Mechanisms of Alkenes

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19:00

Electrophilic addition

- Double bond has many electrons so its easily attracted by electrophiles- electron deficient
- Double bond is nucleophilic- electron rich

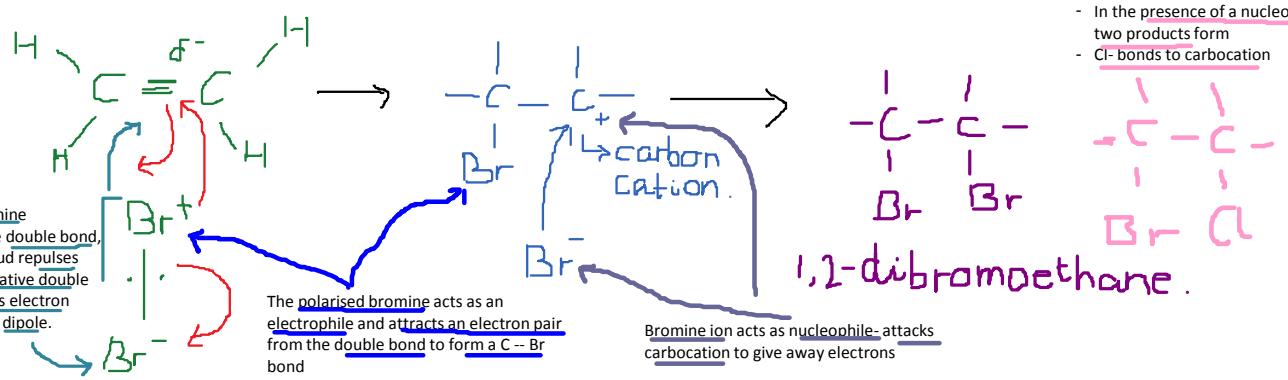
- Chlorine and iodine do this too.

cyclohexene

- Shake an alkene with orange bromine water- solution decolourises
- Bromine is added across double bond to form dibromoalkane

Why are potassium manganate and bromine water decolourised when they react with alkenes?

- The structure that gives them their colour eg. Br -- Br bond makes bromine water brown is destroyed

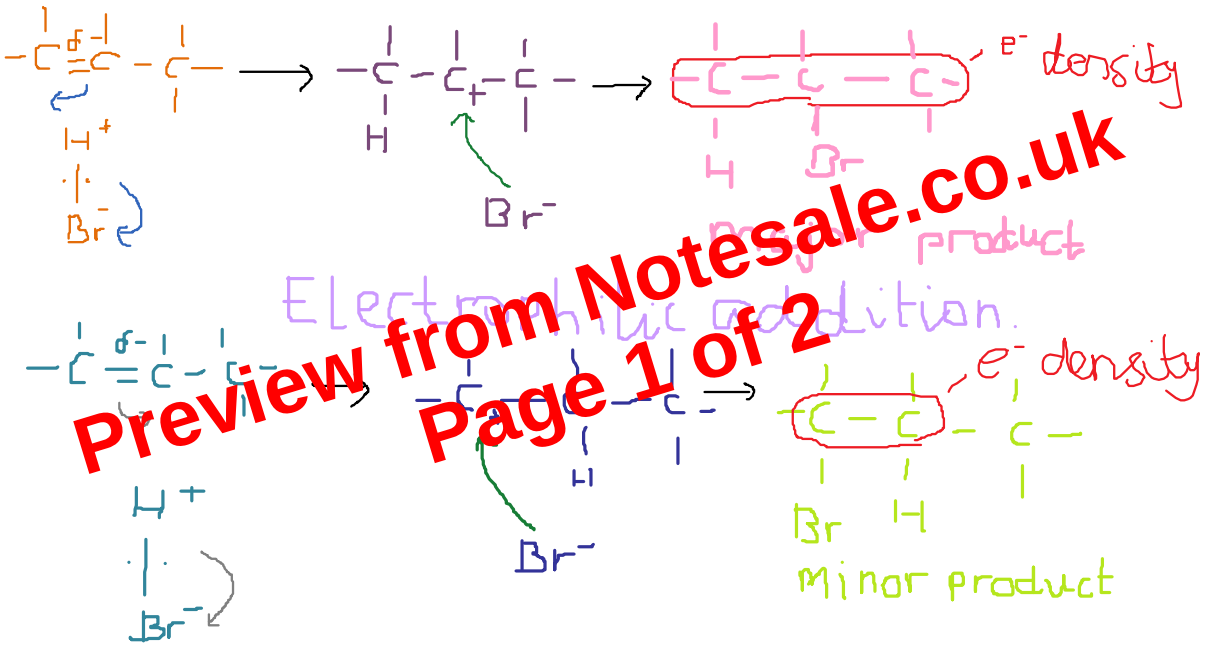


When the bromine approaches the double bond, its electron cloud repulses the slightly negative double bond shifting its electron cloud making a dipole.

The polarised bromine acts as an electrophile and attracts an electron pair from the double bond to form a C -- Br bond

Bromine ion acts as nucleophile- attacks carbocation to give away electrons

- In the presence of a nucleophile, eg. Cl- two products form
- Cl- bonds to carbocation



- HBr adds to an unsymmetrical alkene--> two possible products
- Amount of product produced- depends on how stable the carbocation is
- More stable carbocation is more likely to form- the secondary product is more stable because it has electron densities on either side of the carbon that the Bromine is attached to whereas the primary product has the electron density from one carbon that is attached to it.
- In addition the H in HBr is more likely to attach to the carbon with the most hydrogen's that already surround it- Markovnikovs rule

Ethene will react with hydrogen gas to produce ethane

- Nickel catalyst
- 200°C

H2C=CH2 + H2 (g) --> CH3CH3

- By removing the double bond, the melting point increases allowing margarine to be made by hydrogenating unsaturated vegetable oils
- This allows it to remain solid at room temp.