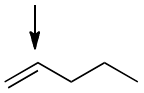
Advanced IUPAC Nomenclature XIV

Useful Common Names and Abbreviations

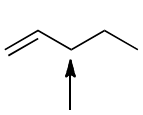
Multiple bonds in Hydrocarbons

Positions at or adjacent to a pi bond often have special names these can be used to refer to the position of a charge (e.g. an allyl cation) or a particular substituent (e.g. a propargyl alcohol). These positions often have resonance or particular reactivity due to the presence of the pi bond.

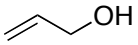


a vinyl position is at the sp^2 carbon

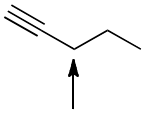
vinyl chloride



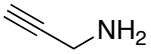
an allyl position is adjacent to the sp^2 carbon



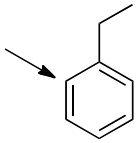
allyl alcohol



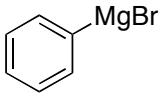
a propargyl position is adjacent to the sp carbon



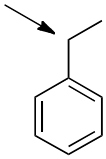
propargyl amine



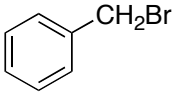
a phenyl position is in a benzene ring



phenyl magnesium bromide



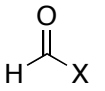
a benzyl position is adjacent to a benzene ring



benzyl bromide

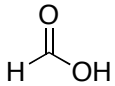
Carbonyls

Small chain carbonyls have some particular common names. It is common to make an alcohol an ester by adding ‘an acetyl group’ rather than adding ‘an ethanoyl group’.



a formyl group

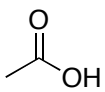
formaldehyde



formic acid

an acetyl group

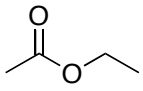
acetaldehyde



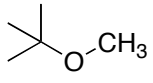
acetic acid

Common Solvents

Many solvents are referred to by common names or by abbreviations. A selection of common solvents along with their commonly used names is shown.

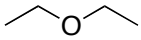


ethyl acetate
(EtOAc)

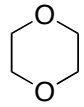


methyl *tert*-butyl ether
(MTBE)

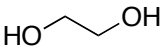
tetrahydrofuran
(THF)



ether



1,2-dioxane



ethylene glycol

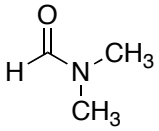
CH_2Cl_2

dichloromethane
methylene chloride
(DCM)

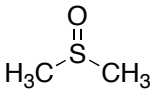
acetone

CH_3CN

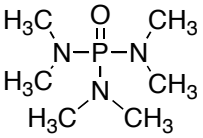
acetonitrile
(MeCN)



N,N-dimethylformamide
(DMF)



dimethylsulfoxide
(DSMO)



hexamethylphosphoramide
(HMPA)

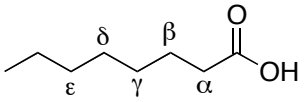
Short Abbreviations

Many common functional groups are abbreviated to two or three letter codes. These codes are then put into formula in the place of actual atoms.

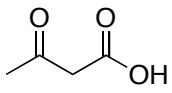
e.g. MeCN = CH_3CN, Me stands for methyl or CH_3-.

Abbreviation	Stands for	Abbreviation	Stands for
Me-	Methyl (CH_3-)	Bn-	Benzyl ($C_6H_5CH_2$-)
Et-	Ethyl (CH_3CH_2-)	Ph-	Phenyl (C_6H_5-)
Pr-	Propyl ($CH_3CH_2CH_2$-)	Bz-	Benzoyl (C_6H_5CO-)
*i*Pr-	Isopropyl ($(CH_3)_2CH$-)	Tf-	Triflyl (CF_3SO_3-)
Bu-	Butyl ($CH_3CH_2CH_2CH_2$-)	Ts-	Tosyl ($C_6H_6SO_3$-)
t-Bu	*tert*-Butyl ($(CH_3)_3C$-)	Ms-	Mesyl (CH_3SO_3-)
s-Bu	*sec*-Butyl ($CH_3CH_2CH(CH_3)$-)	Tr-	Trityl ($(C_6H_5)_3C$-)
Ac-	Acetyl (CH_3CO-)		

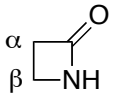
Greek labels



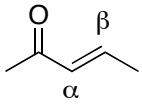
In older common names distance from a functional group was given by Greek letters, α, β, γ, δ, ε etc. This type of referent is still used in mechanisms and discussions of the relative positions of functional groups as close proximity affects the interactions between substituents and thus their reactions. (e.g. β-keto-acids can decarboxylate easily, but regular carboxylic acids will not).



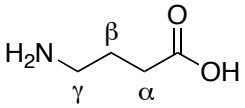
a β–ketoacid



a β–lactam



an α,β–unsaturated ketone

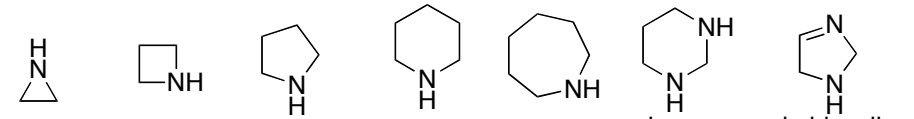


γ–aminobutyric acid

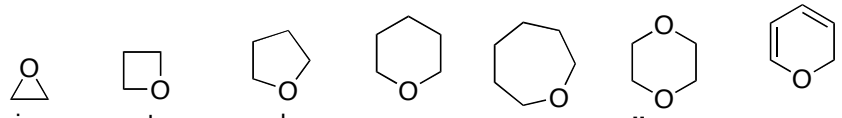
Heterocycles

Heterocycles are rings that contain non-carbon atoms. Many heterocycles have common names for their skeleton structure.

Unsaturated heterocycles:

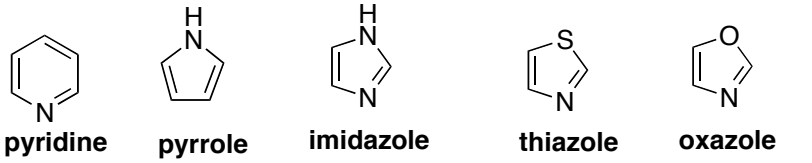


aziridine azetidine **pyrrolidine** **pipridine** azepane piperazene imidazoline

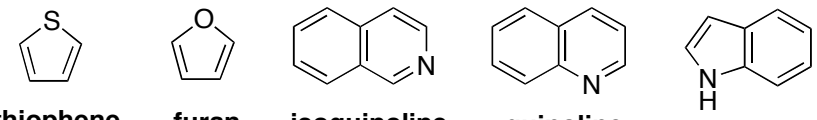


oxirane oxetane oxolane oxane oxepane **dioxane** **pyran**

Aromatic heterocycles:

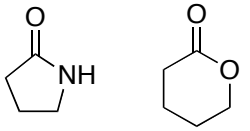


pyridine **pyrrole** **imidazole** **thiazole** **oxazole**



thiophene **furan** **isoquinoline** **quinoline** **indole**

Other Functional Groups:



a lactam **a lactone**