



Organic Chemistry Revision Sheets

Alkenes | Electrophilic Addition (with Br₂)

Reaction

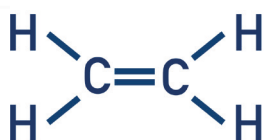
REACTANTS: Alkene and Bromine (Br₂)

CONDITIONS: Non-polar organic solvent (or pure liquid bromine)

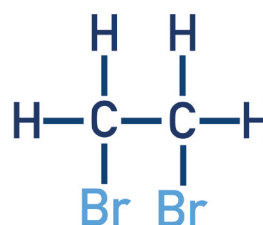
PRODUCT: Dibromoalkane

REACTION TYPE: Electrophilic Addition

REACTION:
(example of
ethene)



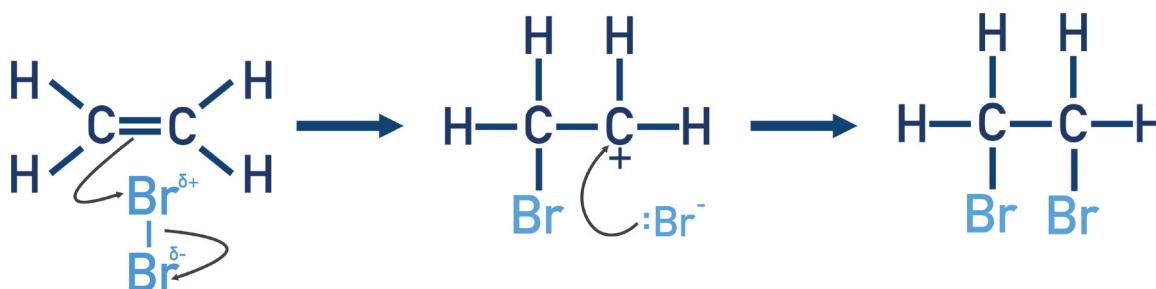
Alkene



Dibromoalkane

Mechanism

Br₂ acts as an electrophile so the bromine-bromine bond is polarised by the carbon-carbon double bond so the bromine atom with a partial positive charge accepts an electron pair from the carbon-carbon double bond. During the reaction the carbon-carbon double bond breaks, forming a positively charged carbon (carbocation). The negatively charged bromide ion bonds with the carbocation. Br₂ is 'added' across the double carbon-carbon bond. **Addition reaction.**



Notes:

- The high electron density in the carbon-carbon double bond (pi-bond) polarises the bromine molecule to create the Br^{δ+} electrophile.
- This reaction is often used to identify an alkene as the colour of bromine water changes from orange / brown to colourless when mixed with an alkene (due to the above reaction).

