

Diazonium Salts RN_2X

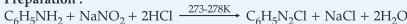
Amines

Physicals Properties

- Lower aliphatic amines are gases. Primary amines with three or more C atoms are liquid and higher ones are solid.
- Arylamines are colourless but get coloured on storage.
- Lower aliphatic amines are soluble in water, while higher are insoluble.
- Primary and secondary amines form intermolecular association
- Boiling point : primary > secondary > tertiary

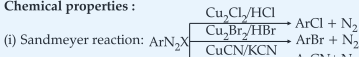
Diazonium Salts

Preparation :

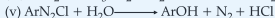
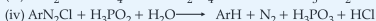
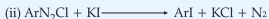
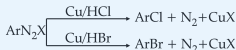


Physical properties : Colourless crystalline solid, soluble in water, stable in cold but reacts with water on warming.

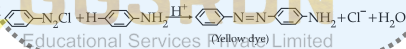
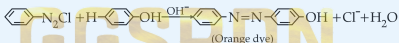
Chemical properties :



Gattermann reaction :

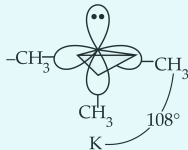


(iv) Coupling reaction :

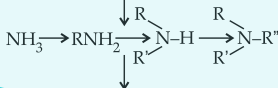


Derivatives of ammonia, obtained by replacement of one, two or all the three H atoms by alkyl and/or groups

Structure

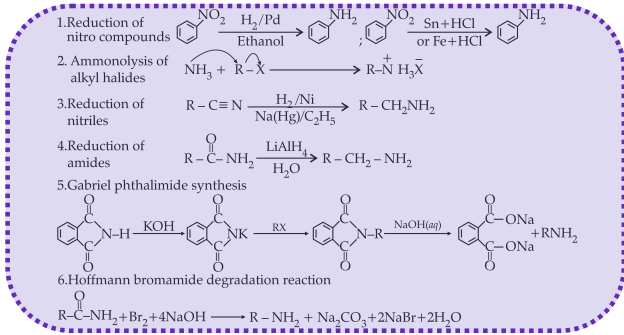


Classification



Nomenclature:

Common name: Aliphatic amine is named by prefixing alkyl group to amine. In secondary and tertiary amines prefix di or tri is put before name of alkyl group. IUPAC name : replacement of 'e' of alkane by the word amine. Suffix 'e' of arene is replaced by amine.



Chemical Reaction

Preparation

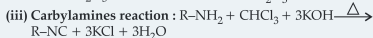
Amines

Importance of diazonium salts in synthesis of aromatic compounds:

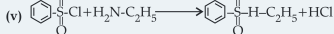
In preparation of substituted aromatic compounds which cannot be prepared by direct substitution in benzene/ substituted benzene.

(i) Basic character of amines

- Reacts with acids to form salts $\text{R-NH}_2 + \text{HX} \rightleftharpoons \text{R-NH}_3^+\text{X}^-$ (salt)
- Reacts with base to regenerate parent amines
 $\text{RNH}_3^+\text{X}^- + \text{OH}^- \longrightarrow \text{RNH}_2 + \text{H}_2\text{O} + \text{X}^-$
- Order of stability of ions : $1^\circ > 2^\circ > 3^\circ$



(iv) With nitrous acid



(vi) Electrophilic substitution

