

UNIT 6 • HALOALKANES AND HALOARENES

Electrophilic Substitution Reactions of Haloarenes

Decoding the paradox of deactivating,
yet ortho/para-directing halogens.

The Forces at Play

Inductive Effect (-I):

Withdraws electron density via the sigma bond (driven by electronegativity).

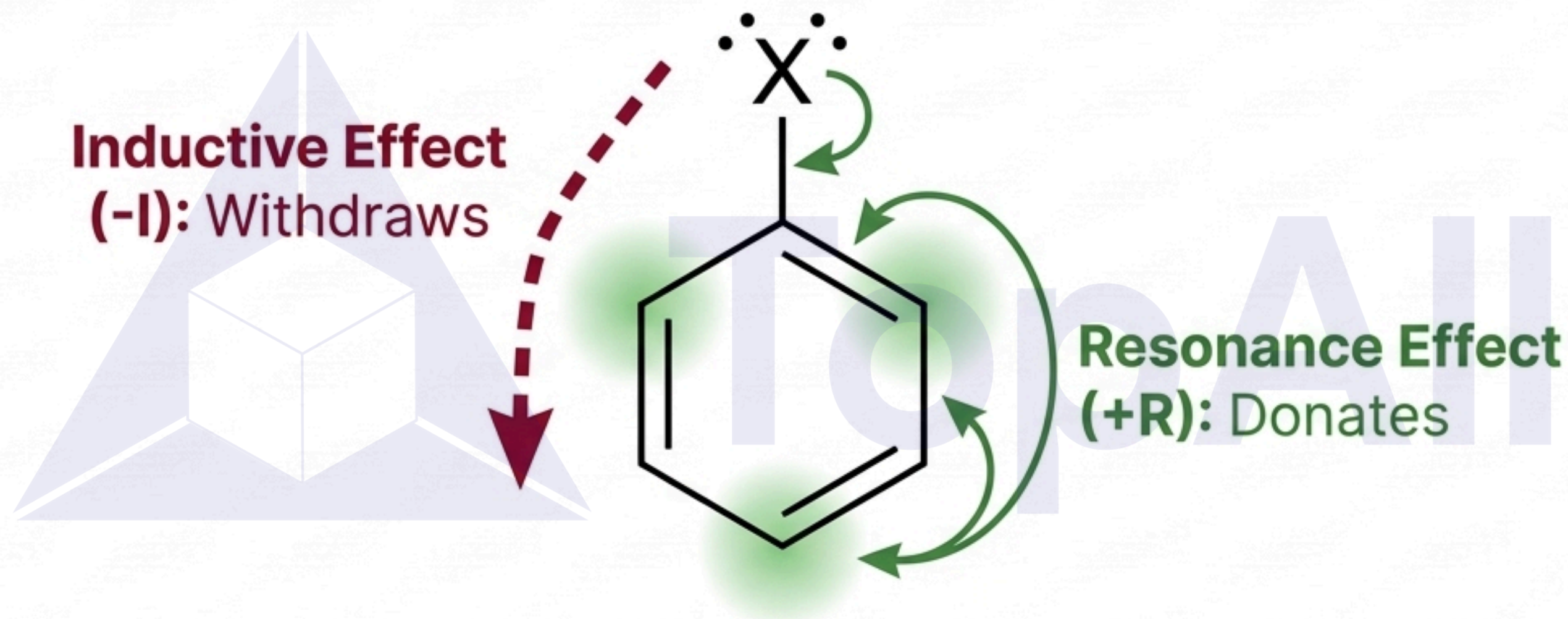
Resonance Effect (+R):

Donates electron density via pi bonds (driven by lone pairs).

Deactivating: Makes the aromatic ring less reactive than pure benzene.

Ortho/Para-directing: Guides incoming electrophiles to specific adjacent or opposite carbons on the ring.

The Halobenzene Paradox: Competing Effects



The -I effect affects the entire ring. The +R effect specifically enriches the ortho and para positions.



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



Four Key Reactions

Halogenation



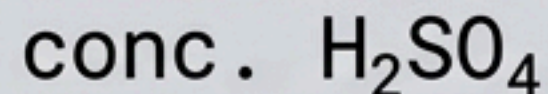
Yields Ortho (minor) + Para (major) products.

Nitration



Yields Ortho (minor) + Para (major) products.

Sulphonation



Yields Ortho (minor) + Para (major) products.

Friedel-Crafts



Yields Ortho (minor) + Para (major) products.

Two Effects, Two Different Jobs

SPEED (Reactivity)



Controlled by stronger Inductive (-I) Effect.

STEERING (Orientation)



Controlled by Resonance (+R) Effect.

Inductive controls the rate. Resonance controls the location.

Watch for this MCQ Trap

The Trap:

Assuming that because halogens are deactivating, they must be meta-directing.

The Truth:

Halogens are the exception! They are the ONLY common substituents that are deactivating overall, but still direct ortho/para. Treat reactivity ($-I$) and orientation ($+R$) as completely separate variables.

✓ Key Takeaways

1. Electrophilic substitution in haloarenes occurs at the ortho and para positions due to the halogen's resonance (+R) effect.
2. These reactions occur more slowly than in pure benzene (requiring drastic conditions) because the halogen's inductive (-I) effect deactivates the ring.



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis