Baridoma Moses Barinem
191/ENG05/018
Mechatronics Engineering
CHEM 102

1a) Primary Alcohols - In a primary alcohol, the carbon atom carries the -OH group is only attached to one alkyl group. Some examples of primary alcohols are

CH_3-CH_2-CH — Ethanol

$CH_3-CH_2-CH_2-OH$ — Propan-1-ol

b) Secondary Alcohols - In a secondary alcohol, the carbon atom carries the two alkyl groups, which may be different. Some examples of secondary alcohols include

$CH_3-CH(OH)-CH_3$ — Propan-2-ol

$CH_3-CH(OH)-CH_2-CH_3$ — Butan-2-ol

c) Tertiary Alcohols - In a tertiary alcohol, the carbon atom holding the OH group is directly attached to three alkyl groups. Some examples of tertiary alcohols include

$CH_3-C(OH)(CH_3)-CH_3$ — 2-Methyl Propan-2-ol

$CH_3-CH_2-C(OH)(CH_3)-CH_3$ — 2-methylbutan-2-ol

3 Ethanol is manufactured by reacting ethene with steam. The catalyst used is solid silicon dioxide coated with phosphoric (V) acid. This reaction is reversible

$$CH_2=CH_{2(g)} + H_2O_{(g)} \xrightleftharpoons{H_3PO_4} CH_3CH_2OH_{(g)}$$

2) As the size of the alkyl group gets larger, alcohols become less soluble in water. Alcohols with 2 (ethanol) or 3 (n-propanol, also iso-propanol) carbon atoms are miscible in water and are great solvents.

8) $CH_3-CH_2-CH_2-OH \xrightarrow[170°C]{Conc\ H_2SO_4} CH_3-CH=CH_2 \xrightarrow{HBr} CH_3-\underset{\underset{Br}{|}}{CH}-CH_3$

(-H_2O) Prop-1-ene (2-Bromopropane)

↓ Propan-1-ol

↓

$CH_3-\underset{\underset{OH}{|}}{CH}-CH_3$

(Propan-2-ol)

84) $CH_3CH(CH_3)H\overset{\delta+}{C}=\overset{\delta-}{O} + CH_3CH_2CH_2CH_2\overset{\delta-}{Mg}\overset{\delta+}{Cl}$

↓

$CH_3CH(CH_3)-\underset{\underset{H}{|}}{C}-OMgCl$ ($CH_2CH_2CH_2CH_3$)

↓ H^+ OH^-

$CH_3CH(CH_3)CHCH_2CH_2CH_2CH_2CH_3 + Mg(OH)Cl$

$CH_3CH(CH_3)CH(OH)CH_2CH_2CH_2CH_3 + Mg(OH)Cl$

2-Methyl heptan-3-ol.