Amines Map

OCR A Level Chemistry A · 6.2.1 Amines

1 From haloalkanes

6.2.1(b)

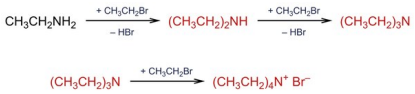
- Excess ethanolic ammonia
- Heat under pressure
- RBr + 2NH_3
- Gives RNH_2 + NH_4Br



2 Further substitution

6.2.1(b)

- Amines have a lone pair
- Primary to secondary
- Then tertiary
- Then **quaternary salt**

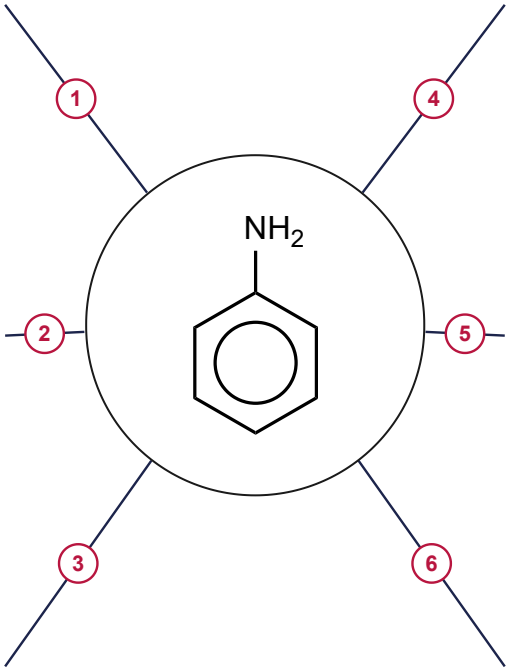


3 Phenylamine

6.2.1(b)

- From nitrobenzene
- Sn + conc HCl, reflux
- 6[H]: gives $2H_2O$ too
- NaOH(aq) frees the amine





4 Bases

6.2.1(a)

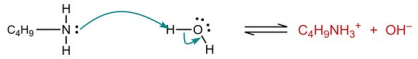
- N lone pair accepts H^+
- Proton acceptance
- Weak bases
- Forms RNH_3^+



5 In water

6.2.1(a)

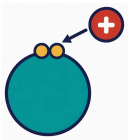
- RNH_2 + H_2O
- Equilibrium
- OH^- is left
- **Alkaline** solution



6 Salts

6.2.1(a)

- Amine + dilute acid
- $RNH_3^+Cl^-$
- Butylammonium chloride
- 2RNH_2 with H_2SO_4



Routes and reactions

making amines and using them as bases

Start	Reagent	Product
Haloalkane	Excess ethanolic NH_3	Primary amine
Haloalkane	Primary amine	Secondary amine
Nitrobenzene	Sn + conc HCl, then NaOH	Phenylamine
Amine	Water	$RNH_3^+ + OH^-$
Amine	Dilute HCl	$RNH_3^+Cl^-$

Worked examples

Yield

- 12.3 g $C_6H_5NO_2$: 0.100 mol
- 6.51 g product: 0.0700 mol
- **70.0%**

Titration

- 20.0 cm^3 of 0.100 mol dm^{-3} HCl
- Amine: 25.0 cm^3
- **0.0800 mol dm^{-3}**

Mass of salt

- 4.50 g $C_2H_5NH_2$: 0.100 mol
- Salt Mr 81.5
- **8.15 g**

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