

4.18 reagent

a) HNO3

b) Br2

c) HNO3

H2

Catalyst

H2SO4 + 30-40°C

FeCl3 FeX3

H2SO4 (Step 1)

Ni, 3atm (Step 2)

4.21 phenols can act as acids

which alone are insoluble in H2O, but if reacted w/ a strong base they can form a water soluble salts.

Cyclohexanol does not act as an acid and will not undergo this reaction.

4.19 a) step 1 HNO3 H2SO4

Step 2 H2SO4 heat

b) step 1 Br2 FeCl3

Step 2 Cl2 FeCl3

11/10/16 Alcohols, Ethers + Thiols

Alcohol - OH (hydroxyl)

Nomenclature:

IUPAC - Determine PC and # so that the hydroxyl group has the lowest # possible
 Carbon # prefix - an/en/yn - ol

Common name - name PC as a branch followed by -alcohol

C_2H_5OH	C_3H_7OH <small>no location for OH</small>	C_3H_7OH	
C_2H_5OH	C_3H_7OH	C_3H_7OH	C_4H_9OH
IUPAC 1-ethanol	1-propanol	2-propanol	2-methyl-2-propanol
Common name n-ethanol	n-propanol	isopropyl alcohol	t-butyl alcohol
Common name ethyl alcohol	propyl alcohol	aka: rubbing alcohol	

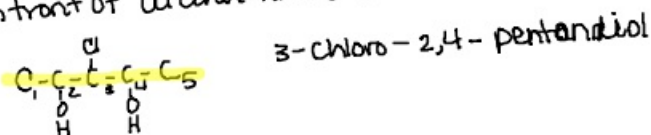
Classifying Alcohols: Determined by the # of C attached to the C-OH

1° alcohol - one C attached
 $HO-C-C-R$

2° alcohol - two C attached
 $HO-C-C-R$
 $\quad |$
 $\quad R'$

3° alcohol - three C attached
 $R-C-C-C-R'$
 $\quad |$
 $\quad OH$

Determined by # of hydroxyls attached
 Use a numeric (standard) prefix to indicate # of -OH, locators go in front of alcohol name but behind branches.



* Glycol $R-C-C-R'$ two or more hydroxyls side by side
 $\quad | \quad |$
 $\quad OH \quad OH$

Properties of Alcohols:

1. Toxic
2. Flammable
3. Relatively high B.P. — \uparrow B.P. as molecule gets larger \uparrow B.P. w/ increase of hydroxyls
4. Polar — hydrogen bonds
5. "Universal Solvent" of the organic world.
6. Soluble in H_2O — the larger the PC, the lower the solubility
the larger the # of hydroxyls \uparrow solubility.
7. alcohols are weak acids
8. volatile