

Hydrocarbon Naming

Functional Group:

- A part of an organic molecule
- A certain pattern of atoms
- Groups that give a molecule certain character, or certain properties

Naming

To name an organic molecule, first you need to identify a functional group. Then use the naming rule to make a name – the examples below use a prefix to indicate the number of carbons and an ending to indicate what type of molecule it is. All of the examples below have three carbons, so they all start with the “prop” prefix.

Type of Molecule	Functional Group	Naming Rule	Example Name	Example Structure
alkane	C-C	prefix + “-ane”	propane	$\begin{array}{c} \text{H} & \text{H} & \text{H} \\ & & \\ \text{H}-\text{C} & -\text{C} & -\text{C}-\text{H} \\ & & \\ \text{H} & \text{H} & \text{H} \end{array}$
alkene	C=C	prefix + “-ene”	propene	$\begin{array}{c} \text{H} & & \text{H} \\ & & \\ \text{C} & = & \text{C} - \text{C} - \text{H} \\ & & \\ \text{H} & \text{H} & \text{H} \end{array}$
alkyne	C≡C	prefix + “-yne”	propyne	$\begin{array}{c} & & \text{H} \\ & & \\ \text{H}-\text{C} & \equiv & \text{C}-\text{C}-\text{H} \\ & & \\ & & \text{H} \end{array}$
alcohol	C-OH	prefix + “-anol”	propanol	$\begin{array}{c} \text{H} & \text{H} & \text{H} \\ & & \\ \text{H}-\text{C} & -\text{C} & -\text{C}-\text{O}-\text{H} \\ & & \\ \text{H} & \text{H} & \text{H} \end{array}$
carboxylic acid	$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{OH} \end{array}$	prefix + “anoic acid”	propanoic acid	$\begin{array}{c} \text{H} & \text{H} & \text{O}-\text{H} \\ & & / \\ \text{H}-\text{C} & -\text{C} & -\text{C} \\ & & \\ \text{H} & \text{H} & \text{O} \end{array}$

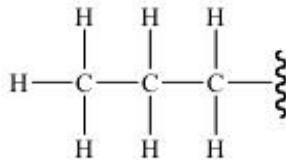
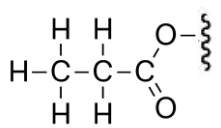
# of C's	Prefix
1	meth-
2	eth-
3	prop-
4	but-
5	pent-
6	hex-
7	hept-
8	oct-
9	non-
10	dec-

Naming Esters and Ethers

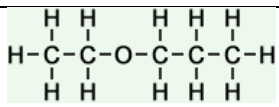
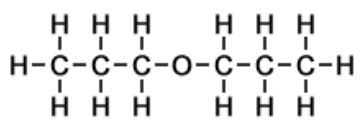
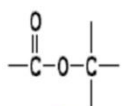
Esters and ethers are more complicated to name, because they are named as pieces of the molecule. This page explains how to name them.

(In Nemo's class, you will only be tested on naming the types of molecules on the previous page; you will, however, need to be able to identify the functional groups for ester and ether).

Groups – these are pieces of molecules that we can name separately (helps for ethers and esters)

Type of Group	Related to:	Naming Rule	Example Name	Example Group
alkyl	alkane	prefix + “-yl”	propyl	
carboxylate	carboxylic acid	prefix + “-anoate”	propanoate	

Ethers and Esters

Type of Molecule	Functional Group	Naming Rule	Example Name	Example Structure
ether	C-O-C	alkyl-alkyl + “ether” (if alkyl groups are different)	ethyl-propyl ether	
ether	C-O-C	“di-“ + alkyl + “ether” (if alkyl groups are the same) (“di-“ means 2x)	dipropyl ether	
ester		alkyl + carboxylate	ethyl propanoate	