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COURSE: CHM 102

DEPARTMENT: MBBS

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ANSWER TO ASSIGNMENT ^{EAT} II

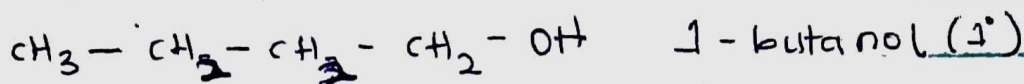
~~A Based On The Position of the Hydroxyl group Attached to a Carbon Atom~~

~~Primary alcohols ~~is~~ are compounds that where the~~

Based On which Carbon Atom is Bonded to the Hydroxyl Group

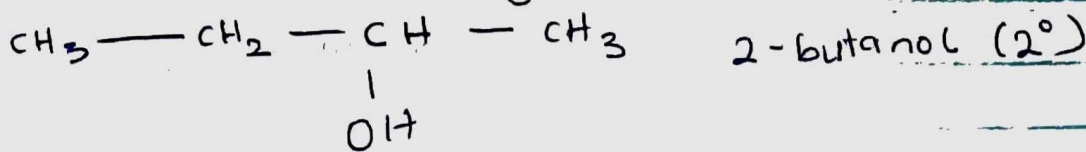
A primary alcohol (e.g 1-butanol) has the hydroxyl group on a ~~second~~ primary (1°) carbon atom which is bonded to only one other carbon atom.

Example of Primary Alcohol:



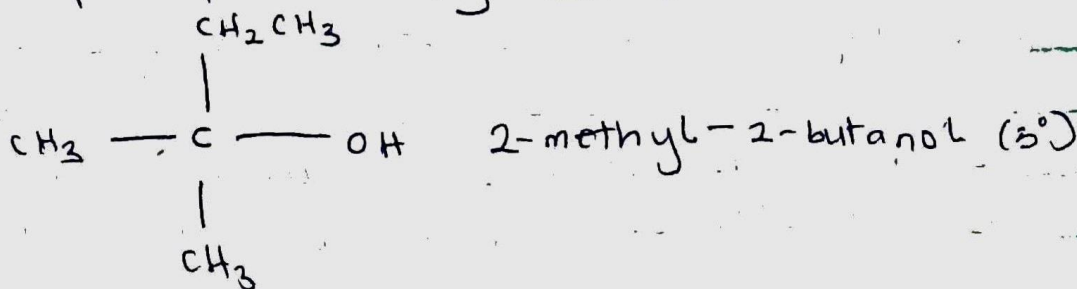
A secondary alcohol has the hydroxyl group on a secondary carbon atom which is bonded to two other carbon atoms.

Example of a Secondary Alcohol:



A tertiary alcohol has the hydroxyl group on a tertiary (3°) carbon atom, which is bonded to three other carbons.

Example of a Tertiary Alcohol:



B. ~~Based on Number of Hydroxyl Groups~~
~~mono~~ A monohydric alcohol is an organic compound with ~~one hydroxyl group~~.

2. Solubility of Alcohols

A. In Water:

Alcohols are soluble in water. This is due to the hydroxyl group in the alcohol which is able to form hydrogen bonds with water molecules. Alcohols with a smaller hydrocarbon chain are very soluble. As the length of the hydrocarbon chain increases, the solubility in water decreases. With four carbon in the hydrocarbon chain and higher, the decrease in solubility becomes visible as the mixture forms two layers of immiscible layers of liquid. The reason why the solubility decreases as the length of hydrocarbon increases is because it requires more energy to overcome the hydrogen bonds between the alcohol molecules as the molecules are more tightly packed together as the size and mass increases.

B. In Organic solvents:

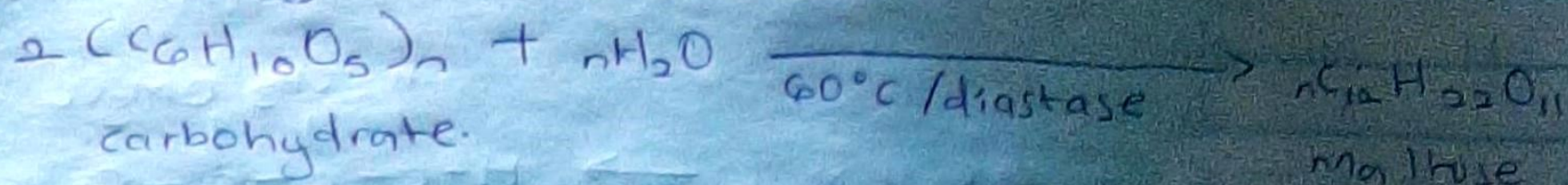
Higher alcohols are fairly soluble in organic solvents. Hexane is nonpolar, and nonpolar solutes are soluble in nonpolar solvents. Alcohols having long hydrocarbon chain are miscible with hexane as they can make firm attachment.

3. Industrial Manufacture of Ethanol

Carbohydrates such as starch are major groups of natural compounds that can be made to yield ethanol by the biological process of fermentation.

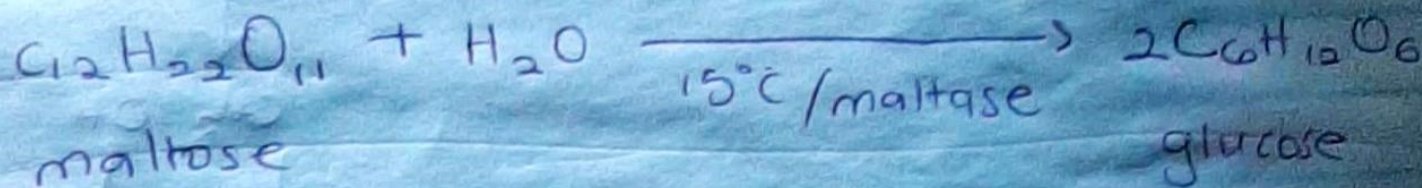
The biological catalysts, enzymes, found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing materials include molasses, potatoes, cereals, rice and on warming with malt at 60°C .

for a specific period of time are converted into maltose by the enzyme — diastase — contained in the malt



STEP II

The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of $15^\circ C$



STEP III

The glucose at constant temperature of $15^\circ C$ is then converted into alcohol by the enzyme — zymase — contained in yeast.

