AULAS DE QUÍMICA

por Anderson Dino

Lista de Exercícios

Nomenclatura Orgânica: Aldeídos e Cetonas

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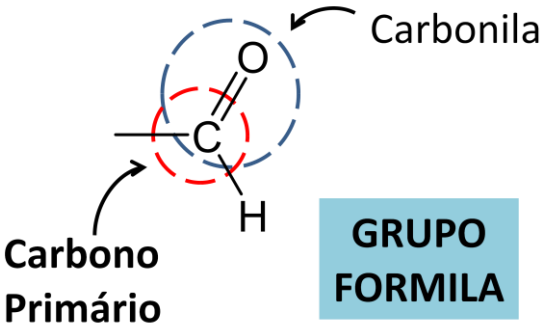
1. Introdução

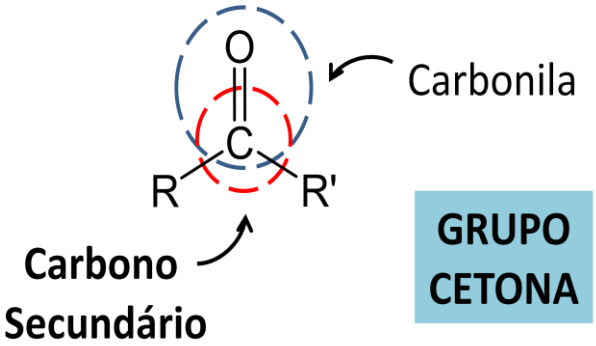


Aldeído é uma função orgânica que se caracteriza pela presença, em sua estrutura, do grupamento H—C=O (formila ou formilo), ligado a um radical alifático ou aromático.

O odor dos aldeídos que têm baixo peso molecular é irritante, porém, à medida que o número de carbonos aumenta, torna-se mais agradável. Os aldeídos de maior peso molecular, que possuem de 8 a 12 átomos de carbono, são muito utilizados na indústria de cosméticos na fabricação de perfumes sintéticos.

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

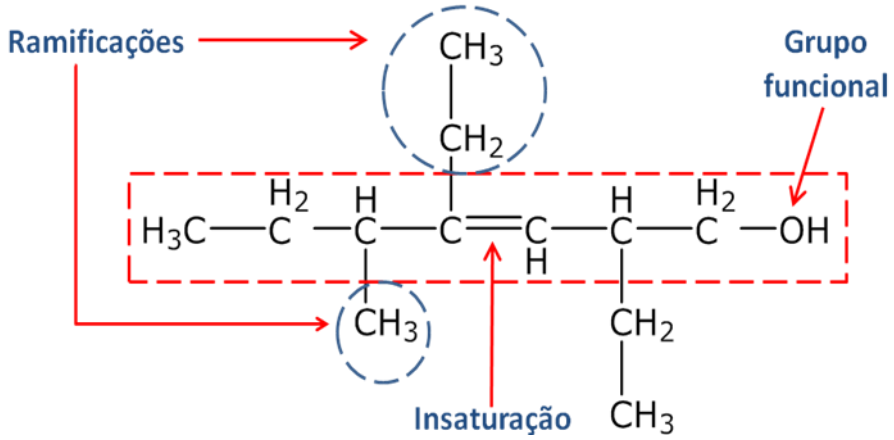
A **IUPAC** (International Union of Pure and Applied Chemistry) considera como a nomencatura oficial dos compostos orgânicos a seguinte estrutura:

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

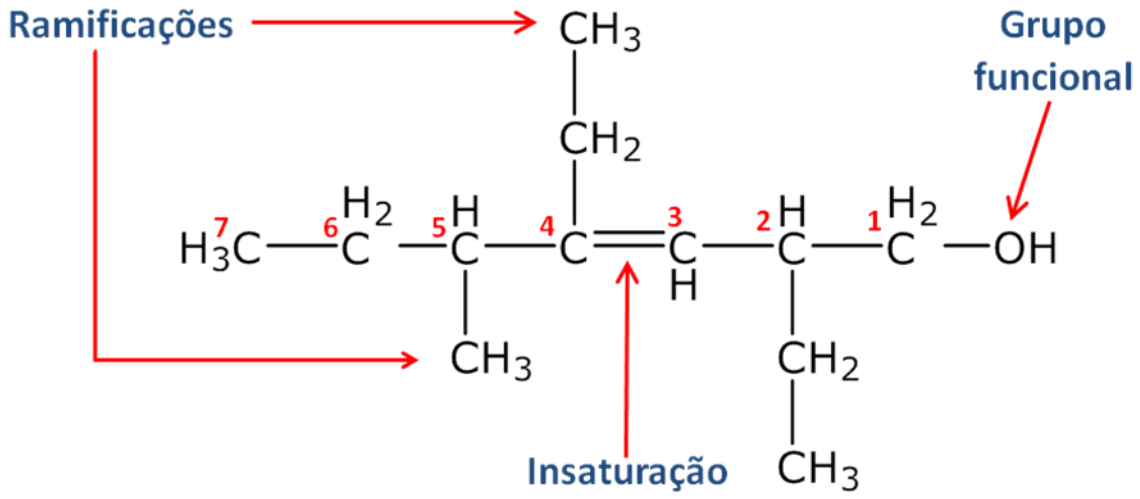
3. Numeração das cadeias

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.



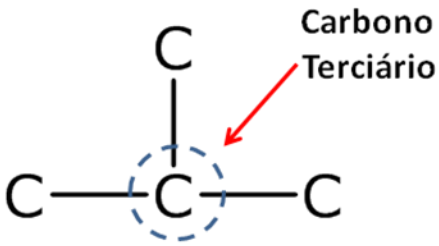
Começar a numerar a cadeia com os menores números possíveis a partir da extremidade de acordo com a preferência:

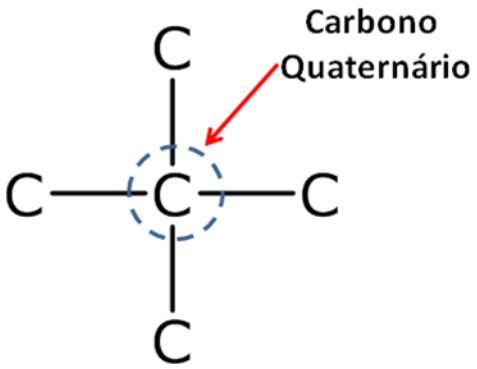


Quando houver só uma possibilidade, a numeração não precisa ser indicada.

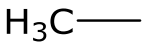
4. Ramificações

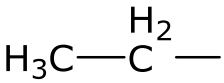
Compostos Orgânicos ramificados apresentam pelo menos um carbono terciário ou quaternário. Não existem ramificações em carbonos secundários e primários.

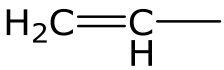


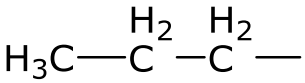


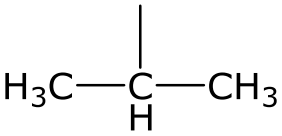
4.a. Principais ramificações

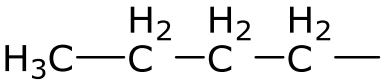

metil

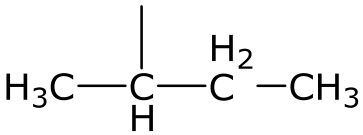

etil

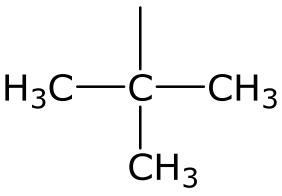

vinil

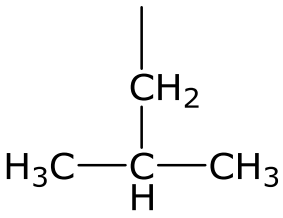

n-propil

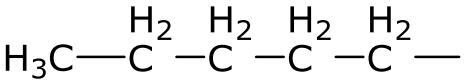

isopropil

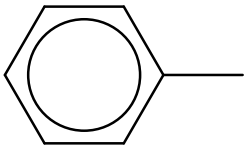

n-butil

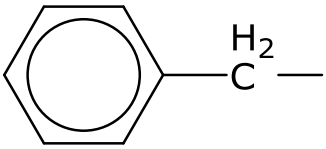

sec-butil


terc-butil


isobutil


n-pentil


fenil

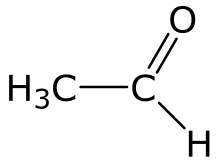

benzil

5. Regra de nomenclatura para compostos orgânicos ramificados

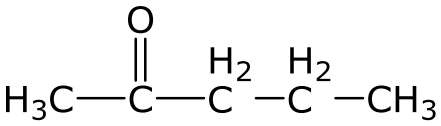
RADICAL + PREFIXO + INFIXO + SUFIXO

Observação: radicais diferentes devem ser colocados em ordem alfabética

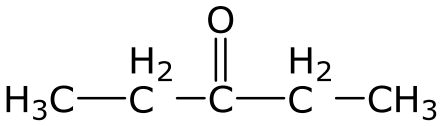
Exemplos:



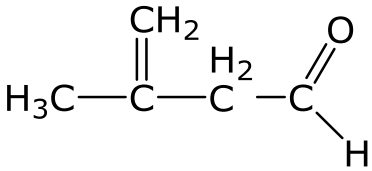
etanal



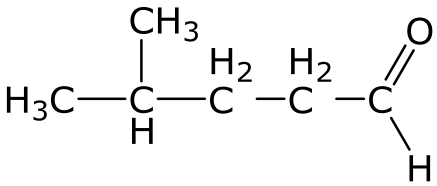
2-pentanona ou pentan-2-ona



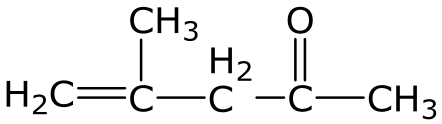
3-pentanona ou pentan-3-ona



3-metilbut-3-enal



4-metilpentanal

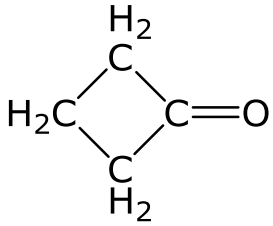


4-metilpent-4-en-2-ona

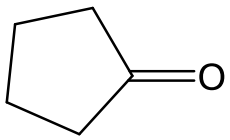
6. Regra de nomenclatura de centonas cíclicas

CICLO + PREFIXO + INFIXO + SUFIXO

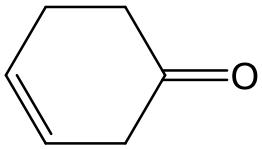
Exemplos:



ciclobutanona



ciclopentanona

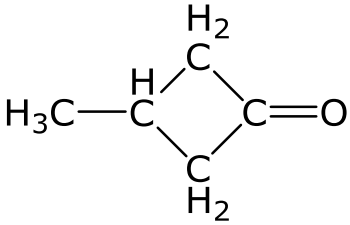


ciclo-hex-3-enona ou ciclo-hex-3-enona

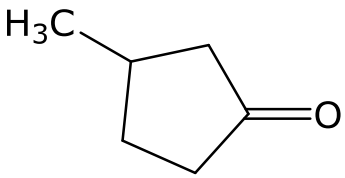
7. Regra de nomenclatura de alcoóis cíclicos e ramificados

RADICAL + CICLO + PREFIXO + INFIXO + SUFIXO

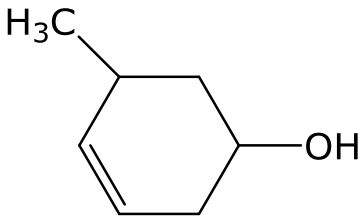
Exemplos:



3-metilciclobutanona



3-metilciclopentanona

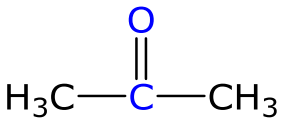


5-metilciclo-hex-3-enol

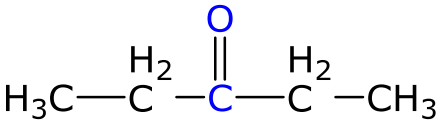
7. Regra de nomenclatura clássica de cetonas

RADICAIS + CETONA

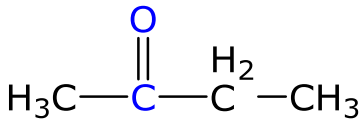
Exemplos:



Dimetilcetona

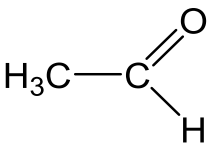
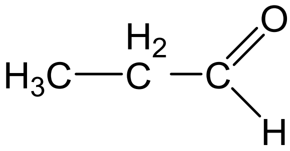
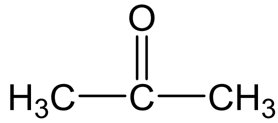
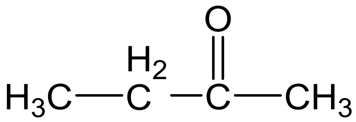
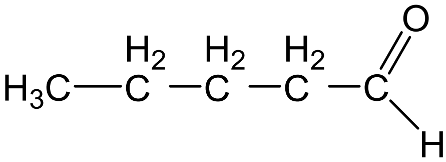
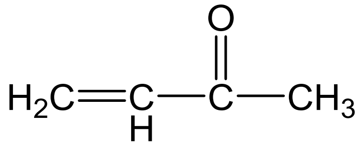
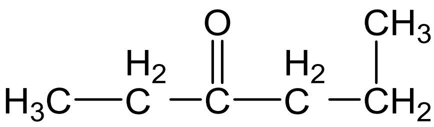
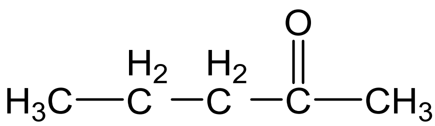
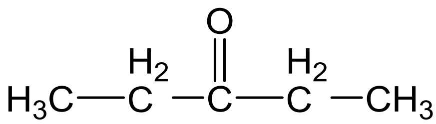
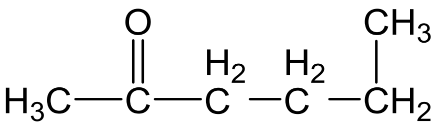
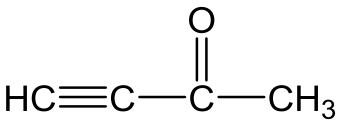
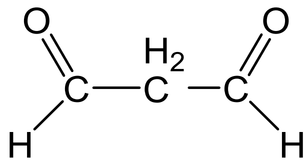
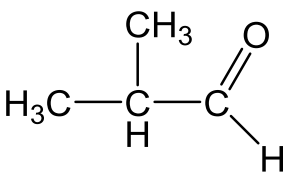
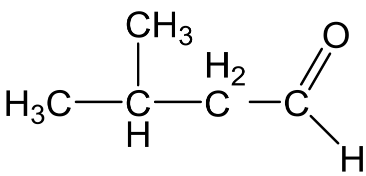
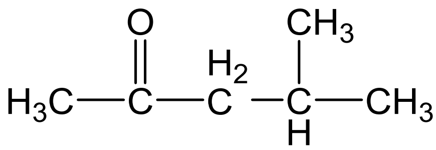
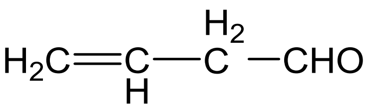
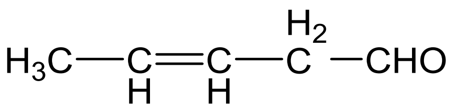
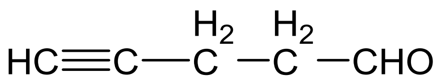
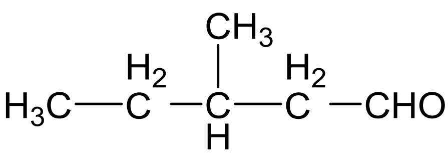
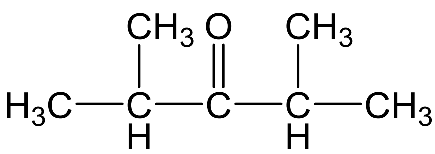
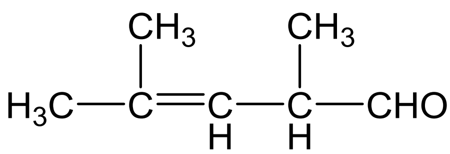
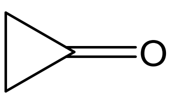
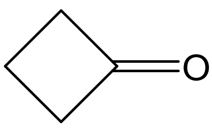
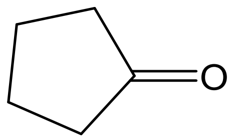
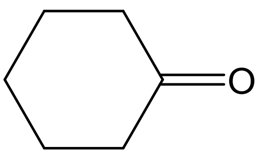
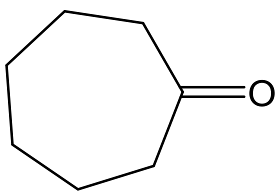
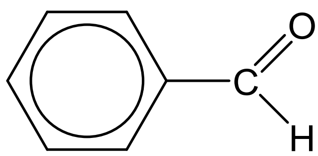


Dietilcetona



Etilmetilcetona

Dê os nomes dos seguintes compostos orgânicos:

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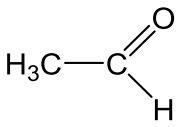
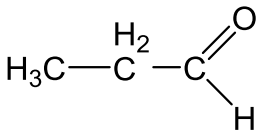
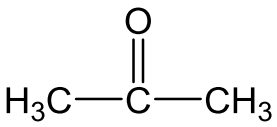
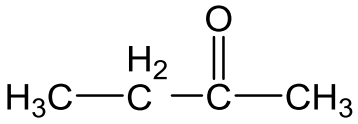
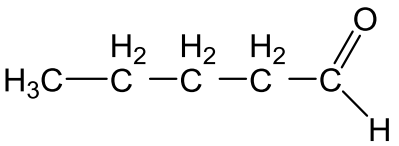
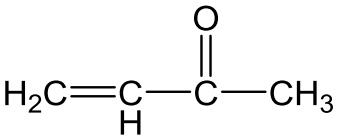
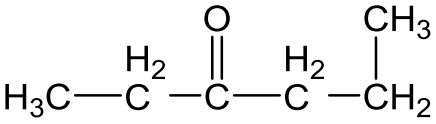
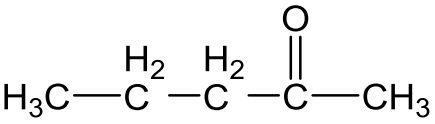
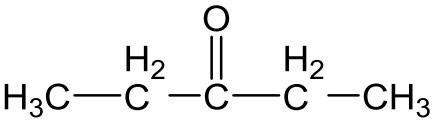
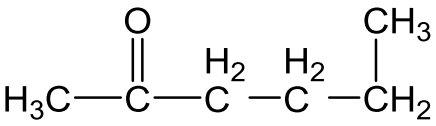
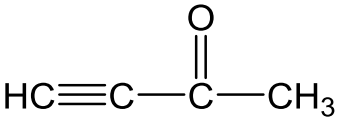
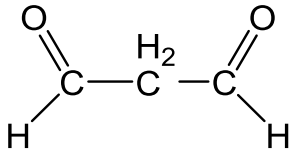
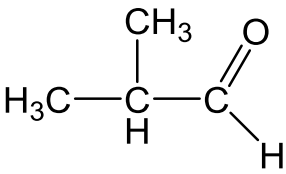
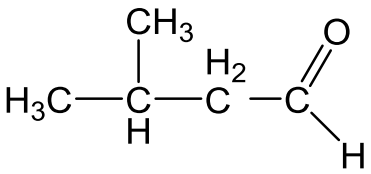
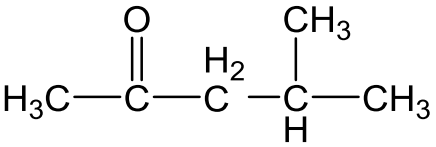
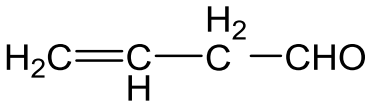
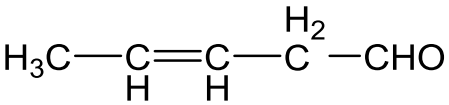
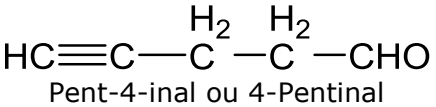
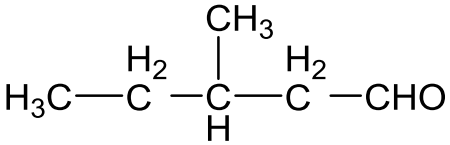
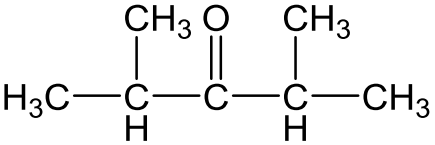
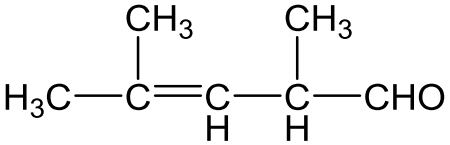
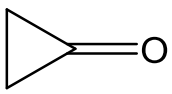
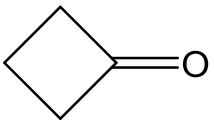
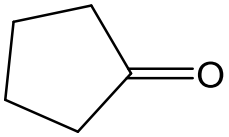
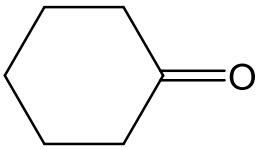
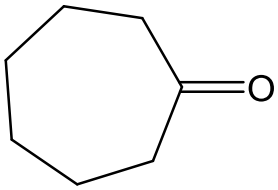
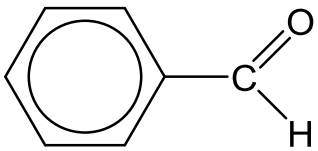
 Etanal ou Acetaldeído	 Propanal	 Propanona
 Butanona	 Pentanal	 Butenona
 Hexan-3-ona ou 3-Hexanona	 Pentan-2-ona ou 2-Pentanona	 Pentan-3-ona ou 3-Pentanona
 Hexan-2-ona ou 2-Hexanona	 Butinona	 Propanodial
 Metilpropanal	 3-Metilbutanal	 4-Metilpentan-2-ona ou 4-Metil-2-pentanona
 But-3-enal ou 3-Butenal	 Pent-3-enal ou 3-Pentenal	 Pent-4-inal ou 4-Pentinal
 3-metilpentanal	 2,4-Dimetilpentanona	 2,4-Dimetilpent-3-enal ou 2,4-Dimetil-3-Pentenal
 Ciclopropanona	 Ciclobutanona	 Ciclopentanona
 Ciclo-hexanona	 Ciclo-heptanona	 Benzenal ou Fenilmetanal