

Chemical Reactions

Lighting of LED

Copper (II) chloride reacts with aluminum and the solutions are copper and aluminum chloride. The chemical formula for this reaction is $2\text{Al(s)} + \text{CuCl}_2(\text{aq}) = \text{Cu(s)} + 2\text{AlCl}(\text{aq})$. This is a single displacement reaction, which occurs when an element reacts with a compound and creates a new compound and element. In this specific reaction, a metal (aluminum) replaces another metal (copper) in a compound. The copper is then a stand-alone metal, and the new compound is aluminum chloride, rather than copper (II) chloride.

Inflation of Balloon

Acetic acid and sodium bicarbonate react to form sodium acetate anhydrous, dihydrogen monoxide, and carbon dioxide. This reaction is actually a combination of two reactions, the first being a double displacement reaction. This reaction is between $\text{CH}_3\text{COOH}(\text{aq})$ and $\text{NaHCO}_3(\text{s})$ and becomes $\text{NaCH}_3\text{COO}(\text{s})$ and $\text{H}_2\text{CO}_3(\text{aq})$. These compounds then go through a decomposition reaction causing $\text{H}_2\text{CO}_3(\text{aq})$ to become $\text{H}_2\text{O}(\text{aq})$ and $\text{CO}_2(\text{aq})$. The final product of these reactions is $\text{NaCH}_3\text{COO}(\text{s}) + \text{H}_2\text{O}(\text{aq}) + \text{CO}_2(\text{aq})$.

Tornado

Sodium iodide reacts with hydrogen peroxide to form a solution of dihydrogen monoxide, sodium iodide, and oxygen. This is a decomposition reaction meaning that when two compounds react together, one of the compounds is split into two or more elements or compounds. The chemical formula for this particular reaction is $\text{NaI}(\text{s}) + 2\text{H}_2\text{O}_2(\text{aq}) = 2\text{H}_2\text{O}(\text{aq}) + \text{NaI}(\text{aq}) + \text{O}_2(\text{g})$.

Poison

Potassium dichromate is combined with iron (III) chloride to produce potassium chloride and iron dichromate. This chemical formula is $3\text{KCr}_2\text{O}_7(\text{aq}) + \text{FeCl}_3(\text{aq}) = 3\text{KCl}(\text{aq}) + \text{Fe}(\text{Cr}_2\text{O}_7)_3(\text{aq})$. This is a double displacement reaction because the iron (III) switches with the potassium. This reaction is formed by two compounds that create two new compounds.

Zap

When magnesium is put into fire, it reacts with the oxygen in the fire. This reaction results in magnesium oxide, and is written in its chemical formula as $2\text{Mg(s)} + \text{O}_2(\text{g}) = 2\text{MgO(s)}$. This is a synthesis reaction, meaning that two elements react to form a single compound.

Fireball

When ethanol is lit on fire, it reacts with the oxygen in the fire to form a decomposition reaction and creates carbon dioxide, water, and heat. The chemical formula for this reaction is $\text{CH}_3\text{CH}_2\text{OH}(\text{aq}) + 3\text{O}_2(\text{g}) = 2\text{CO}_2(\text{aq}) + 3\text{H}_2\text{O}(\text{aq})$. In this decomposition reaction, the ethanol is broken up into two compounds.