

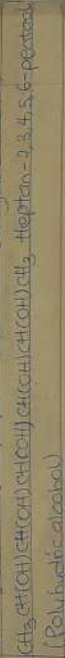


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Medicine and Surgery
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Chem 102 Assignment

1. Classifications of Alcohols

a. This is based on the number of hydrogen atoms attached to the carbon atoms containing the hydroxyl group. If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two it is called a primary alcohol (1°). If it is one hydrogen atom, it is called secondary alcohol (2°) and if no hydrogen atom is attached, it is called a tertiary alcohol (3°). Example: $\text{C}_2\text{H}_5\text{OH}$ Methanol (1°), $\text{C}_2\text{H}_5\text{CH}(\text{OH})\text{C}_2\text{H}_5$ Propan-2-ol (2°) and $(\text{C}_2\text{H}_5)_3\text{C}-\text{OH}$ 2-Methylpropan-2-ol (3°).

b. This is based on the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present in the alcohol structure. Dihydric alcohols are also called glycols have two hydroxyl groups present in the alcohol structure while trihydric alcohols or triols have three hydroxyl groups present in the structure of the alcohol. Polyhydric alcohols or polyols have more than three hydroxyl groups. Examples:



2. Solubility of Alcohols in Water

Lower alcohols with up to three carbon atoms in their molecules are soluble in water because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decreases with increasing relative molecular mass.

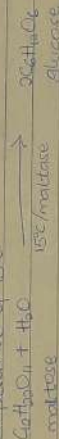
Solubility of Alcohols in Organic Solvents
 All monohydric alcohols are soluble in organic solvents. The solubility of dihydric alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bonds with water molecules.

3. Industrial Manufacture of Ethanol

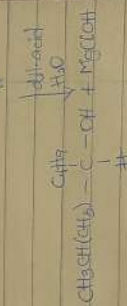
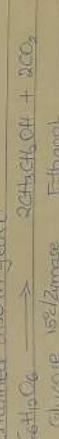
i) The starch containing materials include molasses, potatoes, cereals, etc and on warming with water to 65°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



ii) The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 35°C



iii) The glucose at constant temperature of 35°C is then converted into alcohol by the enzyme Zymase contained also in yeast.



- 5. No answer
- 6. No answer



2-methylpropenal 2-methylpropan-1-ol

