

SECTION 6.1.3

sp^2 C-X Bond: Vinylic and Aryl Halides

Classification and identification of halogen compounds with sp^2 hybridized carbons.

Defining the sp^2 C-X Bond

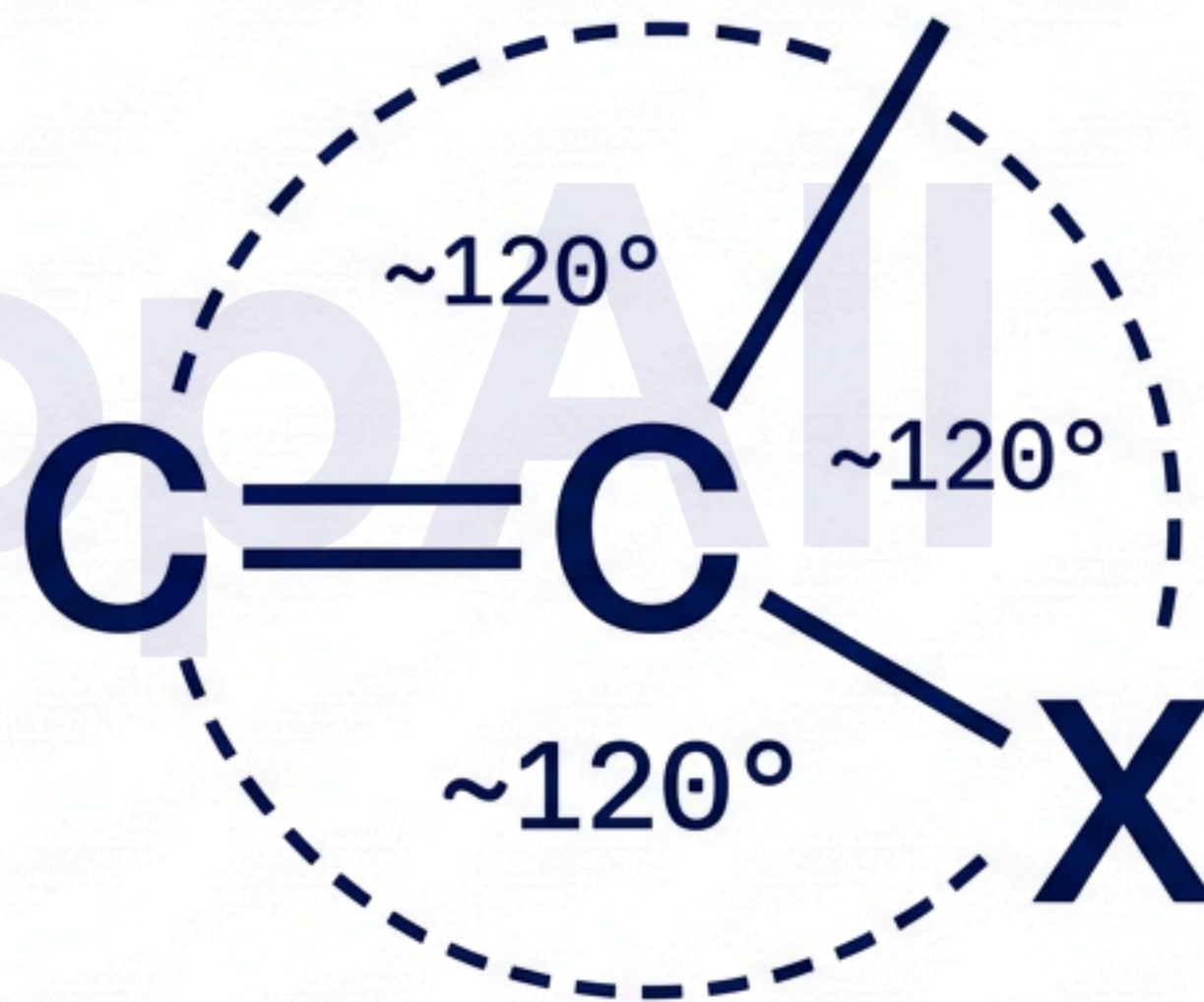
FOUNDATION



The sp^2 **Carbon:** A carbon atom participating in exactly one double bond and two single bonds.

The Bond: The halogen atom ($X = \text{F}, \text{Cl}, \text{Br}, \text{I}$) is directly attached to this sp^2 -hybridized carbon.

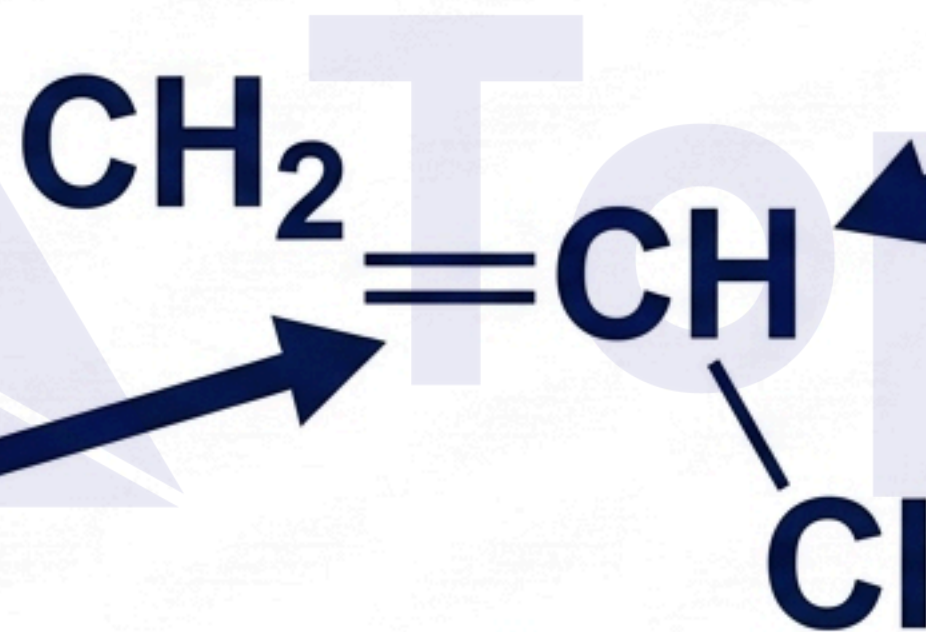
Geometry: The atoms bonded to the sp^2 carbon lie in a single plane, creating a flat, trigonal geometry.



Vinylic Halides



Compounds where the halogen is bonded to an sp^2 -hybridized carbon of an aliphatic carbon-carbon double bond.



Aliphatic carbon-carbon double bond ($\text{C}=\text{C}$).

sp^2 -hybridized carbon. Crucially, this carbon is an open chain or non-aromatic ring, NOT part of an aromatic system.

Halogen atom (X) is directly bonded here.

Example: $\text{CH}_2=\text{CHCl}$ (Vinyl chloride / Chloroethene)



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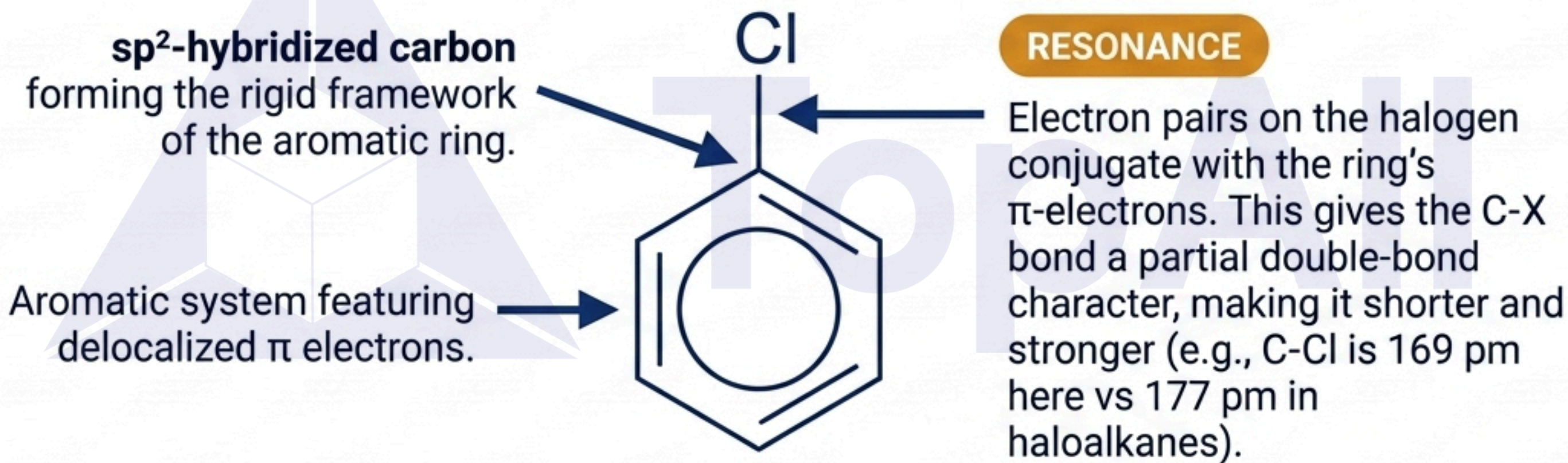
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Aryl Halides

Compounds where the halogen is directly bonded to the sp^2 -hybridized carbon of an aromatic ring.



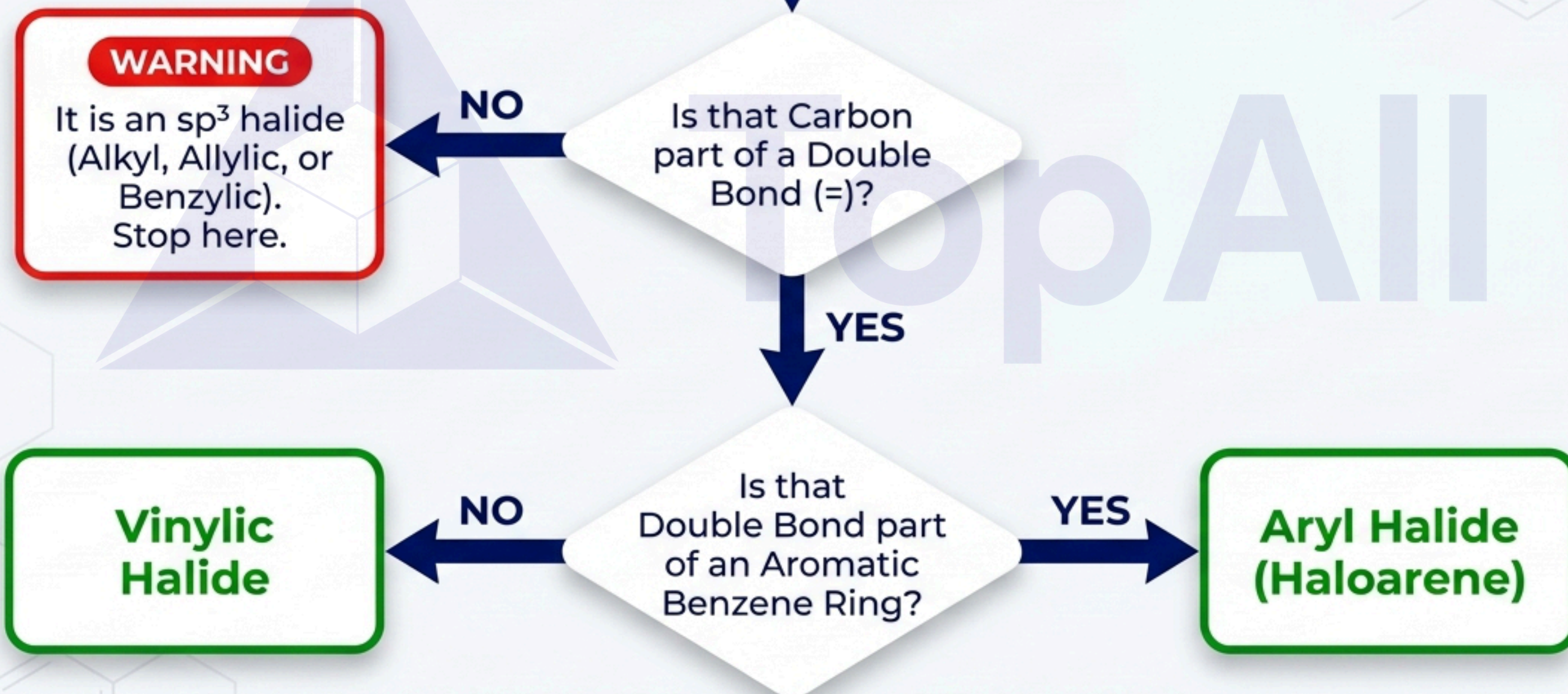
Example: C6H5Cl (Chlorobenzene)

Comparing sp^2 Halides



Feature	 Vinylic Halides	 Aryl Halides
Carbon Attachment	Bonded to an sp^2 carbon of a linear or branched C=C double bond.	Bonded directly to an sp^2 carbon of an aromatic ring.
Structure Type	Aliphatic (open chain or non-aromatic ring).	Aromatic.
Classic Example	$\text{CH}_2=\text{CHCl}$ (Vinyl chloride)	$\text{C}_6\text{H}_5\text{Cl}$ (Chlorobenzene)

Exam Shortcut: How to Identify sp^2 C-X Bonds





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