• Points to remember in Nomenclature

Examples of Compound containing different functional groups with common / trival names.

No. of carbon atoms	Prefix	–CHO (Aldehyde)	–COOH(–ic acid)	–COCl.(–yl chloride)	$-CONH_2$ (Amide)
1	Form	HCHO Formaldehyde	HCOOH Formic acid	HCOCl Formyl chloride	$HCONH_2$ Formamide
2	Acet	CH_3CHO Acetaldehyde	CH_3COOH Acetic acid	CH_3COCl Acetyl chloride	CH_3CONH_2 Acetamide
3	Propion	CH_3CH_2CHO Propion aldehyde	CH_3CH_2COOH Propionic acid	CH_3CH_2COCl Propionyl chloride	$CH_3CH_2CONH_2$ Propionamide
4	Butyr	$CH_3CH_2CH_2CHO$ n–Butyraldehyde	$CH_3CH_2CH_2COOH$ n–Butyric acid	$CH_3CH_2CH_2COCl$ n–Butyryl chloride	$CH_3CH_2CH_2CONH_2$ n–Butyramide
5	Valer	$CH_3CH_2CH_2CH_2CHO$ n–Valeraldehyde	$CH_3CH_2CH_2CH_2COOH$ n–Valeric acid	$CH_3CH_2CH_2CH_2COCl$ n–Valeryl chloride	$CH_3CH_2CH_2CH_2CONH_2$ n–Valeramide
3C+1 Double bond	Acryl	CH_2=CH–CHO Acrylaldehyde	CH_2 = CH–COOH Acrylic acid	CH_2 = CH–COCl Acryl chloride	CH_2=CH–$CONH_2$ Acrylamide
4C + 1 Double bond (at 2nd Carbon. atom)	Croton	CH_3–CH=CH–CHO Crotonaldehyde	CH_3CH_2 = CH–COOH Crotonic acid	CH_3CH_2 = CH–COCl Crotonyl chloride	CH_3CH_2 = CH–$CONH_2$ Crotonamide

No. of carbon atoms	Prefix	–CN(–O nitrile)	–N⇄C(Oisonitrile) If Suffix isocyanide is used than. Carbon atom of – NC not counted. If suffix carbyl amine is used. Carbon atom of – NC not counted. If O-isonitrile is used → Carbon atom of – NC counted	—COOR Ester
1	Form	H–C ≡ N Formonitrile	H–N ⇄ C Formoisonitrile	$HCOOCH_3$ Methyl formate
2	Acet	$CH_3C \equiv N$ Acetonitrile	CH_3–N ⇄ C Acetoisonitrile	CH_3COOCH_3 Methyl acetate
3	Propion	$CH_3CH_3\ C \equiv N$ Propionitrile	$CH_3CH_2N \rightleftarrows C$ Propionisonitrile	$CH_3CH_2COOCH_3$ Methyl propionate
4	Butyr	$CH_3CH_2CH_2\ C \equiv N$ n–Butyronitrile	$CH_3CH_2CH_2N \rightleftarrows C$ n–Butyroisonitrile	$CH_3CH_2CH_2COOCH_3$ Methyl n–butyrate
5	Valer	$CH_3CH_2CH_2CH_2\ C \equiv N$ n–Valeronitrile	$CH_3CH_2CH_2CH_2N \rightleftarrows C$ n–Valeroisonitrile	$CH_3-\underset{\displaystyle CH_3}{\underset{\vert}{CH}}-CH_2-COOCH_3$ Methyl isovalerate
3 C +1 Double bond	Acryl	$CH_2 = CH - C \equiv N$ Acrylonitrile	$CH_2 = CH$–NC Acrylisonitrile	$CH_2=CHCOOCH_3$ Methyl acrylate
4C + 1 Double bond (at 2nd Carbon. atom)	Croton	$CH_3CH = CH - C \equiv N$ Crotononitrile	CH_3–CH=CH–NC Crotonoisonitrile	$CH_3CH=CHCOOCH_3$ Methyl crotonate

Secondary suffix of some common functional groups (IUPAC)

A secondary suffix is added to the primary suffix to indicate the nature of the functional group present in the organic compounds. Secondary suffix of important functional groups are given below in their decreasing order of seniority.

	Class	Name	Suffix	Prefix
1.	R–COOH	Alkanoic Acid	– oic acid (carboxylic acid)	carboxy
2.	$R–SO_3H$	Alkane sulhonic Acid	– sulphonic acid	sulpho
3.	R–C(=O)–O–C(=O)–R	Alkanonic Anhydride	– oic anhydride (carboxylic anhydride)	----------
4.	R–COOR	Alkyl alkanoate	– oate (carboxylate)	alkoxy carbonyl or alkanoyl oxy
5.	R–C(=O)–X	Alkanoyl halide	–oyl halide (carbonyl halide)	halo carbonyl
6.	R–C(=O)–NH_2	Alkanamide	– amide (carboxamide)	carbamoyl
7.	R–C≡N	Alkanenitrile	– nitrile (carbonitrile)	cyano
8.	R–C(=O)–H	Alkanal	– al (carbaldehyde)	formyl / oxo
9.	R–C(=O)–R	Alkanone	– one	oxo
10.	R–OH	Alkanol	– ol	hydroxy
11.	R–SH	Alkanethiol	– thiol	mercapto
12.	R–NH_2	Alkanamine	– amine	amino

IUPAC system of nomenclature

The IUPAC name of any organic compound consists of maximum five parts in the following sequence.

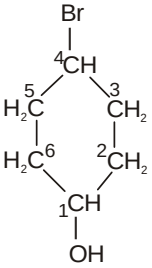
Secondary prefix + Primary prefix + Word root + Primary suffix + Secondary suffix

The following examples illustrate the use of word root, primary suffix and secondary suffix in naming of organic compounds.

Organic compounds	Word root	Primary suffix	Secondary suffix	IUPAC name
CH_3CH_2OH	Eth	an(e)	ol	Ethanol
$CH_3CH_2CH_2NH_2$	Prop	an(e)	amine	Propanamine
$CH_3CH_2CH_2COOH$	But	an(e)	oic acid	Butanoic acid
CH_3CH_2CN	Prop	an(e)	nitrile	Propanenitrile
$CH_2 = CHCHO$	Prop	en(e)	al	Propenal
$HC \equiv CCOOH$	Prop	yn(e)	oic acid	Propynoic acid

The following examples illustrate the use of word root , primary prefix and secondary prefix in naming of organic compounds.

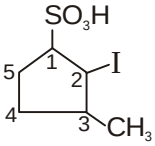
Ex.(i)



4-Bromo + cyclo + hex + an (e) + 1-ol

Secondary prefix | Primary prefix | Word root | Primary suffix | Secondary suffix

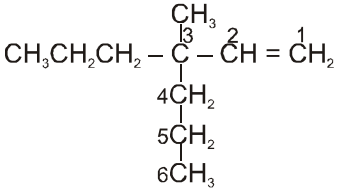
(ii)



2-Iodo-3-methyl + cyclo + pent + ane + 1-sulphonic acid

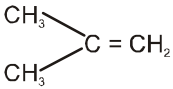
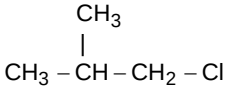
Secondary prefix | Primary prefix | Word root | Primary suffix | Secondary suffix

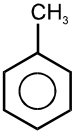
(iii)



Position of double bond will be indicated as no. 1, Hence name will be 3–Methyl–3–propylhex–1–ene

Common and IUPAC Names of Some Organic Compounds

S.No.	Compound	Common names	IUPAC name
1.	$CH_3CH=CH_2$	Propylene	Propene
2.		Isobutylene	2-Methylpropene
3.	$H_3C–C\equiv CH$	Methyl acetylene	Propyne
4.		Isobutyl chloride	1-Chloro-2-methylpropane

5.	CH_2-Br | CH_2-Br	Ethylene dibromide	1, 2-Dibromoethane
6.	$CH_2=CH-Cl$	Vinyl chloride	Chloroethene
7.	$CH_3-CH(OH)-CH_3$	Isopropyl alcohol	Propan-2-ol
8.	$CH_2=CH-CH_2-OH$	Allyl alcohol	Prop-2-en-1-ol
9.	$CH_2(OH)-CH(OH)-CH_2(OH)$	Glycerol or Glycerine	Propane-1, 2, 3-triol
10.	CH_3-CHO	Acetaldehyde	Ethanal
11.	$CH_3-CO-CH_2CH_3$	Ethyl methyl ketone	Butanone
12.	CH_3-COOH	Acetic acid	Ethanoic acid
13.	COOH | COOH	Oxalic acid	Ethanedioic acid
14.	$H_3C-C(=O)-COOH$	Pyruvic acid	2-Oxopropanoic acid
15.	CH_3-COCl	Acetyl chloride	Ethanoyl chloride
16.	CH_3-CONH_2	Acetamide	Ethanamide
17.	CH_3-NH_2	Methylamine	Methanamine
18.	CH_3-CN	Methyl cyanide or Acetonitril	Ethanenitrile
19.	$CH_3-N^+\equiv C^-$	Methyl isocyanide or Methyl carbylamine	Methane isocyanide
20.		Toluene	Methylbenzene or Toluene