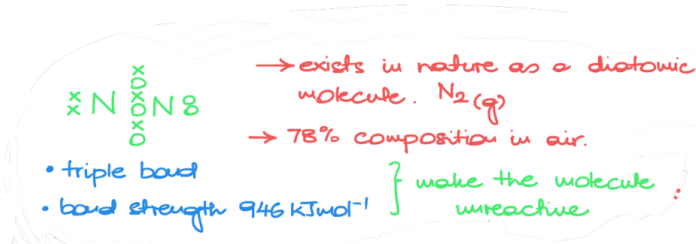


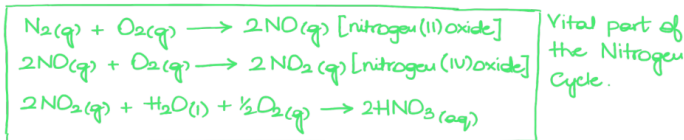
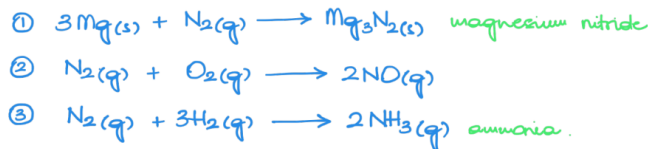
# UNIT 12 - NITROGEN AND SULPHUR

## Nitrogen



## Reactions of Nitrogen

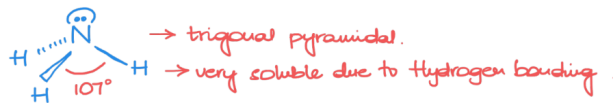
Due to strong triple bond, special conditions are required for reactions to occur.



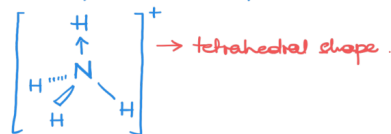
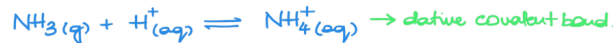
④ Nitrogen fixation by bacteria present in nodules of legumes.

## Ammonia

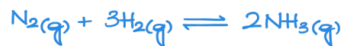
- alkaline gas.



→ basic in nature.



## The Haber Process



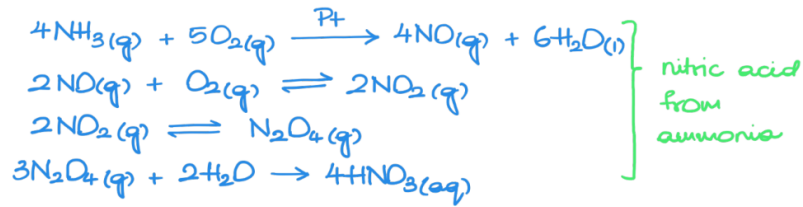
- pressure - 200 atm
- temperature - 670K
- catalyst - Fe(s)



→ Ammonium compounds

- important fertilizers:-  $\text{NH}_4\text{Cl}$   
 $\text{NH}_4\text{NO}_3$   
 $(\text{NH}_4)_3\text{PO}_4$   
 $(\text{NH}_4)_2\text{SO}_4$





conc.  $\text{HNO}_3$ :

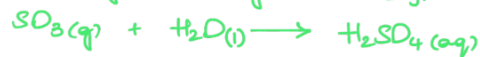
- TNT
- detergents
- paints.

### Nitrate Fertilizers

- water soluble  $\rightarrow$  leached from soil  $\rightarrow$  eutrophication of water supply.
- high levels in drinking water  $\rightarrow$  blue baby syndrome

### Nitrogen Oxides in the atmosphere

- acid rain + photochemical smog.



### Catalytic Converters



## Sulphur

$^{16}_{32.1}\text{S}$  • Group 16



- $\rightarrow \text{SO}_2$   $\rightarrow$  burning fossil fuels coal, crude oil, diesel, petrol.  
 $\rightarrow$  volcanic eruptions.

$\Rightarrow$  Leads to Acid Rain

- damages buildings
- detrimental to flora + fauna
- soil more acidic.

## Sulphur dioxide - uses and acid rain

### Acid Rain

$\text{NO}_x$  - catalysing  $\text{H}_2\text{SO}_4(\text{aq})$  production in the atmosphere.

### Uses of $\text{H}_2\text{SO}_4$

- fertilizers
- detergents
- paints
- synthetic fibres
- car batteries
- tanning leather

### Use of $\text{SO}_2$

- food preservation.