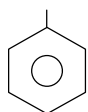


Halo-arenes.

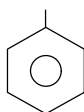
In these compounds the halogen is linked directly to the carbon of the benzene nucleus.

(1) **Nomenclature:** Common name is aryl halide IUPAC name is halo-arene.

Example :



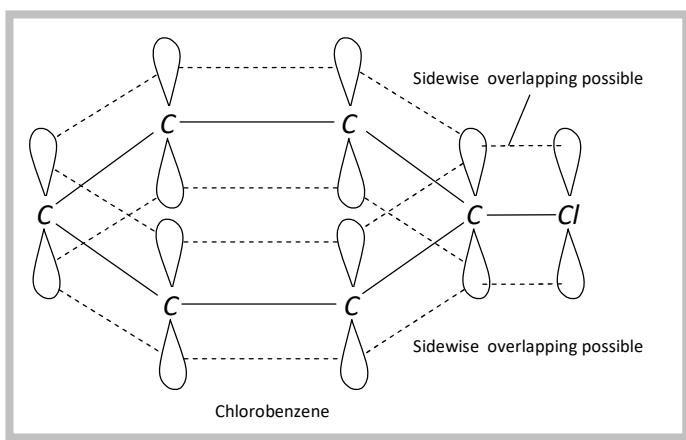
Benzylchloride



Benzylbromide

;

(2) **Structure**

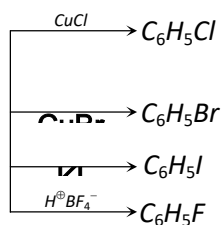
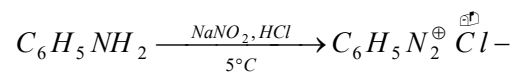


(3) **Methods of preparation**

(i) **By direct halogenation of benzene ring**



(ii) **From diazonium salts**



(iii) **Hunsdieckerreaction:** $C_6H_5COO^- Ag^+ \xrightarrow{Br_2} C_6H_5Br + CO_2 + AgBr$

(iv) **From Aryl thallium compound:** $ArH + Tl(OOCCF_3)_3 \xrightarrow{-CF_3CO_2H} ArTl(OOCCF_3)_2 \xrightarrow[\Delta]{KI} ArI$
Aryl thallium trifluoro acetate

(4) Physical properties

(i) **Physical state:** Haloarenes are colourless liquid or crystalline solid.

(ii) **Solubility:** They are insoluble in water, but dissolve readily in organic solvents. Insolubility is due to inability to break hydrogen bonding in water. Para isomer is less soluble than ortho isomer.

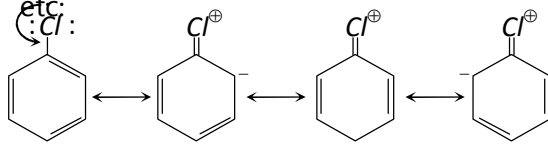
(iii) Halo-arenes are heavier than water.

(iv) B.P. of halo-arenes follow the tend. Iodo arene > Bromo arene > Chloro arene.

(5) Chemical properties

Inert nature of chlorobenzene: Aryl halides are unreactive as compared to alkyl halides as the halogen atom in these compounds is firmly attached and cannot be replaced by nucleophiles.

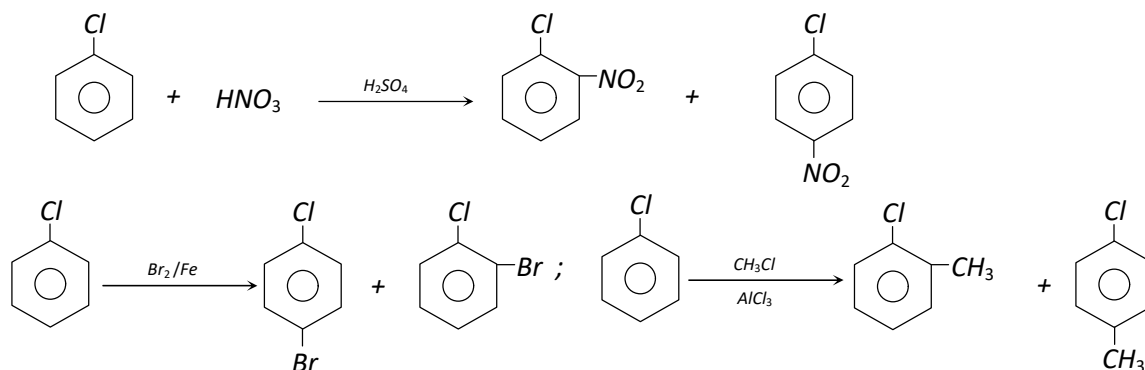
Such as OH^- , NH_2^- , CN^- etc:

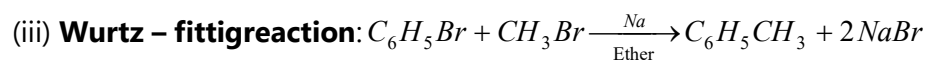


Thus delocalization of electrons by resonance in aryl halides, brings extra stability and double bond character between $C - X$ bonds. This makes the bond stronger and shorter than pure single bond. However under vigorous conditions the following nucleophilic substitution reactions are observed,

(i) **Nucleophilic displacement:** $C_6H_5Cl \xrightarrow[500 \text{ atm.}]{NaOH, 350^\circ C} C_6H_5OH$

(ii) Electrophilic aromatic substitution





(v) **Ullmann reaction**

