Alkanes

Source

• Crude oil

→ Seperated by fractional distillation

Reactions

• Complete combustion

• Incomplete combustion (CO, C, CO_2 and H_2O)

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, CO_2 and H_2O)

Addition reaction

• Small molecule added to alkene to produce larger molecule with no bi-products

• Happens due to carbon to carbon doubles bond

Addition of Hydrogen

→ Reagent: H_2

→ 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 (H_3PO_4), 300°C and 60 atm

→ Product: Alcohol

→ Application: Used in industrial manufacture of ethanol

Addition of Halogens

→ Reagent: Halogens (Cl_2, Br_2 and I_2)

→ 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)