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(1) CLASSIFICATION OF ALCOHOLS

a) It is based on the number of hydrogen atoms attached to the carbon atom with the hydroxyl group. If the number of hydrogen atoms attached to the carbon atom bearing the OH group is three or two, it is a PRIMARY ALCOHOL. If it is one hydrogen atom, it is a SECONDARY ATOM. ~~If the hydrogen atom is~~ If there is no hydrogen atom, it is a TERTIARY ATOM

E.g CH_3CH_2OH —— Primary alcohol (1^o)
ethanol.

b) Based on the number of hydroxyl group present.
Monohydric alcohol — One OH group
Dihydric " — Two OH groups
Trihydric " — Three OH groups
Polyhydric " — More than three OH groups.
E.g $OHCH_2CH_2OH$ — Dihydric alcohol
Ethane-1,2-diol.

(2) SOLUBILITY OF ALCOHOLS

a. IN WATER: Lower alcohols with up to three carbon atoms in their molecules are soluble in water. The water solubility decreases with increasing relative mass

b. IN ORGANIC SOLVENTS: All monohydric alcohols are soluble in organic solvents.

3. PRODUCTION OF ENZYMES.

STEP 1: Starch containing materials (e.g potatoes, cereals, rice) are converted into maltose by an enzyme diastase contained in the malt.

$2(C_6H_{10}O_5)_n + nH_2O \longrightarrow nC_{12}H_{22}O_{11}$

Carbohydrate 60°C/diastase Maltose

STEP 2: The maltose is broken down to glucose on addition of yeast which contains the enzyme maltase.

$C_{12}H_{22}O_{11} + H_2O \longrightarrow 2C_6H_{12}O_6$

maltose 15°C/maltase glucose

STEP 3: The glucose is converted into alcohol by an enzyme. Zymase which is also contained in the yeast added.

$C_6H_{12}O_6 \longrightarrow 2CH_3CH_2OH + 2CO_2$

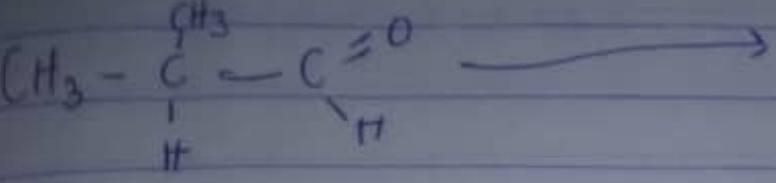
glucose. 15°C/zymase ethanol

4. $CH_3CH(CH_3)CH{=}O + CH_3(CH_2)_3MgCl \longrightarrow CH_3CH(CH_3)-C(H)(CH_2)_3CH_3-OMgCl$

dil acid H^+OH^-

$CH_3CH(CH_3)-C(H)(CH_2)_3CH_3-OH + Mg(OH)Cl$

2-methyl heptan-3-ol.

7.  → $CH_3CH(CH_3)CH_2OH$

2-methyl propanol.

8. Propan-1-ol — $CH_3CH_2CH_2OH$

Propan-2-ol → $CH_3CH(OH)CH_3$

$CH_3CH_2CH_2OH + H_2SO_4 \longrightarrow CH_3CH_2CH_2OH_2OSO_3H$

Propan-1-ol

$\downarrow -H_2O$

$CH_3CH_2CH_2^{+}OSO_3H$

$\downarrow$ dil acid hydrolysis.

$CH_3CH(CH_2)OSO_3H \longrightarrow CH_3CH=CH_2 + H_2SO_4$

Propene

$\downarrow$

$CH_3CH(OH)CH_3$

Propan-2-ol.