numbers**
- **Balancing a Compound**
- **Diatomic molecules**



Chemical Reactions

- **Chemical Reaction** – combining or breaking apart atoms in matter, producing new kinds of matter
 - Evidence of a chemical reaction
 - Change in temperature
 - Change in color
 - Odor, gas, or bubbles forming
 - **Examples**
 - Fruit ripening & food spoiling
 - Candle wick burning
 - Digestion
 - Breathing

Parts Chemical Equation



- **Chemical equation** – A way to describe a chemical reaction using formulas and symbols
- **Reactants** are on the *left side* of yield sign and are the new/raw substances you start with
- **Products** are on the *right side* of the yield sign and are the new substances produced
- \rightarrow means “yields”

Parts Chemical Equation



(aq) means aqueous (dissolved in water)

(s) means solid

(g) means gaseous

(l) means liquid

What are the reactants:

What are the products:

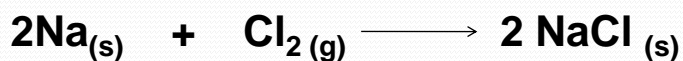
Parts Chemical Equation



Coefficients – represent the number of units of each substance

Why does there need to be a large 2 in front of the NaOH and the NaCl?

Symbols Used in Chemical Equations



Symbol	Explanation
→	“Yields”; indicates result of reaction
↔	Used in place of a single arrow to indicate a reversible reaction
(s)	A reactant or product in the solid state; also used to indicate a precipitate
↓	Alternative to (s), but used only to indicate a precipitate
(l)	A reactant or product in the liquid state
(aq)	A reactant or product in an aqueous solution (dissolved in water)
(g)	A reactant or product in the gaseous state

Using Coefficients



There are ____ Ni, ____ Cl, ____ Na,
____ O, ____ H units on each side

Coefficients make sure the reaction obeys the **law of conservation of mass!**