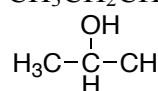


Summary: S_N1, S_N2, E1, and E2

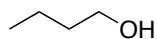
Halide	S _N 1	S _N 2	E1	E2
R-CH ₂ -X (1°)	No	Favoured	No	If strong base present
R ₂ -CH-X (2°)	Sometimes	Yes/competes with E2	Sometimes	Yes/competes with S _N 2, esp. with base.
R ₃ -C-X (3°)	Yes, esp. if HOH, ROH present	No	Competes with S _N 1	If strong base present

Alcohols, Ethers, carbohydrates (sugars)



- CH₃OH - methanol (wood alcohol)
- CH₃CH₂OH - ethanol (grain alcohol)
- CH₃CH₂CH₂OH - 1-propanol (n-propanol)
-  - 2-propanol (isopropanol), rubbing alcohol

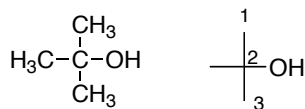
Naming: drop “e” and add “ol” to the parent name



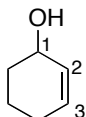
1-butanol
butan-1-ol
n-butanol



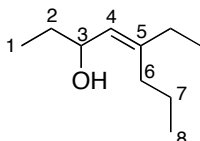
2-butanol



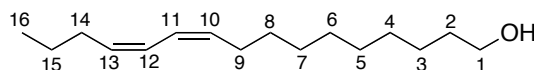
tert-butyl alcohol
2-methyl-2-propanol



2-cyclohexen-1-ol or
cyclohex-2-en-1-ol



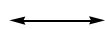
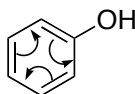
5-ethyl-4(Z)-octen-3-ol



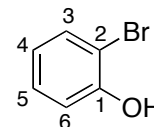
16C = hexadecane
10,12 = Diene
1 = ol

Hexadeca-10(Z)-12(Z)-dien-1-ol

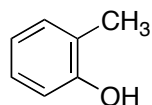
Phenols (aromatic alcohols)



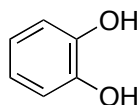
resonance forms



2-bromophenol



2-methylphenol

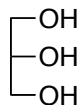


dihydroxybenzene (catechol)

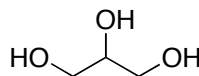
-OH hydroxy group ("hydroxyl")



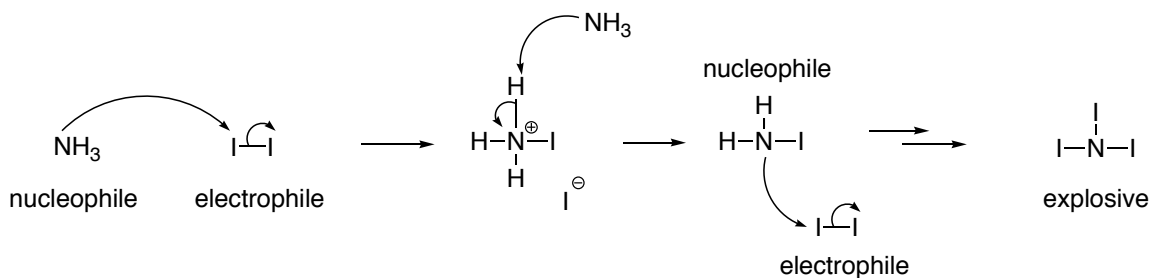
Ethylene glycol
1,2-dihydroxyethane
1,2-ethanediol



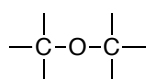
glycerol
1,2,3-trihydroxypropane
1,2,3-propanetriol



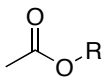
Demo



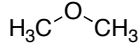
Ether nomenclature



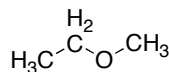
ether



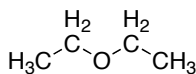
ester



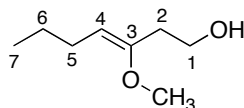
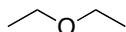
dimethyl ether



ethyl methyl ether

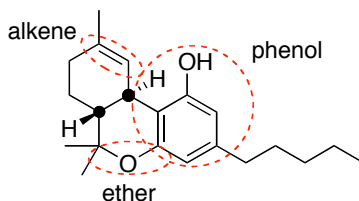


diethyl ether, ethyl ether, ether



3-methoxy-3(Z)-hepten-1-ol

-OR = alkoxy group
-OCH₃ = methoxy group
-OCH₂CH₃ = ethoxy group

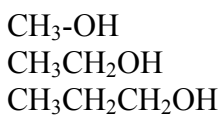


tetrahydrocannabinol (THC)

● 2-stereogenic centers

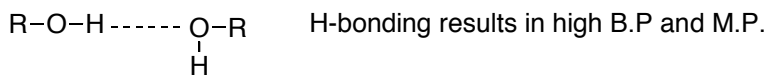
Physical Properties of Alcohols

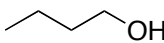
R-O-H - can donate and accept hydrogen bonds
 - polar, good solvents

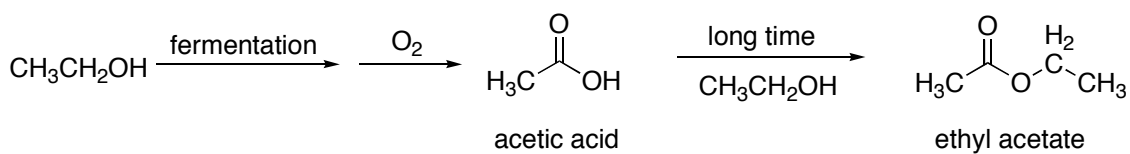


Miscible in H₂O + organic solvent

- longer alcohols are generally not miscible with water.

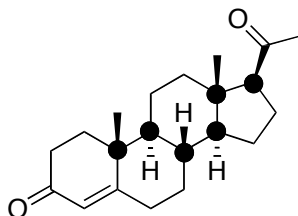


	CH ₃ OH	CH ₃ CH ₃		n-butanol - causes headache
MW	32	30		
BP	+ 65°C	- 88°C		



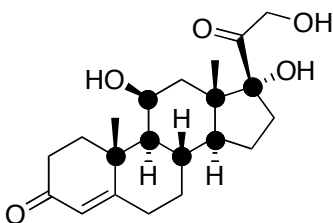
Properties of Ethers

- chemically inert
- non-polar (relatively)
 - have dipole-dipole interactions
- not miscible with water, good solvents for organic compounds.
- low B.P. and M.P. but higher than hydrocarbons.
 - eg. CH₃CH₂OCH₂CH₃ BP = 35°C



A Steroid
progesterone - pregnancy hormone

- 6 stereogenic centers



- 7 stereogenic centers

cortisol
stress hormone

**For Practice: Identify all the functional groups present in the above molecules?
Assign R or S configuration to the stereocenters present?**