

Alkanes

Source

- Crude oil
- Separated by fractional distillation

Reactions

- Complete combustion
- Incomplete combustion (CO, C, CO₂ and H₂O)

Substitution reaction

- Halogens substitute hydrogen from alkanes
- Happens only in presence of UV light

Alkenes

Source

- Prepared by cracking
- 500°C in presence of catalyst (Aluminum trioxide and silicone dioxide)
- 1000°C when no catalyst

Reactions

- Complete combustion
- Incomplete combustion (CO, C, CO₂ and H₂O)

Addition reaction

- Small molecule added to alkene to produce larger molecule with no bi-products
- Happens due to carbon to carbon double bond

Addition of Hydrogen

- Reagent: H₂
- Conditions: Nickel (Ni) and 170°C
- Product: Alkane
- Application: Used in margarine industry (obtain margarine from plant oil)

Addition of water/steam

- Reagent: Water
- Conditions: Phosphoric acid (H₃PO₄), 300°C and 60 atm
- Product: Alcohol
- Application: Used in industrial manufacture of ethanol

Addition of Halogens

- Reagent: Halogens (Cl₂, Br₂ and I₂)
- Conditions: none

Alkenes (cont)

- Application: Used as identification test for alkenes (Pass the compound through aqueous bromine. If compound is an alkene, bromine colour changes from brown to colourless)

