

Name: _____ Date: _____

Objective: To determine the composition of various inks and compare their solubility in different solvents.

Equipment:

filter paper/chromatography paper
pencil
paper clips
beaker
watch glass

Materials:

5 markers (Sharpie work best) – different colors
rubbing alcohol

Procedure:

1. Obtain ten chromatography strips that are at least 15 cm in length. Mark a line in pencil two cm from the bottom. On the top and in pencil, label five strips 50%/50% and the other five strips 75%/25%. Repeat so you have ten strips. Make sure they are flat so they will not curl when placed in the container for development.
2. Use the marker to place a dot on the pencil line of each of the filter strips. Use each marker color twice (one for the paper labeled 50%/50% and another for the paper labeled 75%/25%).
3. Measure 10 mL of isopropyl alcohol in a graduate cylinder. Pour this into a beaker.
4. Measure 10 mL of DISTILLED water in a graduate cylinder. Pour this into the SAME beaker.
5. Use this as the first solvent, and paper clip five filter strips (one of each color) to the sides of the container. Make sure the solvent does not rise above the pencil line.
6. Place a watch glass on top of the container and allow the solvent to travel up the filter paper.
7. Measure 15 mL of isopropyl alcohol in a graduate cylinder. Pour this into a second beaker.
8. Measure 5 mL of DISTILLED water in a graduate cylinder. Pour this into the SAME beaker.
9. Use this as the second solvent, and paper clip the last five filter strips (one of each color) to the sides of the container. Make sure the solvent does not rise above the pencil line.
10. Place a watch glass on top of the container and allow the solvent to travel up the filter paper.
11. When the solvent reaches the top of the each beaker, remove the strips from the beaker. Mark the solvent front in pencil and allow the strips to dry.
12. Mount all strips on a separate sheet of paper. Label them appropriately.

Data:

Complete the two data tables:

50% alcohol/50% water

Marker color	Developed color(s)	Distance developed color(s) travel (cm)	Solvent front distance (cm)

75% alcohol/25% water

Marker color	Developed color(s)	Distance developed color(s) travel (cm)	Solvent front distance (cm)

Analysis/Calculations:

Calculate R_f values for all of the developed colors (remember there may be more than one developed color per marker).

Conclusion:

Based on the R_f values and observational data, answer these questions:

1. Which ink color(s) are most soluble in each solvent?
2. How does the composition of the solvent affect the R_f values?
3. Predict what would happen if a 25% isopropyl alcohol and 75% water solution was used.