Chemistry - Chapter 10: Organic Compounds Cheat Sheet

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Carbon Can Bind With...

- **C**arbon (1x, 2x, 3x)
- **H**ydrogen
- **O**xygen
- **N**itrogen
- **X** - Halogens
- **S**ulfur

Semi Structural Formulae Bracket Purposes

- Branching
- Condensing formulae
- Multiple attached chains to same carbon

Hydrocarbon Naming Guide

1. Stem/base name is the longest C chain
2. Identify any function groups
3. Number C in chain starting from strongest function group end
4. Multi-bond takes higher priority over functional group in terms of 'counting side'
5. Prefix 'di-'/'tri-'/'tetra-' etc. for more than one function/alkyl group
6. Prefix 'cis-'/'trans-' for geometric isomers
7. Functional groups in alphabetical order, ending with base name & suffix
8. No spaces in name, dashes to separate No. & letters and commas to separate No. & No.

Additional Tips

- Highest priority group assigned lowest possible No. & prefix
- Lower priority group assigned prefix or alternative name

Isomers

- Same molecular formula, different structures & properties

Structural Isomers

- Different structures

Chain Isomers	Positional Isomers
Branching, no functional groups	Functional group located elsewhere

Stereoisomers

- Different arrangements in 3D space

Geometric Isomers		Optical Isomers
Can't rotate at a certain molecule point		Mirror image doesn't match the original
Cis Isomers	**Trans Isomers**	**Enanti-omers**
Longest C chain/main group on same 2x bond side	Longest C chain/main group continues opposite of 2x bond	Optical isomer pair

Alcohol Types

Primary Alcohols

- Alcohol bonding to 1 alkyl group

Secondary Alcohols

- Alcohol bonding to 2 alkyl groups

Tertiary Alcohols

- Alcohol bonding to 3 alkyl groups

Functional Groups With Priorities

Priority	Functional Group Name	Base Structure	Suffix	Al at N
1	Carboxyl	COOH	-oic acid	N
2	Hydroxyl	OH	-ol	H
3	Amino	NH_2	-amine	A
4	Alkene	=	-ene	-e
5	Alkyne	≡	-yne	-y
6	Halo	X	N/A	[H er

Other Functional Groups

Functional Group Name	Base Structure	Suffix	Homologous Series
Alkyl	CH_3	-yl	Alkanes
Ester	COOC	-yl + -oate	Esters
Aldehyde	OCHR	N/A	Carbonyl (Aldehydes)
Ketone	ORR'	N/A	Carbonyl
Amide	$CONH_2$	N/A	Primary Amides

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