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COURSE: CHEMISTRY( CHM102)

Assignment

1. a. Classification of alcohols based on the number of alkyl groups attached to the carbon which bears the hydroxyl group. 2 examples are
2. primary alkanols
3. secondary alkanols

b. classification based on the number of hydroxyl group. Examples are

i. Monohydric alkanols

ii. Dihydric alkanols

1. reaction of a named Grignard reagent with CH3CH2CH2CH2C=OCH2CH2CH3 with the reaction steps

Grignard reagent – ethylmagnesiunchloride (CH3CH2MgCl)

Reaction

The Grignard reagent reacts with octan-4-ol, the product is then hydrolyzed by water to give the alcohol

CH3CH2 CH3CH2MgCl + CH3CH2CH2CH2C= OCH2CH2CH3 CH3CH2CH2CH2 C OMgCl

CH2CH2CH3

H+/OH-

CH3CH2

CH3CH2CH2CH2 C OH + Mg(OH)Cl

CH2CH2CH3

4ethylOctan-4-ol

1. One industrial preparation of ethanol by fermentation of starch

Example of starch is crushed potatoes. The crushed potato is steamed at 1400 to 1500 under pressure to prepare starch solution known as mash.

i. Hydrolysis of starch

Starch is hydrolyzed to maltose by an enzyme called diastase

2(C6H10O5) + nH2O n (C12H22O11)

Starch 60 Maltose

ii. Fermentation

Finally, yeast is added to maltose

C12H22O11 + H2O 2C6H12O6

Maltose 15 glucose

C6H12O6 C2H5OH + 2CO2

Glucose 15 ethanol

1. Product of reduction of alkanone is secondary alcohol by using LiAlH4

Example is propanone to propan-2-ol

CH3(C=O)CH3 + 2[H] CH3CH(OH)CH3

Products of reduction of aldehydes are primary alcohols

Example is Ethanal to Ethan-1-ol

CH3CHO + 2[H] CH3CH2OH