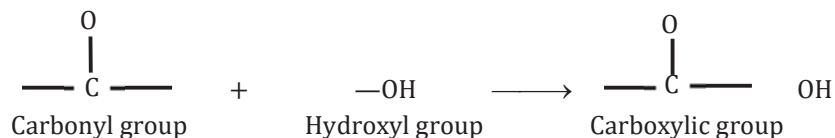


Nomenclature and Structure of Carboxyl Group

Carboxylic Acid & Their Derivatives

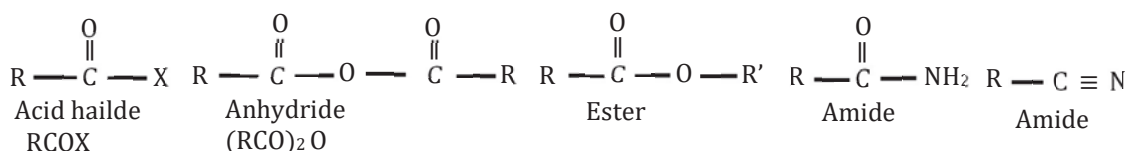
Organic compounds having -COOH group called Carboxylic group. This functional

Group is composed of Carbonyl ($\text{—}\overset{\text{O}}{\underset{\parallel}{\text{C}}}\text{—}$) and hydroxyl (—OH) group.



The characteristics of the carboxylic group are not merely a combination of the properties of the two component groups; rather, it possesses distinctive properties of its own. The acidic nature of carboxylic acids is attributed to the presence of a replaceable hydrogen atom within the carboxylic group. Its general formula is $\text{C}_n\text{H}_{2n}\text{O}_2$.

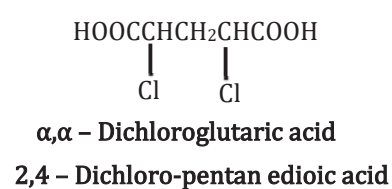
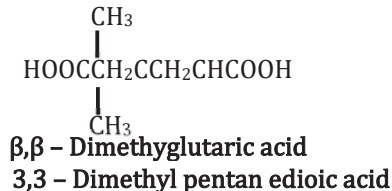
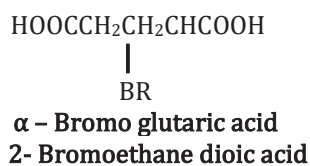
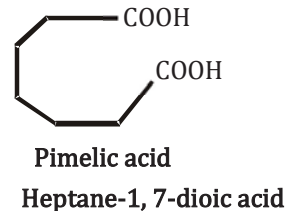
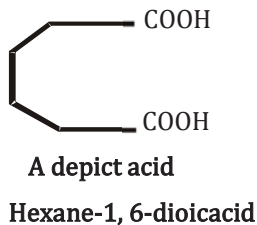
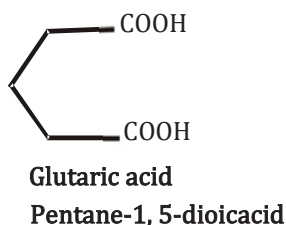
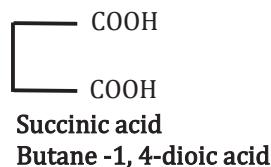
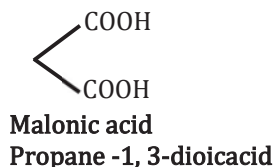
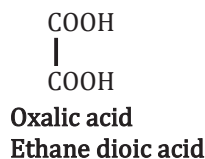
Carboxylic acid derivatives refer to compounds that contain functional groups capable of being transformed into carboxylic acids through a straightforward acidic or basic hydrolysis process. The most significant acid derivatives include esters, amides, nitriles, acid halides, and anhydrides.



Dicarboxylic Acids

In cases where a compound contains two carboxyl groups, it is referred to as a dicarboxylic acid.

For example:



Classification**Monocarboxylic Acid (RCOOH)**

Having one carboxylic group, also called monobasic acid. General formula - $C_nH_{2n}O_2$ ($n = 1, 2, 3 \dots$).

Higher mono carboxylic acids are called fatty acids.

Example: CH_3COOH acetic acid

Dicarboxylic Acid

Having two carboxylic groups, also called dibasic acid.

Example: $\begin{array}{c} COOH \\ | \\ COOH \end{array}$ Oxalic acid

Tricarboxylic Acid

Having three carboxylic groups also called tribasic acid.

Example: $\begin{array}{c} CH_2OOH \\ | \\ HO - C - COOH \\ | \\ CH_2COOH \end{array}$ Citric acid

Nomenclature		
Acid	Common name	IUPAC name
$HCOOH$	Formic acid (formica-red ants)	Meth an oic acid
CH_3COOH	Acetic acid (acetum - vinegar)	Eth an oic acid
CH_3CH_2COOH	Propionic acid (Propan-first pion-fat)	Propanoic acid
$CH_3CH_2CH_2COOH$	But yric acid (Butter-butyrum)	But an oic acid
$CH_3CH_2CH_2CH_2COOH$	Valeric acid (Valerian-plant root)	pen tan oic acid
$C_5H_{11}COOH$	Caproic acid	Hexan oic acid
$C_7H_{15}COOH$	Caprylic acid	Octan oic acid
$C_9H_{19}COOH$	Capric acid	Decanoic acid

Last three acids are found in goat fat word - (Caper-Goat).