

ANUSAN Blossom OLIVATIIMILETHIN

MEDICINE & SURGERY

19/11/2019

CHM 102

1. HCOOH - Methanoic acid.
2. $\text{HOOCCH}_2\text{CH}_2\text{CH}_2\text{COOH}$ - Pentan-1,5-dioic acid
3. $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ - Butanoic acid
4. HOOCCOOH - Ethanedioic acid
5. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{COOH}$ - Hexanoic acid.
6. $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}_2\text{COOH}$ - Hex-4-enoic acid

2. Physical properties of carboxylic acids under

A. Physical appearance.

Simple aliphatic carboxylic acids ^{less than} C_{10} are liquid at room temperature. Other carboxylic acids are solid at room temperature. Acetic acid, although freezes to an ice-like solid below the room temperature.

B. Boiling point

This increases as the Relative molecular mass increases. Aromatic carboxylic acids are crystalline

Solids and have higher melting points than their corresponding aliphatic counterparts

c. Solubility.

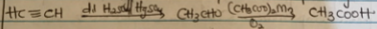
Lower molecular Carboxylic acids upto Carbon 4 are soluble in water, because they can form hydrogen bonds with water molecules.

Water solubility decreases as the Relative molecular mass increases

3. Industrial preparations of Carboxylic acids.

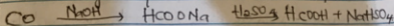
A. From ethanal.

The Liquid phase air oxidation of 5% solution of ethanal to ethanoic acid, using Manganate (II) ethanoate catalyst. Ethanal itself is obtained from ethylene



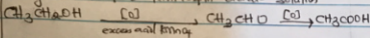
B. From Carbon (I) oxide.

Formic acid is manufactured by adding CO under pressure to hot aqueous solution of NaOH. The Carboxylic acid is liberated by careful reaction with H_2SO_4

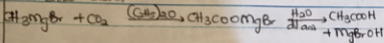


4 Synthetic Preparation of Carboxylic Acid

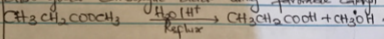
A. Oxidation of primary alcohol and aldehydes using $K_2Cr_2O_7$ or $KMnO_4$ in acidic solution



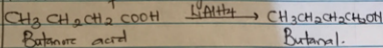
B. Carbonation of Grignard reagent by bubbling CO_2 into a Grignard reagent, then hydrolyzing with dilute acid



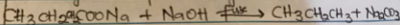
C. Hydrolysis of Nitriles / Cyanides or (esters) can also yield Carboxylic acids using favorable catalyst



5 Reduction of Carboxylic acid



Decarboxylation of Carboxylic Acid



C Esterification of Carboxylic Acid

