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MATRIC NO: 19/ENG02/067
COURSE CODE: CHM102

1. Primary Alcohols: This are those alcohols where the carbon atom of the hydroxyl group (OH) is attached to only one alkyl group. The complexity of the alkyl chain is unrelated to the classification of any alcohol considered as primary. The existence of only one linkage among -OH group and an alkyl group and things that qualifies alcohol as a primary.

Examples CH_3-CH_2-OH propan-1-ol $CH_3-CH_2-CH_2-OH$

Secondary alcohols: Secondary alcohols are those where the carbon atom of the hydroxyl group is attached to two alkyl groups on either side. The alkyl groups present may be either structurally identical or even different

Propan-2-ol $CH_3-\underset{OH}{\overset{CH_3}{CH}}-CH_3$

Butan-2-ol $CH_3-\overset{OH}{CH}-CH_2-CH_3$

2. $CH_3CH_2MgBr + CH_3CH_2CH_2CH_2-\underset{CH_2CH_2CH_3}{\overset{O}{C}} \rightarrow CH_3CH_2-\underset{CH_3CH_2CH_3}{\overset{CH_3CH_2CH_2CH_3}{C}}-O-MgO_7$

Dilute acid is then added to the hydrolysis of

$CH_3CH_2-\underset{CH_3CH_2CH_3}{\overset{CH_3CH_2CH_2CH_3}{C}}-O-MgBr = H_2O \rightarrow CH_3CH_2-\underset{CH_3CHCH_3}{\overset{CH_3CH_2CHCH_3}{C}}-OH + Mg(OH)Br$

3. Firstly, the starch containing materials e.g potatoes are warmed with malt to 60°C for a specific time. The starch is converted into maltose by the enzyme diastase contained in malt.

$$\underset{\text{Carbohydrate}}{2(C_6H_{10}O_5)n} + nH_2O \xrightarrow{\text{diastase}} \underset{\text{Maltose}}{nC_{12}H_{22}O_{11}}$$

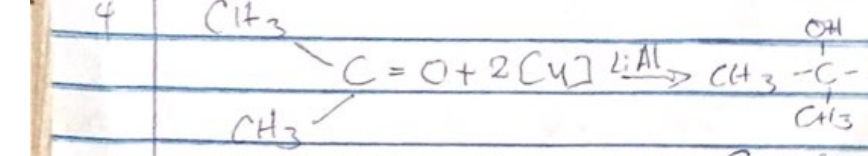
The maltose is taken down into glucose on addition of yeast which contains the enzymes maltase at 15°C

$$\underset{\text{Maltose}}{C_{12}H_{22}O_{11}} + H_2O \xrightarrow[15^\circ C]{\text{maltase}} \underset{\text{glucose}}{2C_6H_{12}O_6}$$

The glucose at constant 15°C is then converted into alcohol by the enzyme Zymase contained also in yeast

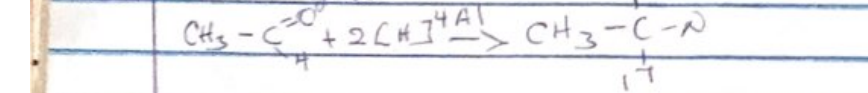
$$\underset{\text{Glucose}}{C_6H_{12}O_6} \xrightarrow[\text{Zymase}]{15^\circ C} \underset{\text{ethanol}}{2CH_3CH_2OH} + 2CO_2$$

Reduction of Alkanone

4 

Secondary alcohol

Reduction of alkanal



Primary alcohol.