

Naming organic compounds

Table 3 Straight-Chain Alkane Nomenclature

Number of carbon atoms	Name	Formula
1	methane	CH ₄
2	ethane	CH ₃ —CH ₃
3	propane	CH ₃ —CH ₂ —CH ₃
4	butane	CH ₃ —CH ₂ —CH ₂ —CH ₃
5	pentane	CH ₃ —CH ₂ —CH ₂ —CH ₂ —CH ₃
6	hexane	CH ₃ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₃
7	heptane	CH ₃ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₃
8	octane	CH ₃ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₃
9	nonane	CH ₃ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₃
10	decane	CH ₃ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₂ —CH ₃

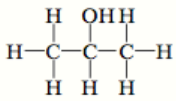
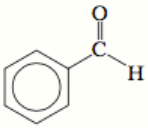

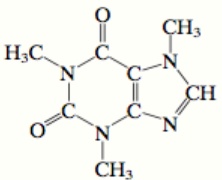
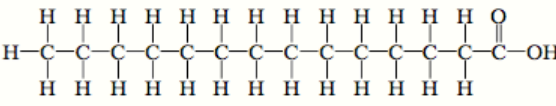
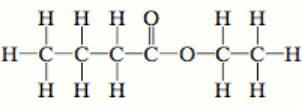
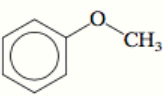
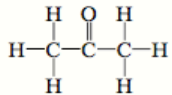
Table 4 Naming Compounds with Functional Groups

Class of compound	Suffix or prefix	Example
Alcohol	<i>-ol</i>	propanol
Aldehyde	<i>-al</i>	butanal
Amine	<i>-amine</i> or <i>amino-</i>	methylamine
Carboxylic acid	<i>-oic acid</i>	ethanoic acid
Ketone	<i>-one</i>	propanone

TABLE 22.2 The Most Common Alkyl Substituents and Their Names

Structure*	Name†
—CH ₃	Methyl
—CH ₂ CH ₃	Ethyl
—CH ₂ CH ₂ CH ₃	Propyl
$\begin{array}{c} \\ \text{CH}_3\text{CHCH}_3 \end{array}$	Isopropyl
—CH ₂ CH ₂ CH ₂ CH ₃	Butyl
$\begin{array}{c} \\ \text{CH}_3\text{CHCH}_2\text{CH}_3 \end{array}$	<i>sec</i> -Butyl
$\begin{array}{c} \text{H} \\ \\ \text{—CH}_2\text{—C—CH}_3 \\ \\ \text{CH}_3 \end{array}$	Isobutyl
$\begin{array}{c} \text{CH}_3 \\ \\ \text{—C—CH}_3 \\ \\ \text{CH}_3 \end{array}$	<i>tert</i> -Butyl

Table 1 Classes of Organic Compounds

Class	Functional group	Example	Use
Alcohol	$-\text{OH}$	 2-propanol	disinfectant
Aldehyde	$\begin{array}{c} \text{O} \\ \parallel \\ -\text{C}-\text{H} \end{array}$	 benzaldehyde	almond flavor
Halide	$-\text{F}, \text{Cl}, \text{Br}, \text{I}$	 trichlorofluoromethane (Freon-11)	refrigerant
Amine	$-\text{N}-$	 caffeine	beverage ingredient
Carboxylic acid	$\begin{array}{c} \text{O} \\ \parallel \\ -\text{C}-\text{OH} \end{array}$	 tetradecanoic acid (myristic acid)	soap-making ingredient
Ester	$\begin{array}{c} \text{O} \\ \parallel \\ -\text{C}-\text{O}- \end{array}$	 ethyl butanoate	perfume ingredient
Ether	$-\text{O}-$	 methyl phenyl ether (anisole)	perfume ingredient
Ketone	$\begin{array}{c} \text{O} \\ \parallel \\ -\text{C}- \end{array}$	 propanone (acetone)	solvent in nail-polish remover