



AULAS DE QUÍMICA

por Anderson Dino

Lista de Exercícios

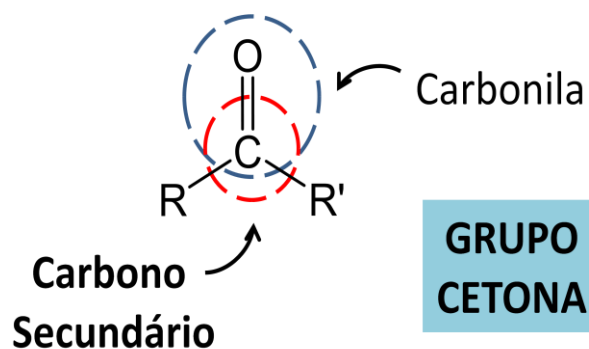
Formulação Orgânica: Cetonas

Professor Anderson Dino
www.aulasdequimica.com.br

1. Introdução

Cetona é uma função orgânica que se caracteriza pela presença do grupamento —C(=O)— , (carbonila), ligado a dois radicais orgânicos. Apresentam a fórmula geral R—C(=O)—R' , em que R e R' podem ser radicais iguais (cetonas simples ou simétricas) ou diferentes (cetonas mistas ou assimétricas); alifáticos ou aromáticos; saturados ou insaturados. R e R' podem também estar unidos. Nesse caso, compõem um ciclo (cetonas cíclicas).

Quando R ou R' é um átomo de hidrogênio, trata-se de um aldeído.



2. Regras de nomenclatura

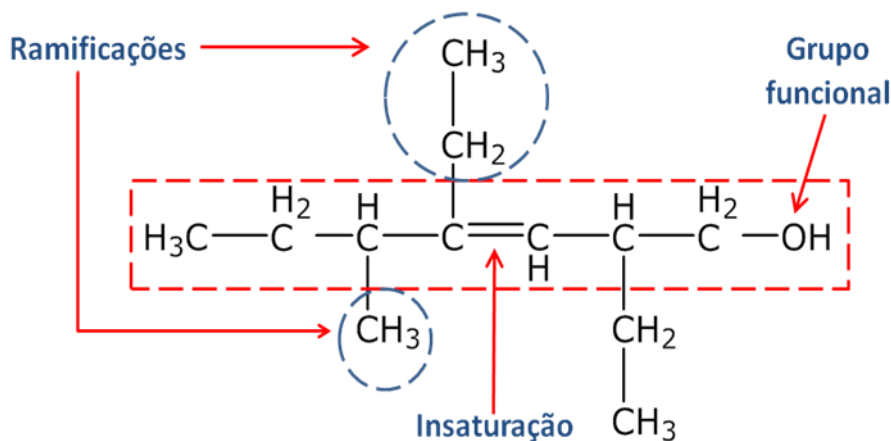
A **IUPAC** (International Union of Pure and Applied Chemistry) considera como a nomenclatura oficial dos compostos orgânicos a seguinte estrutura:

PREFIXO Número de Átomos de Carbono	+ INFIXO Tipo de Ligação entre Carbonos	+ SUFIXO Função Orgânica
1 = MET	AN SÓ LIGAÇÕES SIMPLES	ONA CETONA
2 = ET		
3 = PROP		
4 = BUT		
5 = PENT		
6 = HEX		
7 = HEPT		
8 = OCT		
9 = NON		
10 = DEC		

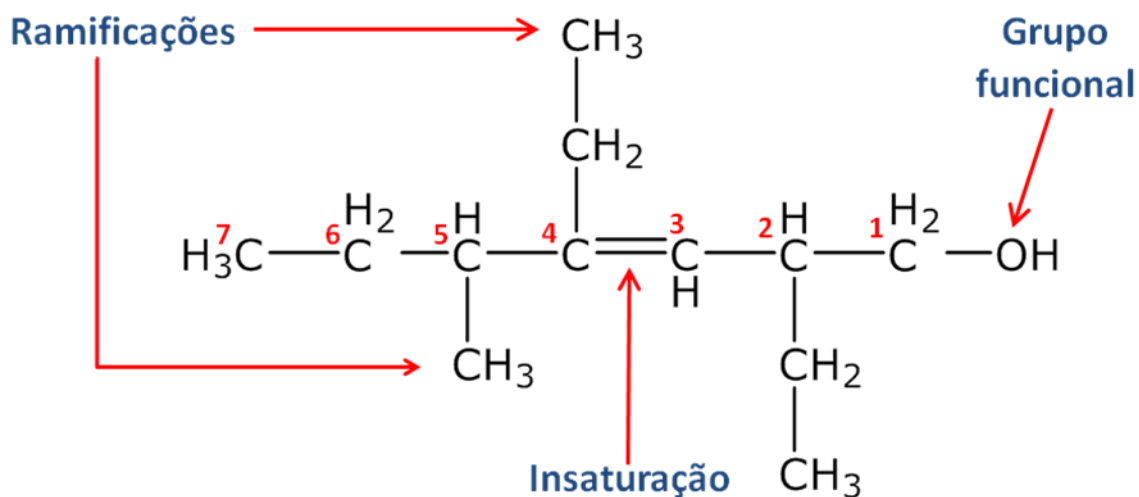
3. Numeração das cadeias

A cadeia principal para cadeias carbônicas abertas é aquela com maior número de átomos de carbonos que contenham:

- grupo funcional (procure átomos que não sejam carbono e hidrogênio);
- maior número de insaturações (ligações duplas ou triplas entre carbonos);
- maior número de grupos radicais substituintes.



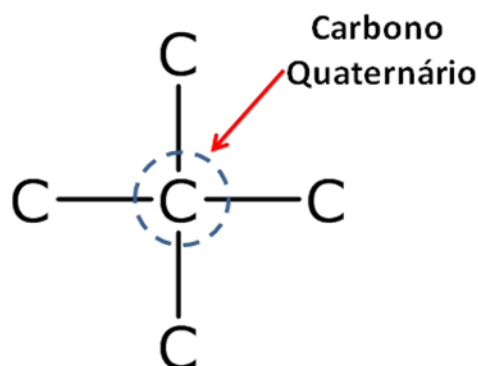
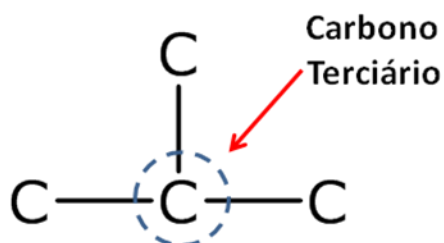
Começar a numerar a cadeia com os menores números possíveis a partir da extremidade de acordo com a preferência:



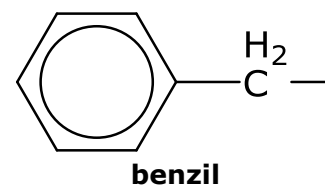
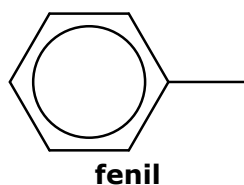
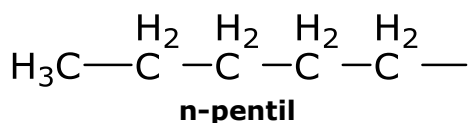
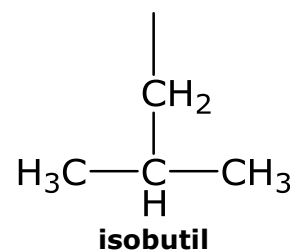
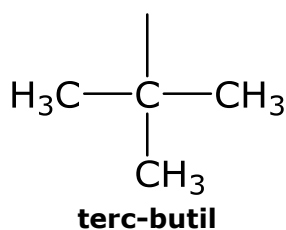
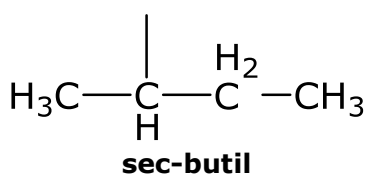
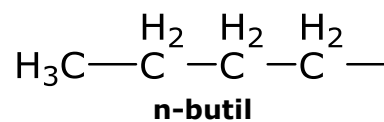
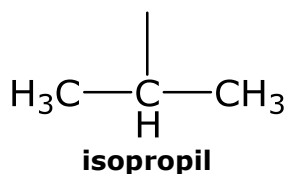
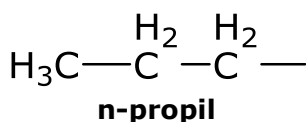
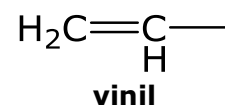
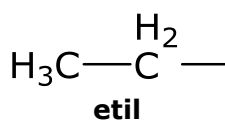
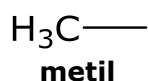
Quando houver só uma possibilidade, a numeração não precisa ser indicada.

4. Ramificações

Compostos Orgânicos ramificados apresentam pelo menos um carbono terciário ou quaternário. Não existem ramificações em carbonos secundários e primários.



4.a. Principais ramificações

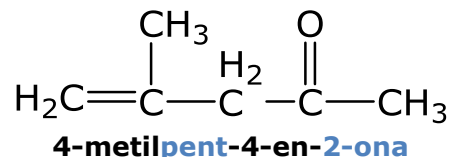
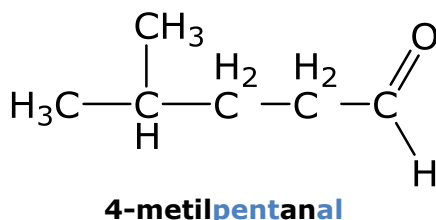
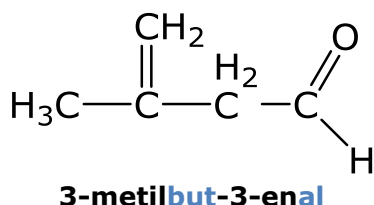
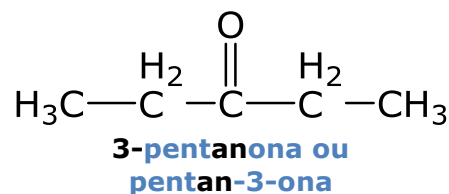
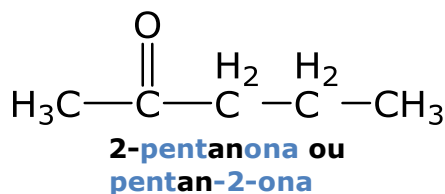
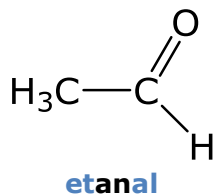


5. Regra de nomenclatura para compostos orgânicos ramificados

RADICAL + PREFIXO + INFIXO + SUFIXO

Observação: radicais diferentes devem ser colocados em ordem alfabética

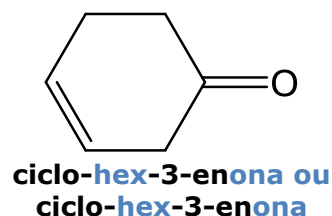
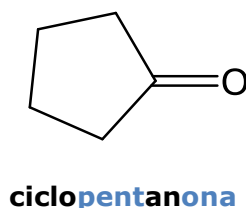
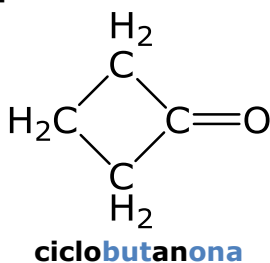
Exemplos:



6. Regra de nomenclatura de cetonas cíclicas

CICLO + PREFIXO + INFIXO + SUFIXO

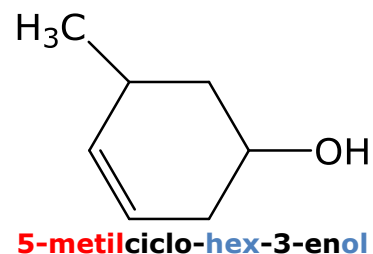
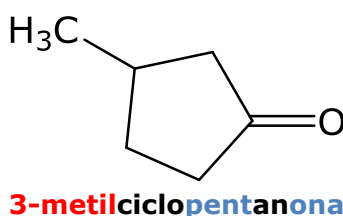
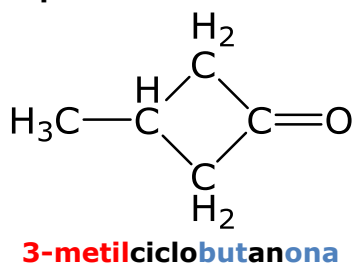
Exemplos:



7. Regra de nomenclatura de alcoóis cíclicos e ramificados

RADICAL + CICLO + PREFIXO + INFIXO + SUFIXO

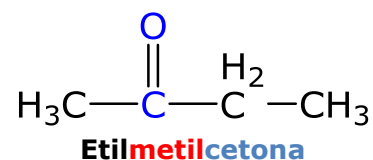
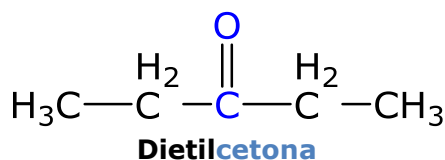
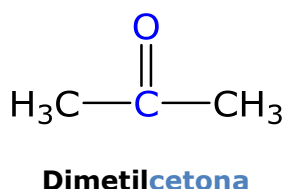
Exemplos:



7. Regra de nomenclatura clássica de cetonas

RADICAIS + CETONA

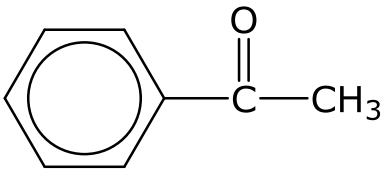
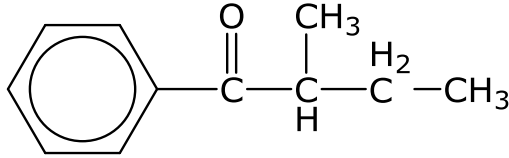
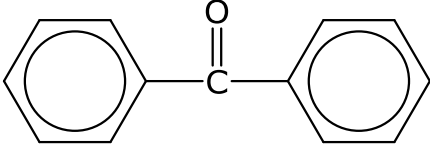
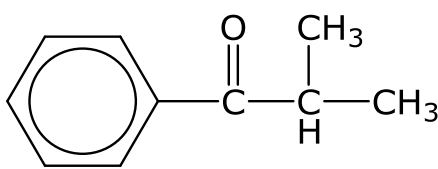
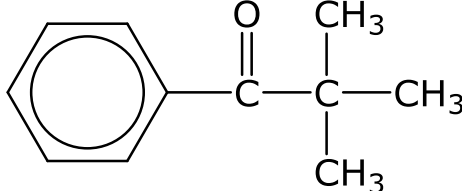
Exemplos:



Dê as fórmulas estruturais das seguintes cetonas:

- | | | |
|--------------------------------|---------------------------------|------------------------------------|
| a. dimetilcetona | b. dietilcetona | c. di-n-propilcetona |
| d. di-isopropilcetona | e. divinilcetona | f. etilmetilcetona |
| g. metilvinilcetona | h. metil-n-propilcetona | i. metilisopropilcetona |
| j. etil-n-propilcetona | k. fenilmetilcetona | l. fenil-sec-butilcetona |
| m. difenilcetona | n. fenilisopropilcetona | o. isopropilsec-butilcetona |
| p. isopropilvinilcetona | q. fenilterc-butilcetona | r. isobutilisopropilcetona |

GABARITO

a. $\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$	b. $\text{H}_3\text{C}-\text{C}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{C}_2-\text{CH}_3$	c. $\begin{array}{ccccccc} & \text{CH}_3 & & \text{O} & & & \text{CH}_3 \\ & & & & & & \\ \text{H}_2\text{C} & -\text{C} & - & \text{C} & - & \text{C} & -\text{CH}_2 \\ & & & & & & \end{array}$
d. $\begin{array}{ccccccc} & \text{CH}_3 & & \text{O} & & & \text{CH}_3 \\ & & & & & & \\ \text{H}_3\text{C} & -\text{C} & - & \text{C} & - & \text{C} & -\text{CH}_3 \\ & & & & & & \\ & \text{H} & & & & & \text{H} \end{array}$	e. $\text{H}_2\text{C}=\underset{\text{H}}{\text{C}}-\overset{\text{O}}{\parallel}{\text{C}}-\underset{\text{H}}{\text{C}}=\text{CH}_2$	f. $\text{H}_3\text{C}-\text{C}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$
g. $\text{H}_2\text{C}=\underset{\text{H}}{\text{C}}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$	h. $\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{C}_2-\text{C}_2-\text{CH}_3$	i. $\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\underset{\text{H}}{\text{C}}(\text{CH}_3)-\text{CH}_3$
j. $\text{H}_3\text{C}-\text{C}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{C}_2-\text{CH}_2\text{CH}_3$	k. 	l. 
m. 	n. 	o. $\text{H}_3\text{C}-\text{C}_2-\underset{\text{H}}{\text{C}}(\text{CH}_3)-\overset{\text{O}}{\parallel}{\text{C}}-\underset{\text{H}}{\text{C}}(\text{CH}_3)-\text{CH}_3$
p. $\text{H}_3\text{C}-\underset{\text{H}}{\text{C}}(\text{CH}_3)-\overset{\text{O}}{\parallel}{\text{C}}-\underset{\text{H}}{\text{C}}=\text{CH}_2$	q. 	r. $\text{H}_3\text{C}-\underset{\text{H}}{\text{C}}(\text{CH}_3)-\text{C}_2-\overset{\text{O}}{\parallel}{\text{C}}-\underset{\text{H}}{\text{C}}(\text{CH}_3)-\text{CH}_3$