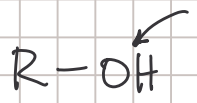
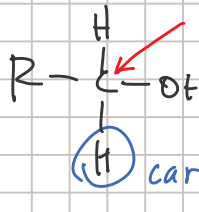
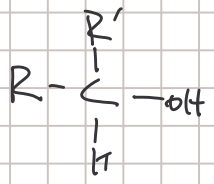
Ch 10 Alcohols

Note Title 12/5/2005

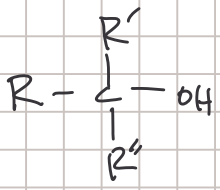




1° alcohol

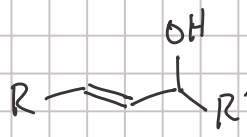


2° alcohol

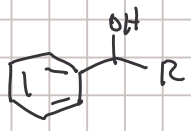


3° alcohol

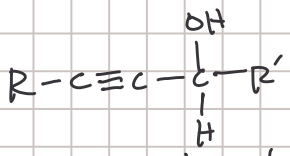
phenol



an allylic alcohol



a benzylic alcohol

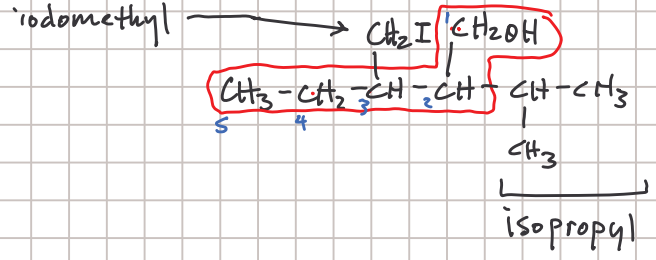


a propargylic alcohol

IUPAC nomenclature of alcohols

1) name longest C chain w/ OH group
(OH has priority over dbl/triple bonds, halides)

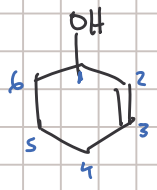
2) number chain from end nearest OH group



3-iodomethyl-2-isopropyl-1-pentanol (OLD way)

where OH attached

" " " " -pentan-1-ol (NEW way)



2-cyclohexenol (assume OH is #1 in ring)

2-cyclohexen-1-ol (old)

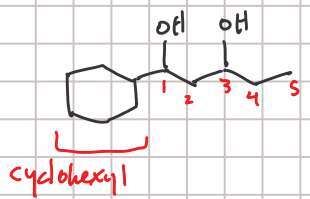
cyclohex-2-en-1-ol (new)

loc. of dbl bond — loc. of OH grp

Common names → $CH_3CH_2CH_2OH$ n-propyl alcohol

IUPAC: 1-propanol

Diols 2 hydroxyl groups.



1-cyclohexylpentane-1,3-diol

1,2-diols = glycols (vicinal diol)

CH_2-CH_2
| |
OH OH

IUPAC: ethane-1,2-diol

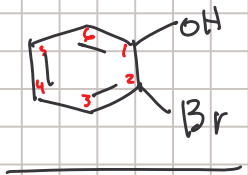
common: ethylene glycol

$CH_2=CH_2$ (ethylene) —OsO_4, H_2O_2 or $KMnO_4$ cold, dilute or RCO_3H, H_3O^+→ CH_2-CH_2 (OH, OH) ethylene glycol

$CH_2=CH-CH_3$ propylene → $CH_2-CH-CH_3$ (OH, OH) propylene glycol

Phenols

Phenols

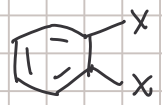


IUPAC: 2-bromophenol

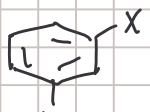
(2-bromo-1-hydroxybenzene ← OH as substituent)

not commonly used

Common name: ortho-bromophenol

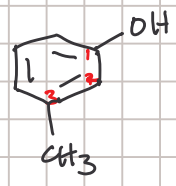


1,2
ortho



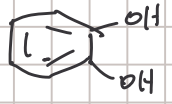
1,3
meta

1,4
para

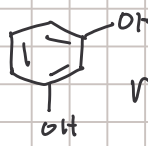


3-methylphenol
meta-cresol

para-cresol
↓
methylphenol



IUPAC benzene-1,2-diol
Catechol

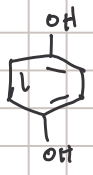


resorcinol

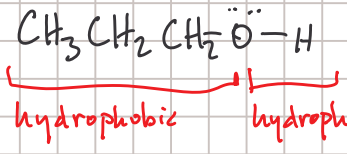
CH_3CH_2OH 78 °C

CH_3OCH_3 -25 °C

$CH_3CH_2CH_3$ -45 °C



hydroquinone



Soluble in H_2O

" in hexane

CH_3OH
CH_3CH_2OH
$CH_3CH_2CH_2OH$
$(CH_3)_2CHOH$
$(CH_3)_3COH$

miscible in H_2O

isobutyl alcohol

limited solubility in H_2O

sol. decreases as #C increases.