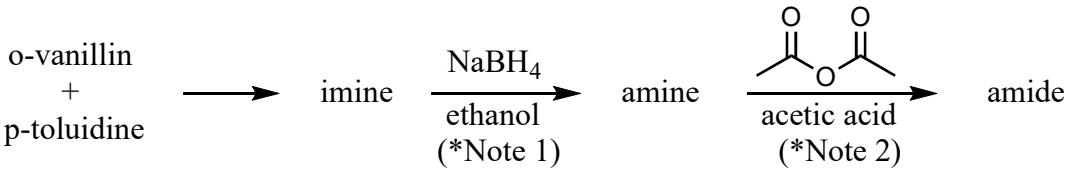
Reductive Amination Reagent Tables (CHM 3150L, Dr. Starkey)



For this experiment, you will need TWO reagent tables in your prelab, as outlined below. We are not isolating the amine product, so we can combine the second and third steps into one reagent table. The molecular weight (MW)/molar mass is given for the two starting materials, and you can use that to calculate the MW of the imine (note that a molecule of water is lost in this process). The MW of the amide must also be calculated: compare its structure to the imine and add the mass of the added C/H/O atoms. The density (g/mL) is relevant only for liquid reagents, and it is not needed for the solvents because we aren not doing any calcuations for those (molar amount of solvents is irrelevant).

Reagent	**MW**	**Density**	**Amount**	**Mole**	**Equiv.**	**Remarks**
o-vanillin		—				
p-toluidine		—				
imine		—				

(calculate MW) *(calculate TY)* *Last column is where you should note safety hazards, relevant mp/bp, etc.*

Reagent	**MW**	**Density**	**Amount**	**Mole**	**Equiv.**	**Remarks**
imine	*(copied from above)*	—	*(copied from above)*	*(copied from above)*		
$NaBH_4$*		—				
ethanol		**N/A** (solvent)		**N/A** (solvent)	**N/A** (solvent)	
Ac_2O*						
AcOH*		**N/A** (solvent)		**N/A** (solvent)	**N/A** (solvent)	
amide		—				

(calculate MW) *(calculate TY)*

*Notes:

1) Every mole of sodium borohydride ($NaBH_4$) contains FOUR equivalents (i.e., four moles) of the reactive species, hydride. To properly determine the limiting reagent, the number of moles in the bold box needs to be the moles of *hydride* ($NaBH_4$ moles x4)

$$\frac{\text{4 moles hydride } (H^-)}{\text{1 mole } NaBH_4}$$

2) Acetic anhydride can be abbreviated Ac_2O. The acetyl (Ac) group: 

Another example is acetic acid, AcOH: