

Reaction

REACTANTS: Halogenoalkane and Sodium (*or Potassium*) Hydroxide, *NaOH* **CONDITIONS:** Heat under reflux, Ethanolic conditions (in ethanol, no water present) **PRODUCT(S):** Alkene and Halide Ion (and water) **REACTION TYPE:** Elimination



Mechanism

Hydroxide ion (:OH:) acts as a base due to the lone pair of electrons on the oxygen atom allowing it to remove a H⁺ ion from the carbon atom next to the carbon-halogen bond. The carbon-halogen bond breaks, forming a double bond between carbon atoms. The halogen group is **eliminated** from the halogenoalkane.



Notes:

- Reaction must be carried out in **ethanolic conditions (in ethanol, no water present), otherwise an alcohol is likely to form** rather than the alkene.
- Unlike in nucleophilic substitution reactions of halogenoalkanes, the **hydroxide ion is acting as a base**.
- The strength of the carbon-halogen bond (bond enthalpy) determines the speed of the reaction. The stronger the bond, the slower the nucleophilic substitution reaction. *C-F bond is strongest, giving slowest reaction; C-I bond is weakest, giving fastest reaction.*

