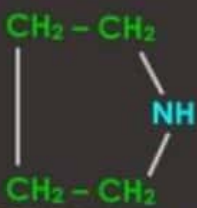
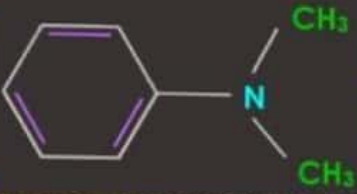
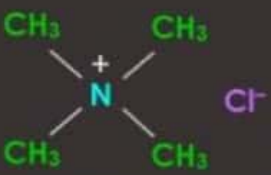


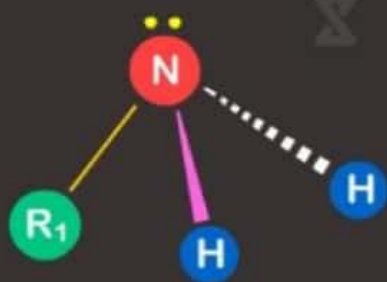
# Amines

Amines are members of a family of nitrogen-containing organic compounds that is derived, either in principle or in practice, from ammonia ( $\text{NH}_3$ ).

Ethylamine	Pyrolidine	N, N - dimethylaniline	Tetramethylammonium chloride
$\text{CH}_3\text{CH}_2 - \text{NH}_2$			
An open-chain aliphatic primary amine.	A cyclic aliphatic secondary amine.	An aromatic tertiary amine.	An aliphatic quaternary ammonium salt.

## STRUCTURE OF AMINES

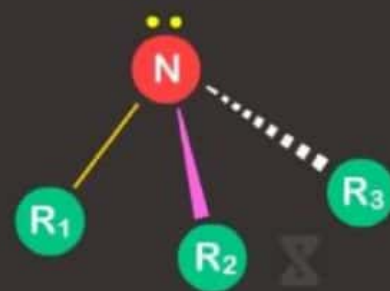
### PRIMARY



### SECONDARY



### TERTIARY



## PROPERTIES

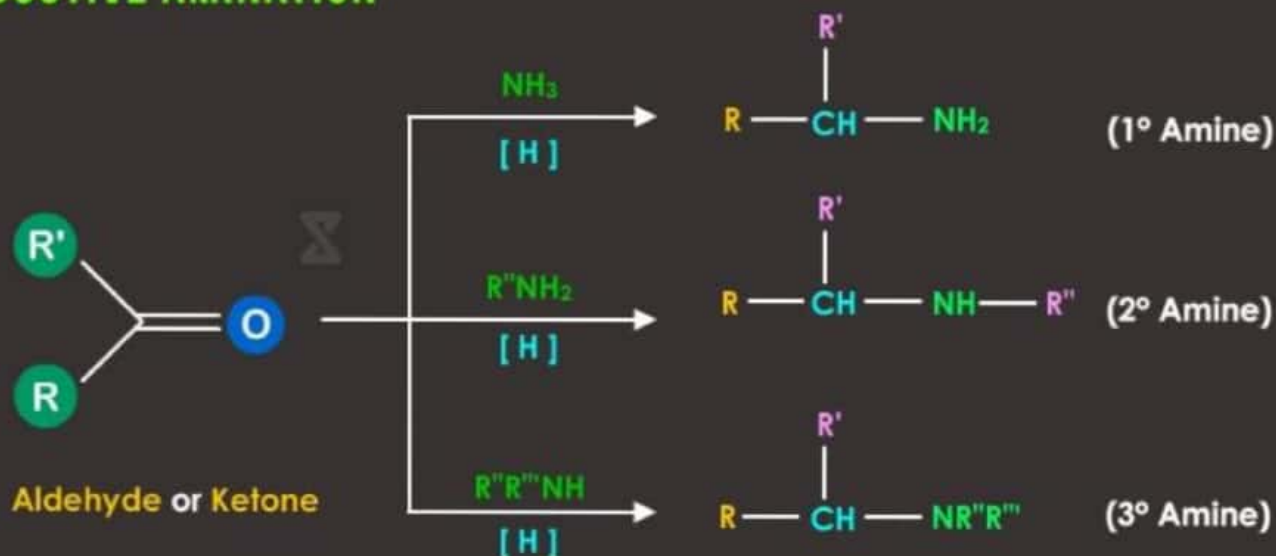
- Water Soluble
- Gaseous at room temperature
- Foul-smelling compounds
- Colourless
- High boiling point
- Burns with a yellow flame

## USES OF AMINES

- Corrosion inhibitors in boilers
- Lubricating oils (morpholine)
- Stabilizers for cellulose
- Nitrate explosives (diphenylamine)
- Protectants against damage from gamma radiation (diarylamines)



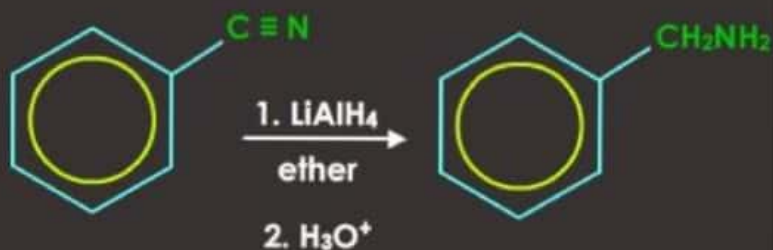
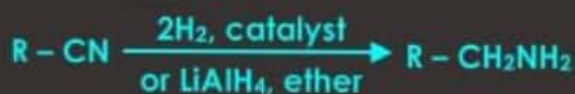
### REDUCTIVE AMINATION



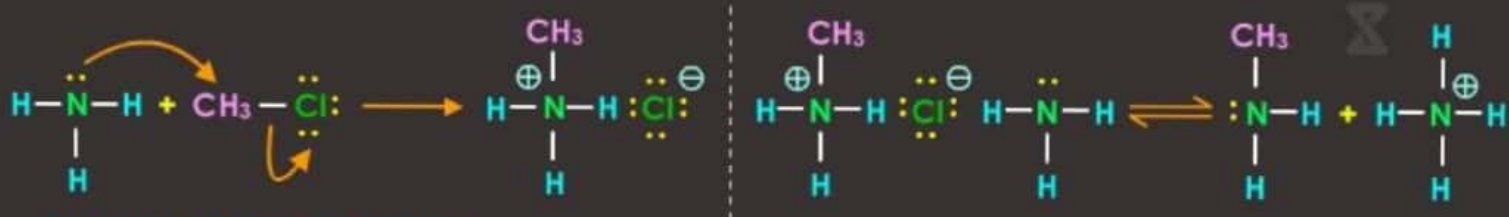
### REDUCTION OF NITRILES

Nitriles can be reduced by strong reducing agent like  $\text{H}_2$  with catalyst (example Ni or  $\text{LiAlH}_4$ ) to yield primary amines via nucleophilic addition reaction.

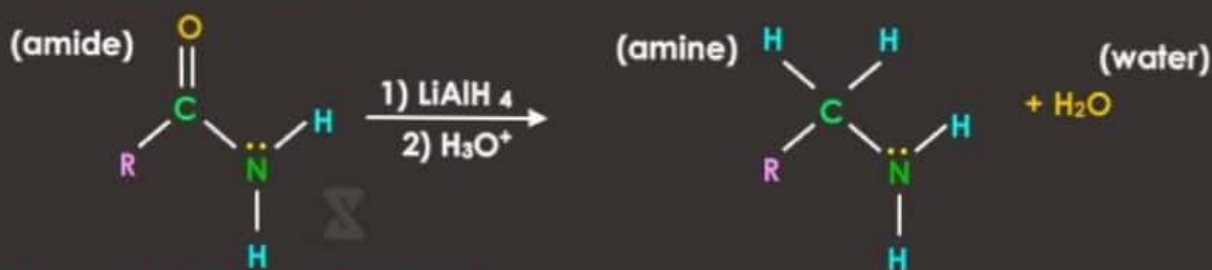
Example :



### REACTION OF AMMONIA WITH ALKYL HALIDES



### REDUCTION OF AMIDES



### REDUCTION OF NITRO GROUPS

