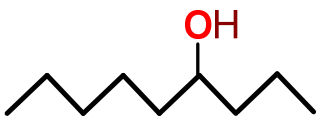
CHEMISTRY

ALCOHOLS AND ETHERS

Alcohols and Ethers both contain a side chain that involves oxygen connecting to the main chain.

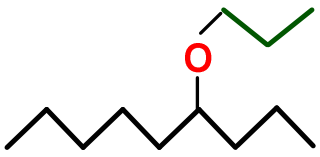
Alcohols

Alcohols have the oxygen side chain placed somewhere connected to the main chain and then a hydrogen is connected to the other side of the oxygen making the functional group a ***hydroxyl group***.



Ethers

Ethers have the oxygen side chain placed somewhere connected to the main chain and then an alkyl group (traditional side-chain) is connected to the other side of the oxygen.



CHEMISTRY

ALCOHOLS AND ETHERS

Naming Alcohols

The functional group that is common to all alcohols is the ***-OH*** group, called the ***hydroxyl group***. An alcohol consists of a hydrocarbon chain with a hydroxyl group attached somewhere in the chain in place of a hydroge atom.

Naming alcohols consists of four parts:

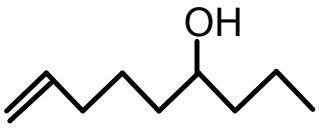
1. A number identifying which carbon contains the hydroxyl group
2. *1st syllable - meth, eth, prop, etc*
3. *2nd syllable - an, en, yn (single, double, or triple bonds???)*
4. *3rd syllable - ol (indicates the presence of hydroxyl group)*

NOTE: you can also name the hydroxyl group as a side chain called "hydroxy"

Ex: ethanol *(or hydroxy ethane)* ***2-butanol*** *(or 2 hydroxy butane)*

hept-3-en-1-ol *(or 1-hyroxy-3-heptene)*

5,6-dichloro-1,3-hexadiol



CHEMISTRY

ALCOHOLS AND ETHERS

Naming Ethers

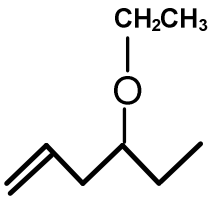
Naming ethers is similar to naming simple alkanes with side-chains. The difference is in an ether, the side chain will be connected via an oxygen. To accommodate the oxygen, the traditional "**yl**" suffix will be replaced with "**oxy**"

Examples:

Recall ... 4-ethylheptane

And Now ... 4-ethoxyheptane

3-methoxy-1-butyne

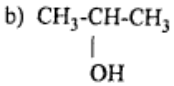


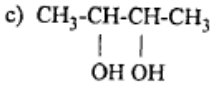
CHEMISTRY

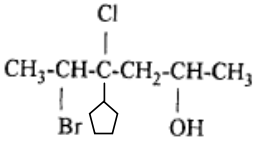
WORKSHEET - ALCOHOLS AND ETHERS

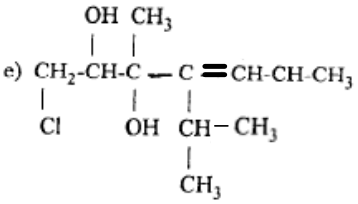
1. Name the Following Compounds

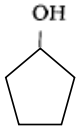
a) CH_3-CH_2-CH_2-CH_2-OH

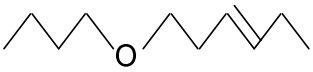
b) 

c) 

d) 

e) 

f) 

g) 

2. Draw the Following Compounds

a) 1,3-pentanediol
b) 3,5-dichloro-2,7-nonandiol
c) 6-bromo-1-heptanol
d) 10-chloro-1-decanol
e) 2-ethyl-3-methyl-1-butanol
f) 3-methyl-1,2,4-butanetriol
g) 1,2,3,4,5,6-cyclohexanehexol
h) ethanol
i) 1-propanol
j) methanol
k) 2-ethyl-3,5-dinitrohept-1-enol
l) 3-butyl-5-bromo-4-ethyl-2,7-oct-1-endiol

3. Draw the Following Compounds

a) 2-methoxypropane

b) 1-ethoxybutane

c) methoxycyclohexane

d) 2-chloro-4-methoxyoctane

e) 5-methoxy-2-hexene

f) 3,5-diethexyheptane

g) 2,4-dibromo-3,5-dimethoxy-cyclopentene

h) 4-propoxy-1,6-dec-3-en-8-ynediol