Alkenes can be obtained from haloalkanes (alkyl halides). These haloalkanes are usually bromo and iodo and less commonly, chloro derivatives. Haloalkanes on heating with alcoholic \((\text{KOH})\) loses one molecule of hydrogen halide to give alkene.

\[
\text{haloalkane} + \text{KOH (alcoholic)} \xrightarrow{\text{heat}} \text{alkene} + \text{HX} + \text{H}_2\text{O}
\]

Example \((\text{PageIndex1})\)

Bromoethane gives ethene,

\[
\text{Br} \quad \text{H} \\
\text{H} \quad \text{C} \quad \text{C} \quad \text{H} + \text{KOH (alcoholic)} \xrightarrow{\text{heat}} \text{H}_2\text{C} \equiv \text{CH}_2 + \text{KBr} + \text{H}_2\text{O}
\]

Example \((\text{PageIndex2})\)

If two alkenes may be formed due to dehydrohalogenation of a haloalkane, the one which is most substituted is the main product.

Example \((\text{PageIndex3})\)

For example, dehydrohalogenation of 2-bromobutane gives,

\[
\text{H}_2\text{C} - \text{CH}_2 - \text{CH}_2 - \text{Br} + \text{KOH (alcoholic)} \xrightarrow{\text{heat}} \text{H}_2\text{C} - \text{CH} = \text{CH}_2 + \text{KBr} + \text{H}_2\text{O}
\]

The order of reactivity of haloalkanes in dehydrohalogenation is, Tertiary > Secondary > Primary. Note: Reactions in which a small molecule like \(\text{(H}_2\text{O})\) or \(\text{(HX)}\) is lost are known as elimination reactions.

**Alkenes from Vicinal Dihaloalkanes**

Vicinal dihaloalkanes are those dihalogen derivatives of alkanes in which two halogen atoms are on the adjacent carbon atoms. Alkenes can be obtained from vicinal dihaloalkanes by dehalogenation. When such a dihaloalkane is heated with zinc in methanol, an alkene is formed.
Example \( \PageIndex{4} \))

1,2-dibromoethane gives 1,2-dibromoethane ethene

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