hydrolysed to glucose by digesting it with dilute tetraoxosulphate (VI) acid and steam at a pressure of 6 - 7 atmosphere.

The excess acid is then neutralized with lime and the resulting solution is fermented with yeast. The enzyme converts glucose to ethanol.

Ethyl alcohol may also be mixed with petrol. A mixture of 20% ethanol and 80% gasoline is used in internal combustion engines. Since alcohol does not mix with petrol therefore, a third solvent benzene or ether or tetralin ($C_{10}H_{12}$ hydronaphthalene) is used as solvent. Ethyl alcohol used for the purpose of generation of power in internal-combustion engine is called power alcohol.

$$\underset{\text{starch}}{2(C_6H_{10}O_5)_n} + nH_2O \xrightarrow{\text{Diastase}} n\underset{\text{Maltose}}{C_{12}H_{22}O_{11}}$$

$$\underset{\text{Maltose}}{C_{12}H_{22}O_{11}} + H_2O \xrightarrow{\text{Maltase}} 2\underset{\text{Glucose}}{C_6H_{12}O_6}$$

$$\underset{\text{Glucose}}{C_6H_{12}O_6} \xrightarrow{\text{Zymase}} 2\underset{\text{Ethyl alcohol}}{C_2H_5OH} + 2CO_2$$

(4) Alkanals are reduced to primary Alkanols as illustrated in the equation below.

$$CH_3-\underset{H}{\overset{H}{C}}=O + 2[H] \longrightarrow CH_3CH_2-OH$$

ethanol.

While alkanones are reduced to secondary alcohols by the equation below.

$$CH_3-\overset{CH_3}{\underset{}{C}}=O + 2[H] \rightarrow CH_3-\overset{CH_3}{\underset{H}{C}}-OH$$

propan-2-one

propan-2-ol

1) Classification of Alkanols

- Classification Based on the Number of Hydroxyl Groups

:- Monohydric Alkanols :- These alkanols contains one hydroxyl group (-OH) per molecule.

Examples: Ethanol, Propan-2-ol

:- Polyhydric alkanols :- These contains more than one hydroxyl group in the molecule they include :-

- Dihydric alkanols eg ethane-1-2-diol

- Trihydric alkanols e.g propane-1,2,3-triol.

e) Classification Based On the Number of Alkyl Groups

:- Primary Alkanols: Example CH_3OH, ethanol, propan-1-ol

:- Secondary Alkanols :- propan-2-ol, butan-2-ol

:- Tertiary Alkanols :- 2 methyl propan-2-ol

2 methyl butan-2-ol

Tertiary.

2) Formation of ethanol by the fermentation of sugar

Obtained from molasses, grapes or beet) is one of the oldest method. Sucrose is first converted to glucose and fructose with an enzyme invertase.

The fermentation process is carried out under anaerobic conditions i.e, in the absence of air. Carbon (iv) oxide released during fermentation keeps the fermentation mixture out of contact of air. If the fermentation mixture are exposed to air, the oxygen of air oxidizes ethanol to ethanoic acid which makes the mixture sour. In Africa, as in many other parts of the world ethanol is obtained from starchy materials such as barley, millet, rice, maize, cassava, ripe banana and potatoes with enzymes diastase and maltase.

In the manufacture of ethanol by germantation of cellulose, the cellulose material is first