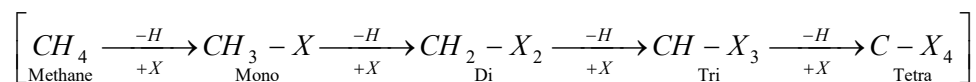


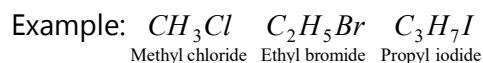
## General characteristics of Halo-Alkanes.

(1) Organic compounds in which halogen atom ( $F, Cl, Br, I$ ) is directly linked with saturated carbon atom are known as halo-alkanes. General formula is  $C_nH_{2n+2-m}X_m$  ( $X = F, Cl, Br, I$ ) and  $m =$  no. of halogen atom;  $n =$  no. of carbon atoms.

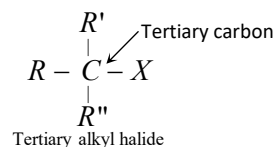
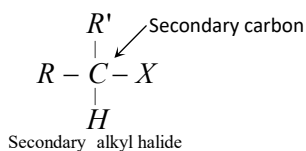
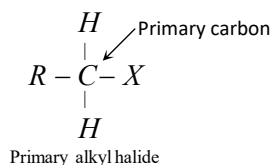
(2) Depending on the number of halogen atoms present in the halogen derivative, these are termed as mono-, di-, tri-, tetra-, and polyhalogen derivatives.



(i) Monohalogen derivatives are termed as alkyl halides.



Monohalogen derivatives or alkyl halides are classified as primary ( $1^\circ$ ), secondary ( $2^\circ$ ) or tertiary ( $3^\circ$ ) depending upon whether the halogen atom is attached to primary, secondary or tertiary carbon atoms.

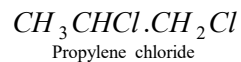
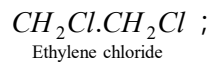


(ii) The dihalogen derivatives are mainly of three types

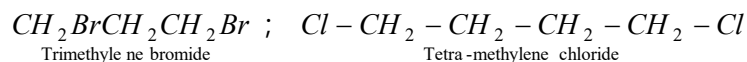
(a) Gem-dihalides: In these derivatives both the halogen atoms are attached to the same carbon atom. These are also called alkylidene halides.



(b) Vic-dihalides: In these derivatives, the halogen atoms are attached to adjacent (Vicinal) carbon atoms. These are also termed as alkylene halides.



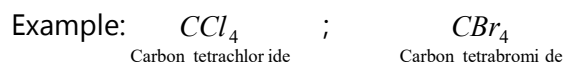
(c)  $\alpha$ - $\omega$  halides (Terminal dihalides): In these derivatives, the halogen atoms are attached to terminal carbon atoms. These are also called polymethylene halides.



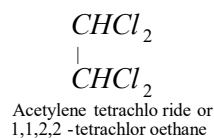
(iii) The tri-halogen derivatives are termed as halo-forms



(iv) In tetra-halogen derivatives all the four halogen atoms are attached to the same carbon atom in derivatives of methane.



In other derivatives, the four halogen atoms are attached to different carbon atoms, e.g.,



(3) The common and IUPAC names of some halogen derivatives are listed here.

Formula of halogen derivatives	Common name	IUPAC name
$CH_3Cl$	Methyl chloride	Chloromethane
$CH_3CH_2Br$	Ethyl bromide	Bromoethane
$CH_3CHBrCH_3$	Isopropyl bromide	2-Bromopropane



(5) Halo-alkanes contain  $sp^3$  hybridised carbon atom bonded to halogen atom or atoms.