

Reversible Reactions



Most chemical reactions are considered **irreversible** – the products that are made cannot readily be changed back into their reactants.

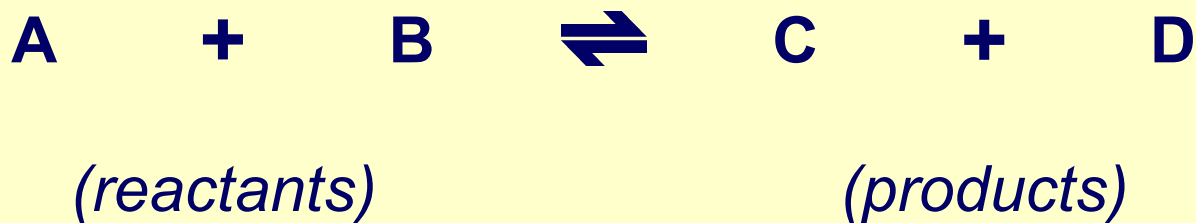
For example, when wood burns it is impossible to turn it back into unburned wood again!

Similarly, when magnesium reacts with hydrochloric acid to form magnesium chloride and hydrogen, it is not easy to reverse the reaction and obtain the magnesium.



What are reversible reactions?

Reversible reactions occur when the backwards reaction (*products to reactants*) takes place relatively easily under certain conditions. The products turn back into the reactants.



For example, during a reversible reaction, reactants **A** and **B** react to make products **C** and **D**.

However, products **C** and **D** can also undergo the reverse reaction, and react together to form reactants **A** and **B**.

Reversible biochemical reactions

Many biochemical reactions (those that take place inside organisms) are reversible.

For example, in the lungs, oxygen binds to hemoglobin (Hb) in red blood cells to create oxyhemoglobin.

When the red blood cells are transported to tissues, the oxyhemoglobin dissociates back to hemoglobin and oxygen.



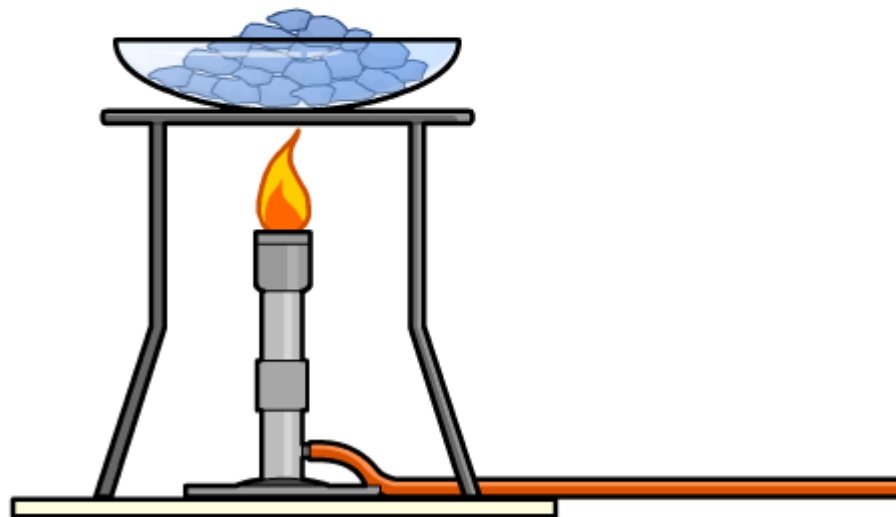
There are also some very important industrial reactions, like the Haber process, that are reversible.



What happens when hydrated copper sulfate is heated?

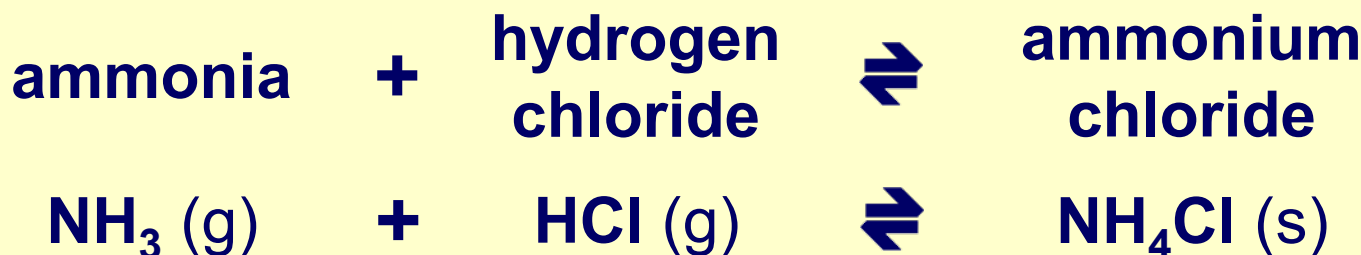
Hydrated copper (II) sulfate undergoes a reversible reaction when heated.

Click "**play**" to see what happens in this reaction.

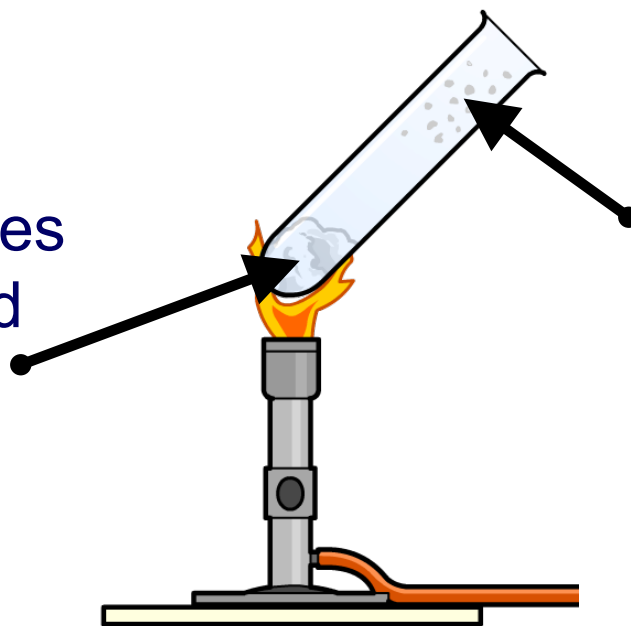


Heating ammonium chloride

An ammonium salt can be made by reacting ammonia with an acid. Some of the salt will decompose back into the reactants when heated.



NH_4Cl decomposes back into NH_3 and HCl gases when heated



NH_4Cl reforms in the cooler part of the test tube

Are these reactions reversible or irreversible?

reversible

irreversible

dehydration of CuSO_4



solve

