

CAIE Chemistry A-level

Topic 31 - Halogen Compounds

(A level only)

Flashcards

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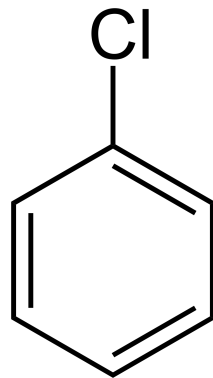
What is a halogenoarene?



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An aromatic hydrocarbon whereby one or more hydrogen atoms bonded to the aromatic ring are replaced by a halogen atom.

E.g. Chlorobenzene:



Describe the bromination of benzene



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Benzene only reacts with bromine if a halogen carrier, FeBr_3 or AlBr_3 , is present.

This forms bromobenzene and hydrogen bromide:



What is the role of the halogen carrier in the bromination of benzene?



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The halogen carrier generates the electrophile:



FeBr_4^- then reacts with the proton expelled from the intermediate to regenerate the halogen carrier:

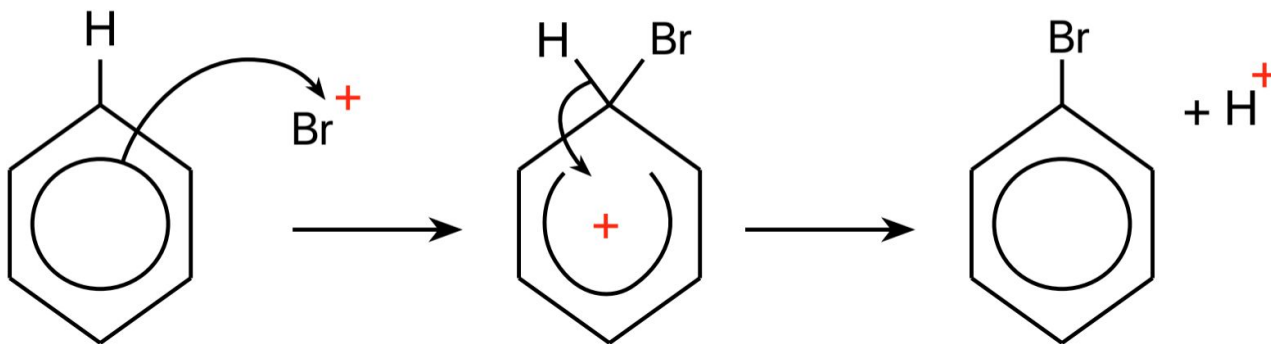


Draw and name the mechanism for the bromination of benzene



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Electrophilic substitution



The Br^+ ion accepts a pair of electrons from the ring of delocalisation. The intermediate is so unstable that it breaks down, releasing a hydrogen ion. This forms the product, bromobenzene.



Compare the reactivity of chlorobenzene to chloroalkanes



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- The C-Cl bond in chlorobenzene is stronger than expected. One of the lone pairs on the chlorine atom interacts with the delocalised ring electrons, strengthening the bond.
- This means the bond is harder to break and hence requires more energy to overcome.

Therefore, chlorobenzene is less reactive than chloroalkanes.

