

Nomenclature of Haloalkanes and Haloarenes

Mastering IUPAC vs. Common Naming
Systems for NEET/JEE

Core Naming Vocabulary

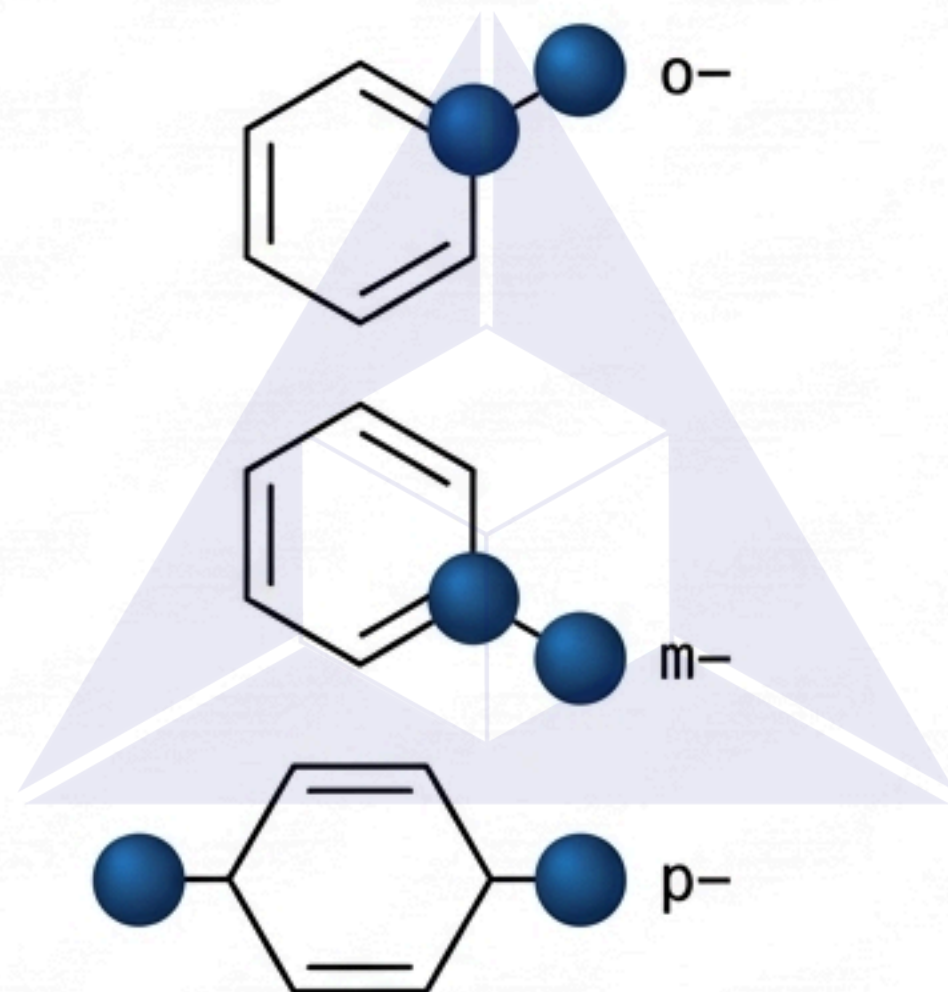
Halosubstituted Hydrocarbons — The foundational IUPAC method: naming the parent alkane/arene and treating the halogen as a substituent (e.g., "Chloromethane").

Alkylidene / Alkylene Dihalides — Common naming conventions used specifically for molecules containing exactly two halogen atoms.

Geminal Halides (gem-dihalides) — A specific structural classification where multiple halogens interact with the parent chain in a highly localized way.

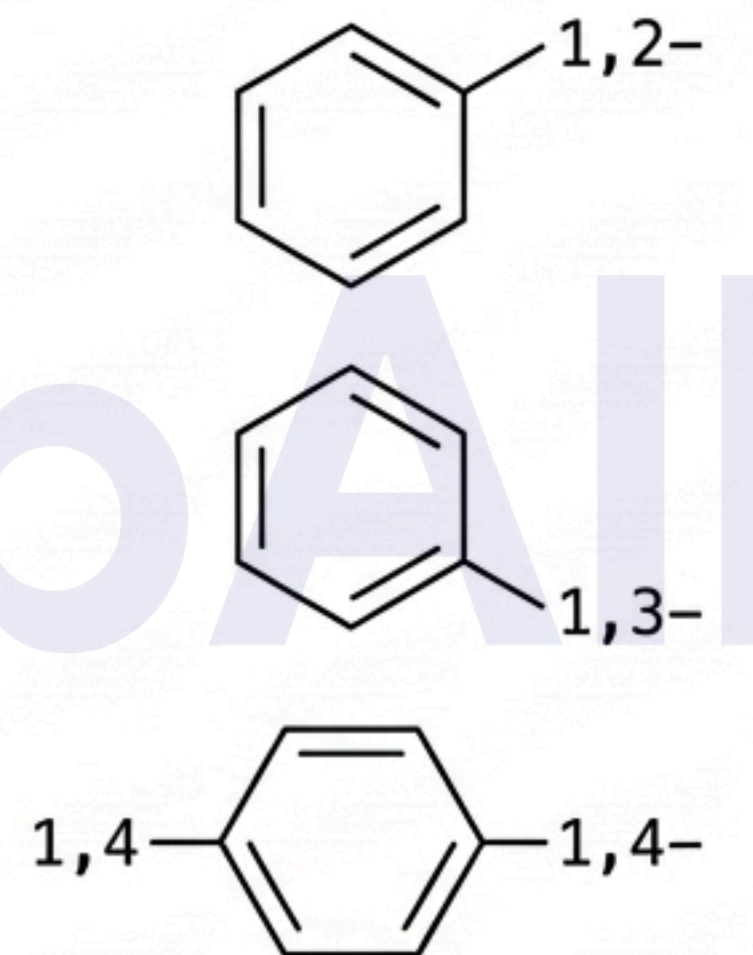
Dihalobenzenes: Relabeling the Ring

Relative Positional Prefixes



o- (ortho) = adjacent carbons;
m- (meta) = separated by one carbon;
p- (para) = opposite ends.

Absolute Numerical Locants



1,2- (matches ortho); 1,3- (matches meta); 1,4- (matches para).



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Key Highlights

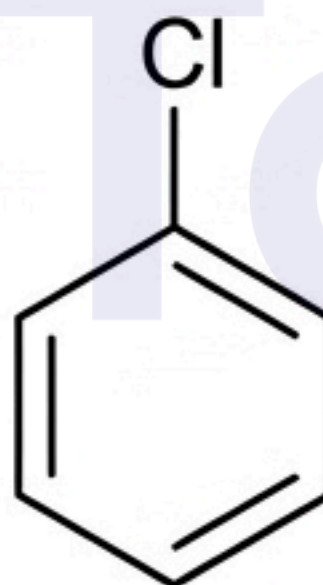
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The Monohalobenzene Exception

Common Name == IUPAC Name

For mono-halogen substituted derivatives of benzene, the naming rules completely converge.

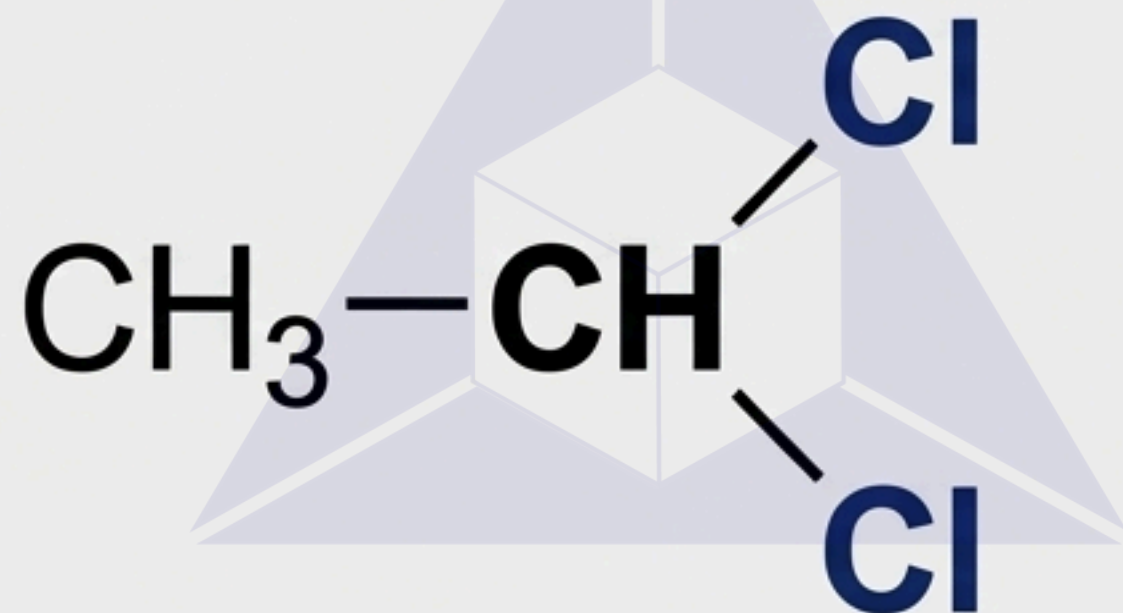


Chlorobenzene

(Accepted identically in both systems)

Structural Spotlight: The “Gem-” Prefix

Geminal Halides (*gem*-dihalides)



This classification applies **exclusively** when **two halogen atoms lock onto one single carbon atom**.

Common Name: Alkylidene halide (e.g., Ethylidene chloride")

IUPAC Name: Locants repeat the same number (e.g., 1,1-Dichloroethane")

High-Yield Concept Alert

Watch for this: The 'Nearby' Illusion

It is easy to assume that “**geminal**” means halogens that are clustered together or on adjacent carbons.

- The Reality: To use the “**gem-**” prefix or the **alkylidene** common name, both halogens must be attached to the exact same carbon atom.

*Note: If they are on adjacent carbons, they are **vicinal** (alkylene dihalides), not geminal.*

Summary

- **A Tale of Two Systems:** IUPAC names treat halogens as substituents on a parent chain (using numerals like '1,2-'), while common names often use alkyl group title or relative prefixes (like 'o-, m-, p-').
- **The Geminal Rule:** The term 'gem-dihalide' (and its common name equivalent, alkylidene halide) is strictly reserved for molecules where two halogens are bonded to the exact same carbon atom.



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