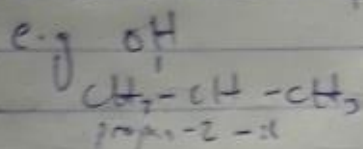
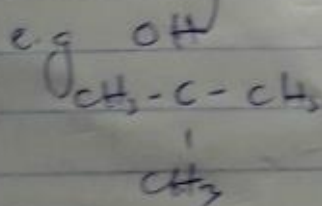


1) primary alcohols: In a primary alcohol the carbon which carries the  $-OH$  group is only attached to one alkyl group e.g.  $CH_3-CH_2-OH$   
ethanol

2) Secondary alcohols: The carbon with  $-OH$  group attached is joined directly to two alkyl groups which may be same and different



3) Tertiary alcohols: The carbon atom holding the  $-OH$  group is attached directly to three alkyl groups which may be any combination or different



2-methyl propan-2-ol

2) Alcohols are soluble in water due to hydroxyl group in the alcohol which is able to form hydrogen bond with water molecules. alcohols which possess smaller hydrocarbon chain are very soluble.

3) Extraction of starch: The crushed source of starch is steamed at  $145^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  under pressure to prepare starch solution known as mash. germination before hydrolysis, starch will first undergo germination at  $10^{\circ}\text{C}$  to  $15^{\circ}$  for few days. This germinated starch is called malt.

1 - Hydrolysis of starch: Starch is hydrolysed to maltose by an enzyme known as diastase.

$$2(\text{C}_{12}\text{H}_{20}\text{O}_{11}) \xrightarrow{n\text{H}_2\text{O}} n(\text{C}_6\text{H}_{12}\text{O}_6)$$

Starch maltose

Fermentation: finally yeast is added to the maltose yeast secretes  $\text{Zn}^{2+}$  enzymes.

1) maltase: Converts maltose into glucose.

2) Zymase: Converts glucose to ethanol

$$\text{C}_6\text{H}_{12}\text{O}_6 + \text{H}_2\text{O} \rightarrow 2\text{C}_2\text{H}_5\text{O}_2$$

3) step 1:  $2(C_6H_{12}O_5)_n + n H_2O \xrightarrow{\text{Lactase}} n(C_{12}H_{22}O_{11}) + H_2O$   
 step 2:  $C_{12}H_{22}O_{11} + H_2O \xrightarrow{\text{maltase}} 2(C_6H_{12}O_6)$   
 step 3:  $2(C_6H_{12}O_6) \xrightarrow{\text{Zymase}} 2C_2H_5OH + 2CO_2$

