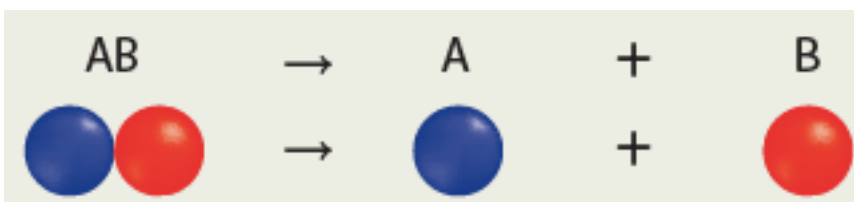


Decomposition Reactions

decomposition

reaction a chemical reaction in which a compound breaks down into elements or simpler compounds



A single reactant gives 2 or more products

For **most** decomposition reactions, energy must be supplied in the form of **heat**, **light**, **mechanical shock** or **electricity**.

Decomposition reactions fall into 5 general categories:

1. Binary compounds which decompose to form two elements.

e.g. $2\text{NaN}_3(\text{s}) \rightarrow 2\text{Na}(\text{s}) + 3\text{N}_2(\text{g})$
Mercury (II) oxide breaks into liquid mercury and oxygen.

2. A METAL NITRATE DECOMPOSES INTO A METAL NITRITE AND OXYGEN GAS.

e.g. $2\text{NaNO}_3(\text{s}) \rightarrow 2\text{NaNO}_2(\text{s}) + 3\text{O}_2(\text{g})$
Potassium nitrate breaks into potassium nitrite and oxygen.

3. A metal hydroxide breaks into a metal oxide and water vapour

e.g. $\text{Ca}(\text{OH})_2(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{H}_2\text{O}(\text{g})$
Potassium oxide and water vapour are produced when potassium hydroxide breaks down

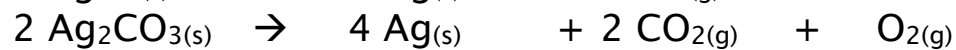
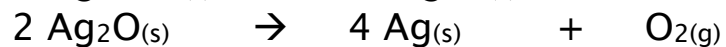
4. A METAL CARBONATE BREAKS INTO A METAL OXIDE AND CARBON DIOXIDE

e.g. $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
Zinc oxide and carbon dioxide are formed when zinc carbonate breaks down.

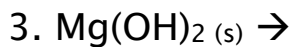
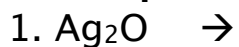
5. SOME DECOMP. REACTIONS ARE DIFFICULT TO PREDICT



The decomposition of silver carbonate is actually two reactions:



Decomposition Reactions



Try p. 134 #31-40