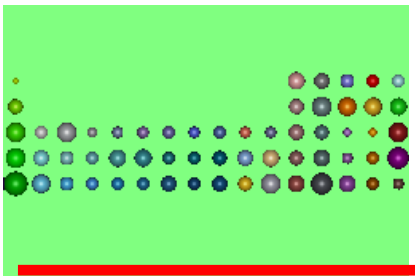
1



Nomenclature

Organic chemistry has millions of molecules for which a systematic convention of nomenclature has been developed. This topic summarizes the rules proposed by the International Union of Pure and Applied Chemistry (IUPAC).

There are different methods for naming organic molecules according to their structure, but without a doubt, the most used method is **nomenclature by substitution**.

This method consists of choosing a main carbon chain (cyclic or acyclic or acyclic chain) and naming its substituents (atoms or groups of atoms attached to a given chain) as prefixes and/or suffixes. Of all the substituents, one type is chosen as the main group, which is named as a suffix of the name of the molecule. The rest of the substituents are named as prefixes in alphabetical order.

The following is a procedure for the formation of a name for an organic compound:

1. The type of functional group, if any, is determined to be named as the main group. The following table shows, in descending order of priority, the most characteristic functional groups that can be named as suffixes. The table also specifies the prefixes for these groups:

Functional group	Formula	Prefix	Suffix
Salts		-onio-	-onio
Carboxylic acids	-COOH	Carboxy-	Acid...-carboxylic acid
	-(C)OOH	—	Acid...-oic
Anhydrides	-CO-O-CO-	—	Anhydride...-oic
Esters	-COO-R	R-oxycarbonyl-	-R carboxylate
	-(C)OO-R	—	-oato of R
Acyl halides	-CO-X	Haloformyl-	Carbonyl halide
	-(C)O-X	—	Halide of...-hear it
Amides	-CO-NH2	Carbamoyl-	-carboxamide
	-(C)O-NH2	—	-amide
Nitriles	-C≡N	Cyano-	-Carbonitrile
	-(C)≡N	—	-nitrile
Aldehydes	-CHO	Formyl-	-carbaldehyde

	-(C)HO	Oxo-	-to the
Ketones	-(C)O-	Oxo-	-Ona
Alcohols	-OH	Hydroxy-	-Ol
Thiols	-SH	Sulfanyl-	-thiol
Amines	-NH2	Amino-	-amine

R can be any hydrocarbon substituent (alkyl, alkenyl, alkynyl or aryl). Thus, R-oxycarbonyl- it is hydrocarbyloxycarbonyl (alkoxycarbonyl, aryloxycarbonyl...) and -oate of R would be -oate of hydrocarbon. Carbon atoms in parentheses are included in the name of the main chain.

There are some functional groups that are always named as prefixes. Below is a table with the most common of these groups:

Functional group	Formula	Prefix
Azides	-N3	Azido-
Diazocomposites	=N2	Diazo-
Halides	-X	Halo-
Ethers	-O-R	R-oxy-
Sulphides	-S-R	R-uncle-
Nitrocomposites	-NO2	Nitro-
Nitrosocomposites	-NO	Nitrous-

R can be any hydrocarbon substituent (alkyl, alkenyl, alkynyl or aryl). So, R-oxi- could be alkoxy-, alkenyloxy, aryloxy... and R-tio- could also be alkyltium-, alkenylthium-, aryltium...

2. The main carbon chain is determined, following the following rules in order:

a) The one that contains the main group as a substitute the most times.
b) The one that contains the largest number of double and triple bonds considered together.
c) The one with the longest length.
d) The one with the highest number of double bonds.
e) The one with the lowest possible locators for the main groups (i.e., for suffixes).
f) The one with the lowest possible locators for multiple links.
g) The one with the lowest possible locators for double bonds.
h) The one with the highest number of substituents cited as prefixes.
i) The one with the lowest possible locators for all the substituents of the main chain cited as prefixes.
j) The one with the highest number of times the substitute to be cited first in alphabetical order.
k) The one with the lowest possible locators for the substituents that are cited as prefixes first in alphabetical order.

3. Name of the main string and the main group(s).

4. Prefixes are determined and named.

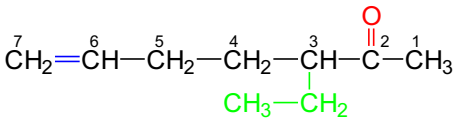
5. The main chain is numbered, following the following rules in order:

a) The lowest possible locators are assigned for the main groups cited as suffixes.

b) The lowest locators are assigned for multiple links considered together and, if necessary, with priority for double links over triple links.
c) The lowest locators are assigned for the substituents that are named as prefixes, all of which are considered together.
d) The lowest locators are assigned for the substituent that is named as a prefix and that is cited first in the name.

6. Partial names are coupled into a full name, using alphabetical order for all prefixes.

Example 1



3-Ethylhept-6-en-2-one

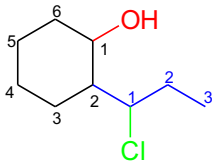
This compound has only one functional group that can be named as a suffix : a ketone, so the suffix of the name must be "-ona". The main carbon chain contains seven carbons and a double bond, therefore it is a derivative of heptene. If the suffix is added, it forms heptenone.

The CH3CH2- group is named as a prefix (ethyl-). The full name would be ethylheptenone.

The seven carbons are numbered starting at the end of the lower locator of the ketone (the main group). The full name is written using hyphens between numbers and letters. Group locators should be typed immediately before the group. This is how 3-ethylhept-6-en-2-one is obtained.

The presence of unsubstituted identical substituents is indicated by the appropriate multiplier prefix, di-, tri-, tetra-, penta-, hexa-, hepta-, etc., and locators are separated by commas. For example: 1,2-dichloroethane ClCH2CH2Cl ; 2,2,4-trimethylpentane $(CH3)_{2}CHCH2C(CH3)_{3}$.

Example 2



2-(1-chloropropyl)cyclohexan-1-ol

The only functional group present that can be named as a suffix is alcohol, so the suffix "-ol" will have to be used. This compound contains two carbon chains: the six-carbon cycle and the three-carbon acyclic chain. The main carbon chain is the one that contains alcohol. Thus, the name of the compound will be a derivative of cyclohexanol (cyclic carbon chain with six carbons and one alcohol).

Cyclohexanol has a single substituent: a three-carbon carbon chain which, in turn, is replaced by a chlorine. This is known as a complex substituent and is named in parentheses to avoid ambiguity. Complex substituents are named by prefixing the substituents' prefixes to the substituent directly attached to the main string. Therefore, the name of this complex substituent is (chloropropyl) and the name of the compound is (chloropropyl)cyclohexanol.

The cyclohexane is numbered so that the minor locator is assigned to the suffix and then in the sense that the minor locator is assigned to the substituent. Complex substituents are numbered from the atom attached directly to the main chain. This results in 2-(1-chloropropyl)cyclohexan-1-ol.

Traditionally, the drive locator is omitted as long as there is no ambiguity. This happens in cycles with a single group or with several but only one as a suffix. In this way, the above compound could be named 2-(1-chloropropyl)cyclohexanol. Still, the omission of locators is discouraged.

The presence of identical complex substituents is indicated by the appropriate multiplier prefix, bis-, tris-, tetrakis-, etc.

HYDROCARBONS

Organic compounds are usually made up of a hydrocarbon chain (composed of carbon and hydrogen). This hydrocarbon chain is what gives the structure to organic compounds. This chain can be acyclic (alkanes, alkenes and alkynes) or cyclical (cycloalkanes, cycloalkenes, cycloalkynes and sands) or a combination of both. If a hydrocarbon of the RH type loses a hydrogen and leaves a free valence (R-) to bind to a backbone, it is generically called hydrocarbon.

1. ALKANES


Suffix : -ano

The generic name for saturated acyclic hydrocarbons is "alkanes". The first four are called methane, ethane, propane, and butane. The names of the upper members of this series are formed with a numerical term followed by the suffix "anus", with the elision of the terminal "a" of the numerical term. The following table provides some examples of these names.

Name	Formula	Name	Formula	Name	Formula
Methane	$CH4$	Octane	$CH3(CH2)_{6CH3}$	Pentacane	$CH3(CH2)_{13CH3}$
Ethane	$CH3CH3$	Nonanus	$CH3(CH2)_{7CH3}$	Hexadecone	$CH3(CH2)_{14CH3}$
Propane	$CH3CH2CH3$	Dean	$CH3(CH2)_{8CH3}$	Heptadecane	$CH3(CH2)_{15CH3}$
Butane	$CH3CH2CH2CH3$	Undean	$CH3(CH2)_{9CH3}$	Octadean	$CH3(CH2)_{16CH3}$
Pentane	$CH3(CH2)_{3CH3}$	Dodean	$CH3(CH2)_{10CH3}$	Nonadean	$CH3(CH2)_{17CH3}$
Hexane	$CH3(CH2)_{4CH3}$	Tridean	$CH3(CH2)_{11CH3}$	Icosano	$CH3(CH2)_{18CH3}$
Heptane	$CH3(CH2)_{5CH3}$	Tetradean	$CH3(CH2)_{12CH3}$	Henicosano	$CH3(CH2)_{19CH3}$

The names of univalent substituents derived from saturated acyclic hydrocarbons, due to the loss of a hydrogen atom, are formed by substituting the ending "-ano" for "-ilo" (ALKANE → ALKYL).

Examples of the most common rental groups:

Methyl (Me)	$CH3-$	Butyl (Bu or n-Bu)	$CH3CH2CH2CH2-$
Ethyl (Et)	$CH3CH2-$	sec-Butyl (Bus)	$CH3CH2CH(CH3)-$
Propyl (Pr or n-Pr)	$CH3CH2CH2-$	terc-Butyl (But)	$(CH3)_{3C}-$
Isopropyl (Pri)	$(CH3)_{2CH-}$	Neo-pentyl	$(CH3)_{3CCH2}-$

2. ALKENES

>C=C< Suffix : -eno

Unsaturated acyclic hydrocarbons that possess a double bond are named by replacing the "-ano" ending of alkanes with "-ene".

Ethene or ethylene	CH2=CH2	1-Butene	CH2=CHCH2CH3
Propene or propylene	CH3CH=CH2	2-Butene	CH3CH=CHCH3

Univalent substituents derived from acyclic hydrocarbons with double bonds carry the "-enyl" ending (ALKENE ALKENYL →).

Ethenyl or vinyl	CH2=CH-	2-Propenyl or allyl	CH2=CHCH2-
1-Propenyl	CH3CH=CH-	1-Butenyl	CH3CH2CH=CH-

Bivalent substituents derived from the univalent radicals of acyclic hydrocarbons are named by adding "-idene" (ALKYL → ALKYLIDENE).

Methylidene methylene	or	CH2=	Propylidene	CH3CH2CH=
Ethylidene		CH3CH=	Isopropylidene	$(CH_3)_{2C=}$

3. ALKYNES

-C□C- Suffix : -ino

Unsaturated acyclic hydrocarbons that possess a triple bond are named by replacing the "-ano" ending of the alkanes with "-ino".

Ethylene acetylene	or	HC□CH	1-Butino	CH3CH2C□CH
Tip		CH3C□CH	2-Butine	CH3C□CCH3

Univalent substituents derived from acyclic hydrocarbons with triple bonds are terminated "-inyl" (ALKYNE → ALKYNYL)

Ethyl	HC□C-	2-Propyl or propyl	HC□CCH2-
1-Propynile	CH3C□C-	1-Butinyl	CH3CH2C□C-

4. ALKENINES

Unsaturated acyclic hydrocarbons that possess both double and triple bonds are named by replacing the "-ano" ending of the corresponding saturated hydrocarbon with "-enine". Double and triple links are assigned the lowest possible numbers. If it is possible to choose the way to number, the lowest locators are assigned to the double links.

3-Penten-1-ino	CH3CH=CHC□CH	1-Penten-4-ino	CH2=CHCH2C□CH

5. CYCLIC ALIPHATIC HYDROCARBONS

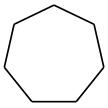
The names of saturated monocyclic hydrocarbons are formed by adding the prefix "cycle" to the name of the saturated acyclic hydrocarbon with the same number of carbon atoms.


Cyclopropane

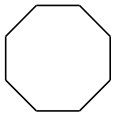

Cyclobutane


Cyclopentane

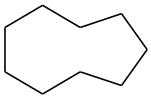

Cyclohexane



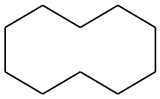
Cycloheptane



Cyclooctane

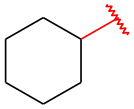


Cyclononane

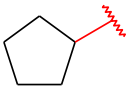


Cyclodean

The univalent substituents of these hydrocarbons are called cycloalkyls:



Cyclohexyl



Cyclopentil

Similarly, the names of unsaturated monocyclic hydrocarbons with double and/or triple bonds are formed by adding the prefix "cycle" to the name of the unsaturated acyclic hydrocarbon with the same number of carbon atoms.

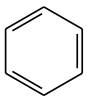
Cyclohexene

1,3-Cyclopentadiene

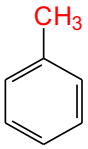
1,6-Cyclodecadiine

6. AROMATICS OR SANDINESS

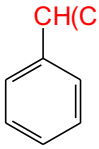
Benzene and its most common derivatives:



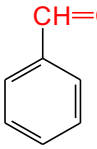
Benzene



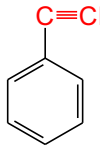
(Methylbenzene)
Toluene



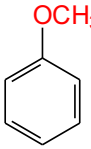
Isopropylbenzene
Cumene



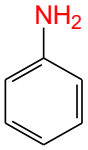
(Vinylbenzene)
Styrene



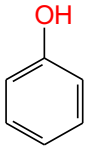
(Ethinylbenzene)
Phenylacetylene



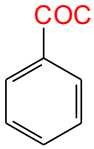
(Methoxybenzene)
Anisol



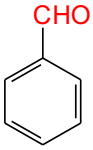
(Benzenamine)
Aniline



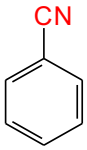
(Bencenol)
Phenol



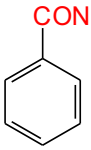
Acetylbenzene
Acetophenone



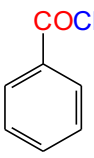
(Benzenecarbaldehyde)
Benzaldehyde



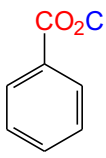
(Benzenecarbonitrile)
Benzonitrile



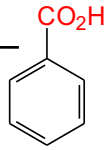
(Benzenecarboxamide)
Benzamide



(Benzenecarbonyl chloride)
Benzoyl chloride

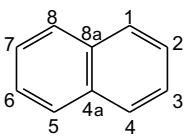


(Methyl benzene carboxylate)
Methyl benzoate

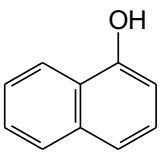


(Benzenecarboxylic acid)
Benzoic acid

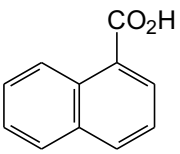
Naphthalene and its most common derivatives:



Naphthalene

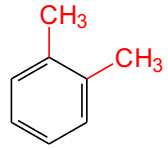


1-Naphthol

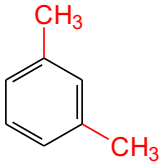


1-Naphtoic acid

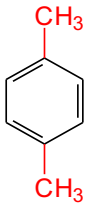
Benzenes displaced:



1,2-Dimethylbenzene
(*ortho*)o-Dimethylbenzene

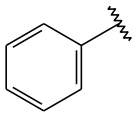


1,3-Dimethylbenzene
(*meta*)m-Dimethylbenzene

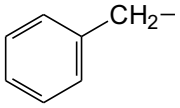


1,4-Dimethylbenzene
(*for*) p-Dimethylbenzene

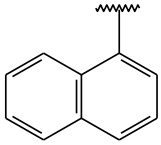
As univalent substitutes : ARENO → ARILOS (Ar-)



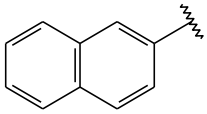
Phenyl (Ph)



Benzyl (Bn)



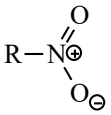
1-Naphthyl



2-Naphthyl

CHARACTERISTIC GROUPS

7. NITROCOMPOSITES



R = Any hydrocarbon substituent (alkyl, alkenyl, alkynyl or aryl).

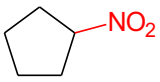
Compounds containing a -NO2 group are named using the prefix "nitro" followed by the name of the main chain.

CH3NO2

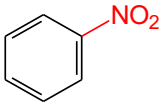
Nitromethane

CH3CH2NO2

Nitroethane



Nitrocyclopentane



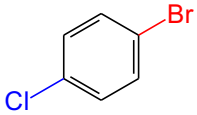
Nitrobenzene

8. HALOALKANES

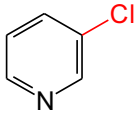
R-X

Prefix : Halo- si X= F- : Fluoro- si Cl- : Chloro- si Br- : Bromine- si I- : Iodine-
R = Any hydrocarbon substituent (alkyl, alkenyl, alkynyl or aryl).

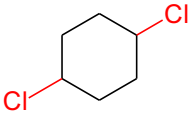
Halogenated derivatives are named by adding the prefixes "fluoro", "chlorine", "bromine" or "iodine" to the name of the fundamental compound.



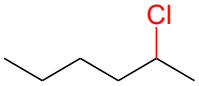
1-Bromine-4-
chlorobenzene



3-Chloropyridine



1,4-
Dichlorocyclohexane



2-Chlorohexane

1.9. ETHERS

R-O-R' Prefix : Alkyloxy- (alkoxy-) ALKOXYALKANES

Ethers are named as RO- prefixes of the fundamental compound R'. RO- radicals are named by adding "oxi" as a suffix to the name of the R group.

Pentiloxy-	CH3CH2CH2CH2CH2O-	Benzyloxy-	PhCH2O-

It is recommended to use the following contractions for the most common radicals:

Methoxy-	CH3O-	Isopropoxy-	$(CH_3)_{2CHO}$-
Ethoxy-	CH3CH2O-	tert-Butoxy-	$(CH_3)_{3CO}$-
Propoxy-	CH3CH2CH2O-	Phenoxy-	Pho-

Examples:

Methoxyethane	CH3OCH3CH3	t-Butoxybenzene	$(CH_3)_{3COPh}$	PhOCH2CH2OH	2-Phenoxyethanol

1.10. AMINES

R-NH2 Primary Amine R2NH Secondary Amine R3N Tertiary Amine

Suffix : -amine ALKYLAMINES OR ALKANAMINES

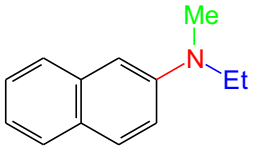
Primary amines are named by adding the suffix "-amine" to the name of the R group or to the name of the fundamental compound RH, with elision of the terminal vowel. Secondary and tertiary amines are named as *an N-substitution product of a primary amine.*

Examples:

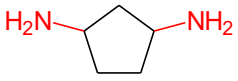
CH3CH2CH2CH2NH2

Butylamine or

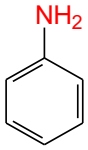
1-Butanamine



N-Ethyl-N-methyl-2-naphthylamine



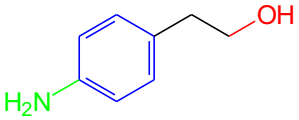
1,3-Cyclopentanediamine



Bencenamine or aniline

If there is a higher priority group in the molecule, the prefix "amino-" is used.

4-(Methylamino)cyclohexanone



2-(p-Aminophenyl)-1-ethanol

1.11. ALCOHOLS

R-OH Suffix : -ol ALCANOLES

Alcohols are named by adding the suffix "ol", with elision of the terminal vowel, to the name of the fundamental compound.

CH3OH

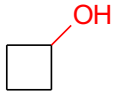
Methanol

CH3CH2OH

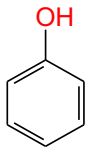
Ethanol

CH3CHOHCH3

2-Propanol

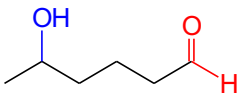


Cyclobutanol

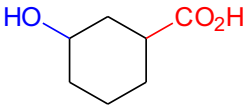


Bencenol or phenol

The hydroxyl group -OH is named "hydroxy-" as a prefix.

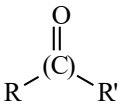


5-Hydroxyhexanal



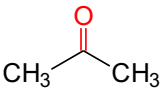
3-hydroxycyclohexane-1-carboxylic acid

1.12. KETONES

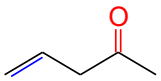


Suffix : -ona ALCANONES

The name of a ketone is formed by adding the suffix "-ona" to the name of the main chain, with elision of the terminal vowel.

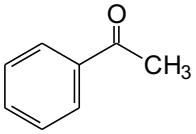


Propanone or acetone



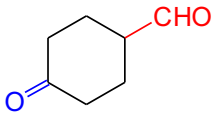
Pent-4-in-2-one

Cyclobutanone

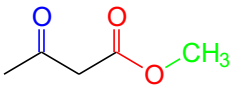


Acetophenone

The prefix "oxo-" is used when there is also another group that has priority to be cited as a proncipal group.



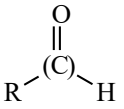
4-Oxocyclohexane-1-carbaldehyde



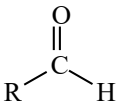
3-Methyl Oxobutanoate

All functional groups that need three valences of carbon to form can be named with two suffixes, depending on whether the carbon to which the heteroatom(s) is attached can be included in the main chain prefix. In this way, they all have a suffix in which this carbon is not included ("-al", "-nitrile"...) and another in which it is ("-carbaldehyde", "-carbonitrile"...).

1.13. ALDEHYDES



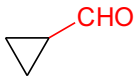
Suffix : -al ALCANALES



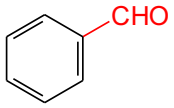
Suffix : -carbaldehyde CYCLOALKANCARBALDEHYDES

Aldehydes can be named by adding the suffix "-al" to the name of the fundamental compound, with elision of the terminal vowel, adding the suffix "-carbaldehyde", or by substituting the suffix "-ico" of the common name of carboxylic acid with "-aldehyde".

Methanal formaldehyde	or HCHO	Propanal propionaldehyde	or CH3CH2CHO
Ethanal or acetaldehyde	CH3CHO	Butanal or butyraldehyde	CH3CH2CH2CHO

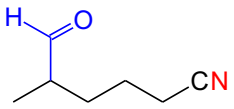


Cyclopropane carbaldehyde

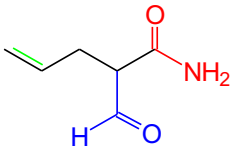


Benzenecarbaldehyde or benzaldehyde

If there is a higher priority group in the molecule, the -CHO group is named with the prefix "formyl-".



5-Formilhexanonitrile



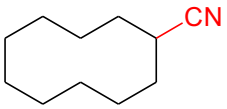
2-Formilpent-4-enamide

1.14. NITRILES

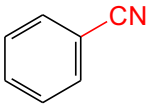
R-(C)≡N	Suffix : -nitrile	ALCANONITRILES
R-C□N	Suffix : -carbonitrile	CYCLOALKANOCARBONITRILES

Nitriles can be named by adding the suffix "-nitrile" to the name of the fundamental compound, with elision of the terminal vowel, adding the suffix "-carbonitrile", or by substituting the suffix "-ico" of the common name of carboxylic acid with "-onitrile".

Hydrogen cyanide	HCN	Propanonitrile or propiononitrile	CH3CH2C□N
Ethanonitrile or acetonitrile	CH3C□N	Butanonitrile or butyronitrile	CH3CH2CH2C□N

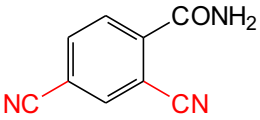


Cyclodecanocarbonitrile

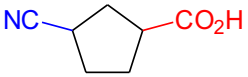


Benzenecarbonitrile or benzonitrile

If there is a higher priority group in the molecule, the -CN group is named with the prefix "cyano-".

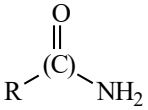


2,4-Dicyanbenzamide

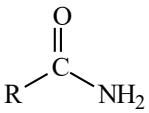


3-Cyanocyclopentanecarboxylic acid

1.15. AMIDES



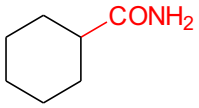
Suffix : -amide ALCANAMIDES



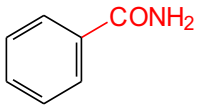
Suffix : -carboxamide CYCLOALKANCARBOXAMIDES

Amides can be named by adding the suffix "-amide" to the name of the fundamental compound, with elision of the terminal vowel, adding the suffix "-carboxamide", or by substituting the suffix "-ico" of the common name of carboxylic acid with "-amide".

Methanamide or formamide		HCONH2	Propanamide or propionamide	CH3CH2CONH2
Ethanamide or acetamide		CH3CONH2	Butanamide or butiramide	CH3CH2CH2CONH2

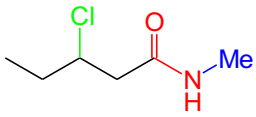


Cyclohexanecarboxamide

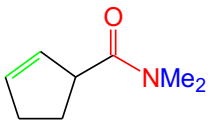


Benzenecarboxamide or benzamide

Amides, like amines, can be mono- or desubstituted in nitrogen. These amides are referred to as *N-substituted or N,N-substituted* amides.



3-Chloro-N-methylpentanamide

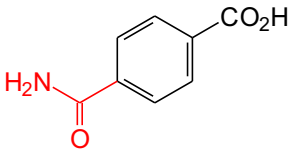


N,N-Dimethylcyclopent-2-enamide

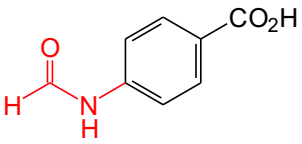
Amides are prefixed as "alkanamide-" ("acylamino-" can also be used) or carbamoyl, depending on whether they are bound to the backbone by nitrogen or carbon respectively.

Below are some examples of alkanamid groups:

HCONH- Formamide or formylammine	CH3CONH- Acetamide or acetylamine	CH3CH2CONH- Propanamide or propanoyamino	CH3CH2CH2CONH- Butanamide or Butanoylamino

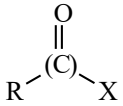


p-carbamoylbenzoic acid

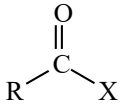


P-formamidobenzoic acid

1.16. ACYL HALIDE



ALKANYL HHALIDES



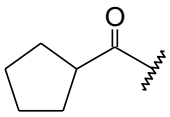
CYCLOALKANOCARBONYL HALIDES

Acyl halides are named by first citing the name of the corresponding halide anion, followed by the corresponding acyl group.

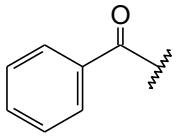
Examples of acyl groups:

HCO-	CH3CO-	CH3CH2CO-	CH3CH2CH2CO-

Methanoyl or formyl	Ethanoyl or acetyl	Propanoyl or propionyl	Butanoyl or butyryl



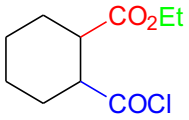
Cyclopentanocarbonyl



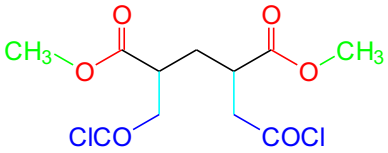
Benzenocarbonyl or benzoyl

HCOF	CH3COCl	CH2=CHCH2COBr	PhCOCl
Fornyl fluoride	Acetyl chloride	But-3-enoyl bromide	Benzoyl chloride

If there is a group that has priority over acyl halide, the prefixes "fluoroformyl-", "chloroformyl-", "bromoformyl-" or "iodoformyl-" are used.

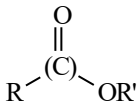


2-(Chloroformyl)ethyl cyclohexane carboxylate

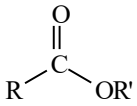


2,4-Bis[(chloroformyl)methyl]dimethyl pentanedioate

1.17. ESTERS



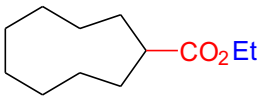
Suffix : -oato of R' ALCANOATOS DE R'



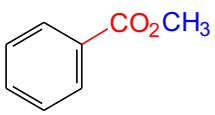
Suffix : -carboxylate of R' CYCLOALKANCARBOXYLATES OF R'

Esters are named by adding the suffix "-oato" to the fundamental compound, with elision of the terminal vowel, adding the suffix "-carboxylate", or by substituting the suffix "-ico" in the common name of carboxylic acid with "-ato" followed by the oxygen substituent preceded by the preposition "de".

HCO2CH3	CH3CO2Ph	CH3CH2CO2CH2CH=CH2	CH3CH2CH2CO2CH2PhPh
Methyl methanoate or Methyl formate	Phenyl ethanoate or phenyl acetate	Allyl propanoate or Allyl propionate	Benzyl butanoate or benzyl butyrate

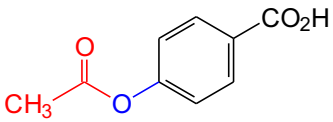


Ethyl cyclononanecarboxylate

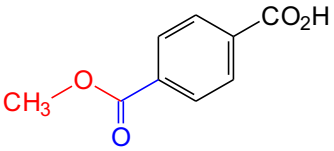


Methyl benzene carboxylate or methyl benzoate

Esters are prefixed using "acyloxy-" (RCO2-) or "alkoxycarbonyl-" (RO2C-) depending on where they are attached to the backbone.



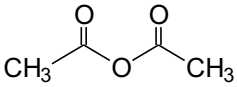
P-acetyloxybenzoic acid or p-acetoxybenzoic *acid*



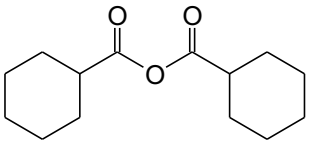
P-methoxycarbonylbenzoic acid

1.18. ANHYDRIDES

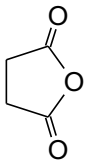
Symmetrical anhydrides are named after the carboxylic acid from which they come, only replacing the word "acid" with "anhydride".



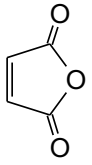
Acetic anhydride



Cyclohexanecarboxylic anhydride

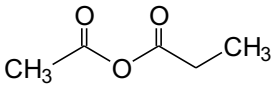


Succinic anhydride

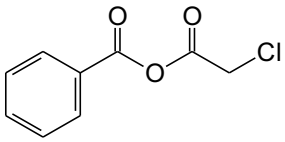


Maleic anhydride

Mixed anhydrides are named by the word "anhydride" followed by the names of the two acids (from which it comes) in alphabetical order and separated by a hyphen.

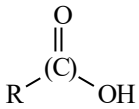


Acetic-propionic anhydride

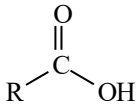


Benzoic-chloroacetic anhydride

1.19. CARBOXYLIC ACIDS



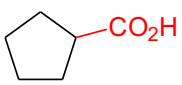
ALKANOIC ACIDS



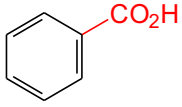
CYCLOALKANCARBOXYLIC ACIDS

Carboxylic acids can be named by adding the suffix "-oic" to the name of the fundamental compound, with elision of the terminal vowel, by adding the suffix "-carboxylic" or by a common name and prefixing the word "acid".

HCO2H	CH3CO2H	CH3CH2CO2H	CH3CH2CH2CO2H
Methanouic acid or formic acid	Ethanoic acid or acetic acid	Propanoic acid or propionic acid	Butanoic acid or Butyric acid



Cyclopentanecarboxylic acid

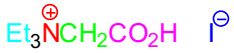


Benzenecarboxylic acid or benzoic acid

Some examples of diacids:

HO2CCO2H	HO2CCH2CO2H	HO2CCH2CH2CO2H
Ac. ethanedioic or oxalic acid	Ac. propanedioic or malonic acid	Ac. Butanedioic or Succinic Acid

The -COOH group is named "carboxi-" as a prefix.

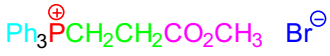
 (carboxymethyl)triethylammonium iodide

1.20. SALTS

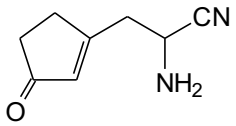
Salts are named by first citing the name of the anion followed by the substitution product (in alphabetical order) of one of the following cations:

$^{+}NH_4$ Ammonium salt $^{+}PH_4$ Phosphonium salt $^{+}OH_3$ Oxonium salt $^{+}SH_3$ Sulfonium salt

Example:

 Triphenyl(2-methoxycarbonylethyl)phosphonium bromide

EXAMPLE

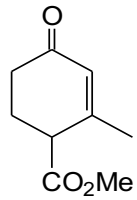


This compound contains four functional groups: an alkene, an amine, a ketone, and a nitrile. Following the naming rules mentioned at the beginning of the topic, the first thing is to determine which of them will give the suffix to the name. Looking at the table of functional groups, the highest priority is nitrile. As nitrile carbon can be included in the mainchain prefix, the suffix to use is "-nitrile".

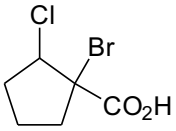
This compound contains two carbon chains: the five-carbon cycle and the three-carbon acyclic chain. The main carbon chain is the one that contains nitrile. Thus, the name of the compound will be a derivative of propanonitrile (carbon chain with three carbons and one nitrile).

Propanonitrile contains two substituents: a single one (-NH2) and a complex one (five-carbon cycle with an alkene and a ketone). The amine is named as "amino-". The complex substituent is a cyclopentenyl substituted by a ketone, then named as oxocyclopentenyl, with the localizers: 3-oxocyclopent-1-enyl.

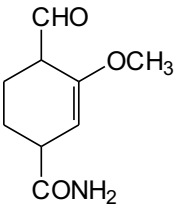
The full name would be: 2-amino-3-(3-oxocyclopent-1-enyl)propanonitrile.



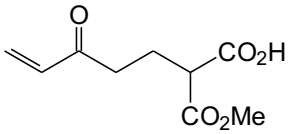
Methyl 2-Methyl-4-oxocyclohex-2-methyl enocarboxylate



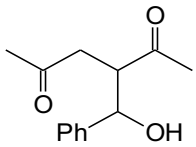
1-bromo-2-chlorocyclopentanecarboxylic acid



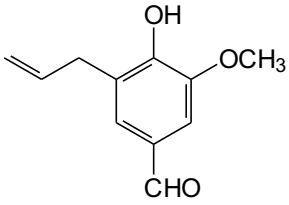
4-Formyl-3-methoxycyclohex-2-enocarboxamide



2-(methoxycarbonyl)-5-oxohept-6-enoic acid



3-(Phenylhydroxymethyl)hexane-2,5-dione



3-Alyl-4-hydroxy-5-methoxybenzaldehyde