

- i. HCOOH — Methanoic acid
- ii. $\text{HOOCCH}_2\text{CH}_2\text{CH}_2\text{COOH}$ — Pentan-1,5-dioic acid
- iii. $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ — Butanoic acid
- iv. $\text{HO}_2\text{C}-\text{CH}_2\text{H}$ — Ethanoic acid
- v. $\text{CH}_2(\text{CO}_2\text{H})_2$ — Hexanoic acid
- vi. $\text{CH}_2\text{CH}=\text{CHCH}_2\text{CH}_2\text{COOH}$ — Hexan-4-enoic acid

2. Physical Appearance:

All simple aliphatic carboxylic acids up to C_{10} , are liquid at room temperature. Most are solid at room temperature.

3. Boiling Point:

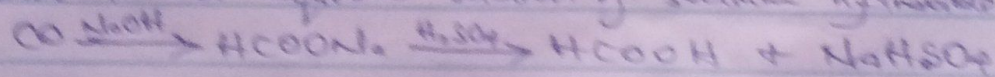
This increases with increasing relative molecular mass.

4. Solubility:

Low molecular mass carboxylic acids with up to four carbon atoms in their molecules are soluble in water, largely due to their ability to form hydrogen bonds with water molecules.

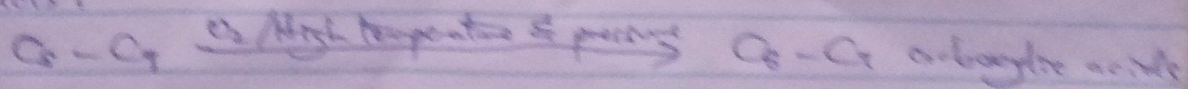
5. From Carbon(II) oxide:

Methanoic acid is manufactured by adding CO(g) under pressure to hot aqueous solution of sodium hydroxide.



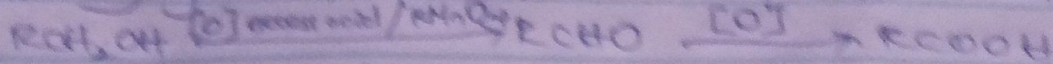
6. From Petroleum:

Liquid phase or oxidation of C_6-C_7 alkanes, obtainable from petroleum at high temperature and pressure, will give C_6-C_7 carboxylic acids with acetic, propionic and butanedioic acids as by-products.



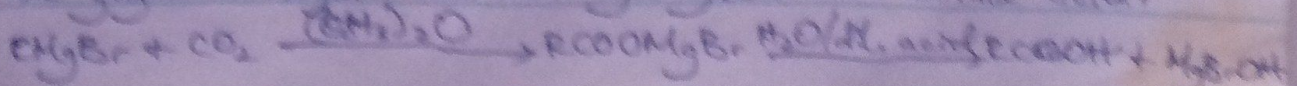
7. Oxidation of primary alcohols and aldehydes.

This can be used to prepare carboxylic acids using the usual oxidising agents i.e. $\text{K}_2\text{Cr}_2\text{O}_7$ or KMnO_4 in acidic solution.

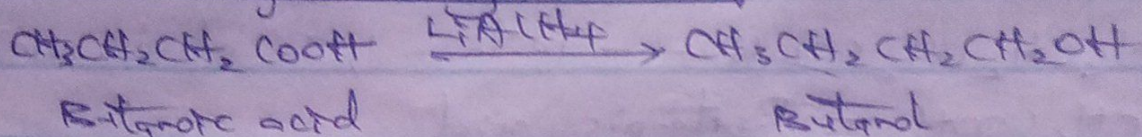


8. Carbonation of Grignard reagent

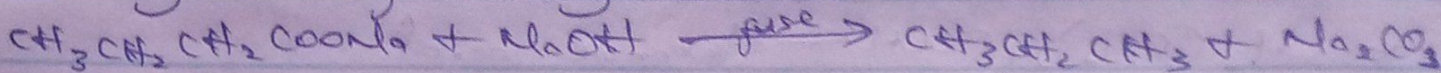
Aliphatic carboxylic acids are obtained by bubbling $\text{CO}_2(\text{g})$ into the Grignard reagent and then hydrolysed with dilute acid.



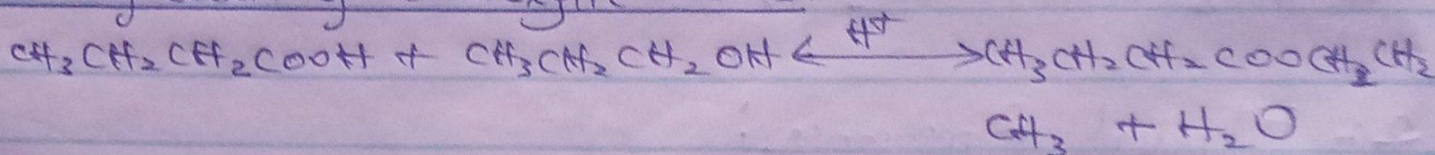
5. Reduction of carboxylic acids



ii. Decarboxylation of carboxylic acids



iii. Esterification of carboxylic acids



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