

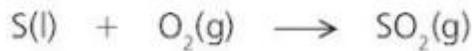
Contact Process(Manufacturing of Sulfuric acid)

Raw Materials:

Sulfur dioxide : From Sulfur (beneath the ground) burns in air
/ Zinc sulfide (Sulfide ore) Burns in air

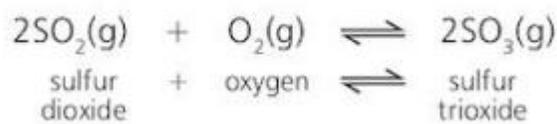
Oxygen : From Air

A spray of molten sulfur is burned in a furnace in a current of dry air. Sulfur dioxide is formed:



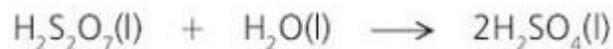
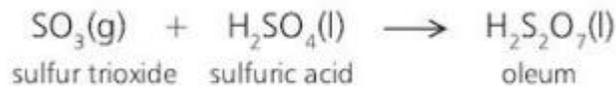
Increase pressure can give yield but increase pressure can be expensive (strong pipes required and risky (danger of explosion), even at 200kpa gives very good yield.

Low temperature can give better yield but disadvantage of low temperature is low rate of reaction so compromise temperature of 450°C is used.



Conditions for reversible process

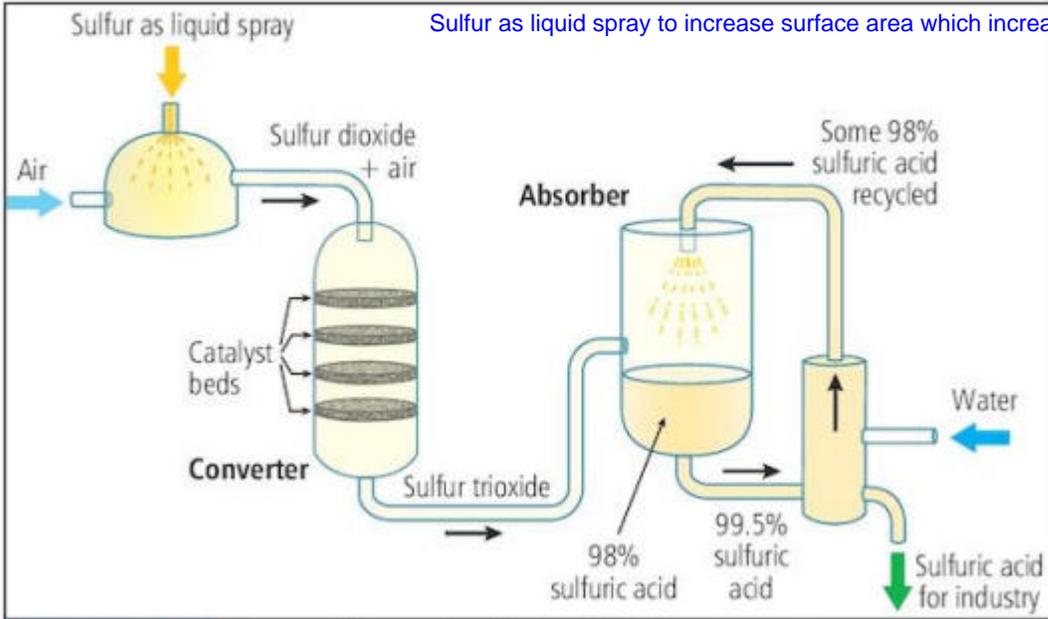
Temperature 450°C
Pressure 2 atm/200 kpa
Catalyst Vanadium(V) Oxide



98 % Sulfuric acid

The sulfur trioxide is absorbed into a 98% solution of sulfuric acid. This happens in a tower called an absorber. We do not dissolve the sulfuric acid directly into water. This is because when sulfur trioxide reacts with water a fine mist of sulfuric acid forms. This does not condense very easily. The sulfur trioxide dissolves in the 98% sulfuric acid to form a thick liquid called oleum:

Sulfur as liquid spray to increase surface area which increases the rate of reaction)

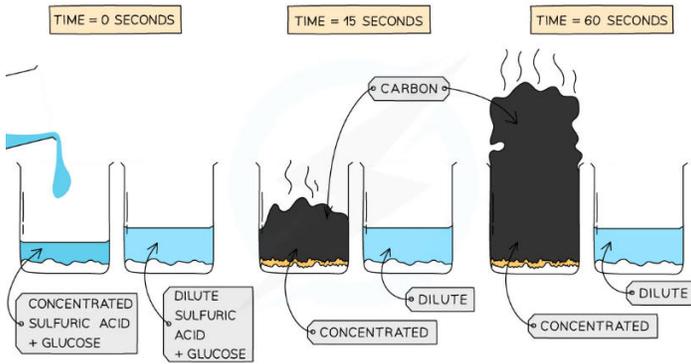


Uses of sulfuric acid:

- In paints
- Car batteries
- Detergents

Concentrated sulfuric acid is a very strong dehydrating agent.

- Concentrated sulphuric acid is also a very powerful **dehydrating agent** and is very good at removing water from other substances
- For example, if mixed with sugar ($C_6H_{12}O_6$), concentrated H_2SO_4 will remove water molecules and leave behind carbon in a spectacular looking black tower



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