

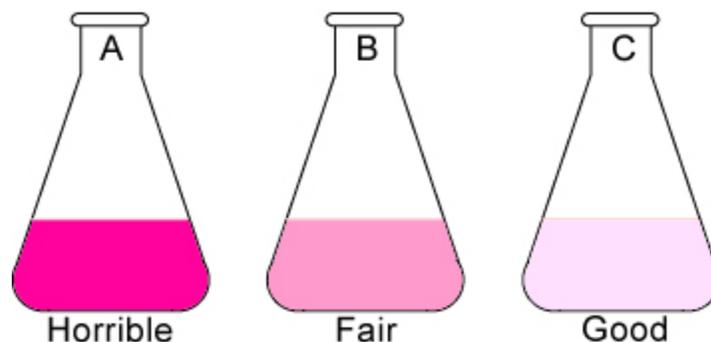
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## Tips and Hints

### Unknown Amino Acid Experiment

When performing a titration which uses phenolphthalein to designate the endpoint, it is essential that the bare minimum excess of base be added beyond the end point. Once the indicator has turned pink, the end point has been reached. Thus any base added after this point introduces error into the readings.

In flask A, the end point has been severely overshot. This titration should be redone. In flask B, the end point has also been overshot, but not appreciably. Flask C shows the indicator color when the titration is performed almost perfectly. In such a case, the end point has been overshot by less than a fraction of a drop. The ideal color is a pale, barely detectable pink which persists for at least 10 seconds.



Placing a micro stir bar in the flask and stirring the solution a useful way of gaging how close the titration is to the end point. At the beginning of the titration, the pink color will fade almost instantly, but as the titration progresses, the pink will persist longer.

### Essential Oils

Depending on the temperature of the room and the pressure inside the distillation apparatus, it is possible to not notice that the first fraction (Limonene) is collecting in the receiver flask. At very low pressure, the boiling point of Limonene is very close to room temperature. Because of this, the vapor may not condense on the inside surfaces of the column or vacuum adaptor. However, if the receiver flask is kept well iced, the Limonene will condense there. If you do not check the receiver flask occasionally, you may think that the Limonene is not yet distilling and allow the distillation to go too far before collecting this fraction. To avoid contaminating your first fraction, make certain that you pull the ice bath away occasionally to check if any Limonene has collected. Once the temperature at the top of the column begins to rise above 55-60 degrees C and vapor begins to condense on the inside surfaces of the vacuum and thermometer adaptors, Carvone is probably distilling.