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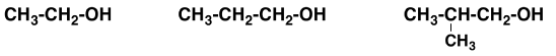
MATRIC NO:19/MHS08/001
DEPARTMENT:PUBLIC HEALTH
COURSE: CHM 102

Assignment

1.Classification of alcohol with an example

PRIMARY ALCOHOLS

In a primary (1°) alcohol, the carbon atom that carries the -OH group is only attached to one alkyl group. Some examples of primary alcohols are shown below:

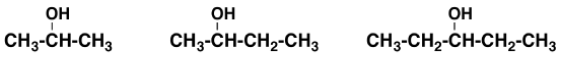


ethanol propan-1-ol 2-methylpropan-1-ol

Notice that the complexity of the attached alkyl group is irrelevant. In each case there is only one linkage to an alkyl group from the CH2 group holding the -OH group. There is an exception to this. Methanol, CH3OH, is counted as a primary alcohol even though there are no alkyl groups attached to the the -OH carbon atom.

SECONDARY ALCOHOLS

In a secondary (2°) alcohol, the carbon atom with the -OH group attached is joined directly to two alkyl groups, which may be the same or different. Examples include the following:



propan-2-ol butan-2-ol pent-3-ol

TERTIARY ALCOHOLS

In a tertiary (3°) alcohol, the carbon atom holding the -OH group is attached directly to three alkyl groups, which may be any combination of the same or different groups. Examples of tertiary alcohols are given below:

2-methylpropan-2-ol 2-methylbutan-2-ol

2. SOLUBILITY OF ALCOHOLS IN WATER

Small alcohols are completely soluble in water; mixing the two in any proportion generates a single solution. However, solubility decreases as the length of the hydrocarbon chain in the alcohol increases.

SOLUBILITY OF ALCOHOLS IN ORGANIC SOLVENT

> Alcohols contain two groups of different polsrities. The alkyl group is a chain of one or more carbon atoms and some hydrogen atoms--this is a non-polsr group of atoms. The other group is an -OH, which is the polar end of the molecules.
>
> The non-polsr alkyl group enables alcohols to interact with non-polar organic molecules. The polar group interacts with polar water molecules, and can also hydrogen bond with water.
>
> As the size of the alkyl group gets larger, alcohols become less soluble in water. Alcohols with 2 (ethanol) or 3 (n-propanol and iso-ptopanol) carbon atoms are miscible with water and are great solvents for non-polar organic compounds.

3.ii)

4&7)