

CHE 213 IUPAC Rules for Alkane Nomenclature

1. Find the longest continuous C chain. If there are two options with the same number of C's, choose the chain with the larger number of branch points. The number of C's in this longest chain gives the root name, with the -ane ending. Use cyclo prefix if the longest chain is a ring.

1 C	2 C's	3 C's	4 C's	5 C's	6 C's	7 C's	8 C's	9 C's	10C's	11C's
meth-	eth-	prop-	but-	pent-	hex-	hept-	oct-	non-	dec-	undec-

12 C's	13 C's	14 C's	15 C's	16 C's	17 C's	18 C's	19 C's	20C's	30 C's
dodec-	tridec-	tetradec-	pentadec-	hexadec-	heptadec-	octadec-	nonadec-	icos-	triacont-

2. Substituents are given their usual names. Alphabetize them.

- Do not use numeric prefixes when alphabetizing.
- Do not use *sec-* & *tert-* when alphabetizing (except between themselves).
- "iso" & "neo" prefixes are included in alphabetizing.

3. Number the C chain beginning at the end nearer the first substituent.

- When branching first occurs at an equal distance from either end, chose the numbering which gives the lower number at the first instance of difference.
  - If this does not give an assignment, alphabetize the substituents at the first branching positions to break the tie.

4. Alphabetized substituent names with their locations are prefixes to the root name.

*Examples:*

$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3-\text{CH}-\text{CH}-\text{CH}_3 \\   \\ \text{CH}_2-\text{CH}_3 \end{array}$ <p>2, 3-Dimethylpentane</p>	$\begin{array}{c} \text{CH}_3 \qquad \text{CH}_3 \text{ CH}_3 \\   \qquad   \quad   \\ \text{CH}_3-\text{CH}-\text{CH}_2-\text{CH}-\text{CH}-\text{CH}_3 \end{array}$ <p>2,3,5-Trimethylhexane (<b>not</b> 2,4,5-Trimethylhexane)</p>
$\begin{array}{c} \text{F} \quad \text{Cl} \\   \quad   \\ \text{CH}_3-\text{CH}-\text{CH}-\text{CH}_3 \end{array}$ <p>2-Chloro-3-fluorobutane (<b>not</b> 3-Chloro-2-fluorobutane)</p>	$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3-\text{C}-(\text{CH}_2)_2-\text{CH}-\text{CH}_2-\text{CH}_3 \\   \\ \text{CH}_3 \end{array}$ <p>5-Ethyl-2,2-dimethyloctane</p>

5. Name a complex hydrocarbon substituent according to the compound rules, but use the -yl suffix. Enclose in parenthesis and alphabetize, using numeric prefix if present.