

## 01a Separation Lab (4622173)

Question

1 2 3 4 5 6 7 8 9 10

**Instructions**

Part 1: Separation of liquids with paper chromatography: You will separate a mixture of colored dyes.

1. Obtain a 50 mL graduated cylinder and place about 5 mL of 1.0 M ammonia ( $\text{NH}_3$ ) solution into this graduated cylinder.
2. Obtain a strip of chromatography paper and place one drop of the colored mixture about 3 cm from one end of the paper. Allow it to dry for one minute.
3. Place the strip of chromatography paper into the cylinder so that the end near the colored dot is near the ammonia. The bottom of the strip should be in the ammonia solution.
4. Observe. Allow the tube to sit for about 20 minutes. Observe again.
5. Take a photo of the paper with your iPad camera.

Part 2: Separation of two solids. Your objective is to take a sand and salt sample mixture, separate it and determine the % of salt. Salt is soluble in water and sand is insoluble.

1. Obtain a clean and dry evaporating dish and obtain its mass.
2. Place a rounded spoonful of the salt and sand mixture into the evaporating dish and find its mass.
3. Add about 10 mL (the small test tubes hold about 15mL) of distilled water to a small test tube, add the salt and sand mixture, and mix well by placing a stopper in the tube and shaking for 1 minute.
4. Filter the mixture into the evaporating dish and discard the sand remaining in the filter or test tube.
5. Set up a ring stand with a ring and clay triangle.
6. While wearing goggles, heat the filtrate over a medium flame. As the water evaporates, the mixture may start to boil over or spatter. If this happens, stop heating with the burner and place the dish in the oven using tongs. Allow to heat for about 10 minutes. Proceed with Part 3 while waiting.
7. After all the water has evaporated and the salt looks dry, allow the dish to cool, and determine the mass of the dish and salt. Now put the dish back in the oven for another 10 minutes. Remove the dish and allow it to cool, and determine the mass of the dish and salt. If the mass differs by more than 0.01 g, place the dish back in the oven for another 10 minutes.

Part 3: Separation of a liquid from a solid precipitate. Barium chloride and sodium carbonate are salts that are soluble in water. When mixed, a precipitate forms that is called barium carbonate.

1. Add about 2 mL (40 drops) of barium chloride ( $\text{BaCl}_2$ ) to a small test tube.
2. Add about 2 mL (40 drops) of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) to the same test tube.
3. Mix with a stirring rod until you observe a homogenous milky texture.
4. Place the tube in the centrifuge. Balance your tube.
5. Centrifuge for 1 min. and when it completely stops, remove your tube.
6. Decant the supernatant liquid into the sink. Show the precipitate to the instructor for verification.
7. Clean out the centrifuge tube with a test tube brush and water into the sink.

Part 4: Separation of a liquid solution using pressure liquid chromatography. Materials: syringe, alcohol mixtures, Grape Powerade, cartridge, 3 small test tubes

1. To clean the cartridge: Place the syringe tip onto the chromatography cartridge, remove the plunger and squirt about 5 mL of 70% isopropyl alcohol (rubbing alcohol) into the syringe. Squirt the alcohol through the cartridge and out into the sink.
2. With the cartridge still attached to the syringe, remove the plunger and put about 5 mL of grape Powerade™ into the syringe.
3. Squirt the Powerade through the cartridge into a clean test tube. Keep the test tube to show to the instructor later. Note the color of the effluent. Note the color of the cartridge.
4. With the cartridge still attached to the syringe, remove the plunger and put about 5 mL of 12% into the syringe. Squirt the 12% alcohol through the cartridge into a clean test tube. . Keep the test tube to show to the instructor later. Note the color of the effluent and the cartridge.
5. With the cartridge still attached to the syringe, remove the plunger and put about 5 mL of 50% alcohol into the syringe. Squirt the 50% alcohol through the cartridge into a clean test tube. Keep the test tube to show to the instructor later. Note the color of the effluent and the cartridge.
6. Show the 3 test tubes to your instructor for verification and discard all mixtures into the sink.

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1. Question Details

Lab Partners [1837468]

Enter the name(s) of your lab partner(s). (If you worked by yourself, enter "none").

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2. Question Details

Chromatography definition [2679160]

What is chromatography? (use your own words)

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3. Question Details

Distillation definition [2679161]

What is distillation? (use your own words)

## 4. Question Details

Upload Paper Chromatography [2678705]

Upload a photo of your paper chromatography (with your face in the photo also).  no file selected

## 5. Question Details

% of Salt in Salt/Sand Mix [2678680]

- a. Enter the mass of the empty evaporating dish:  g
- b. Enter the mass of the salt and sand mix and dish:  g
- c. Calculate the mass of the salt and sand:  g
- d. Enter the mass of the salt and evaporating dish after heating to constant mass:  g
- e. Calculate the mass of the salt:  g
- f. Calculate the % of salt in the salt/sand mixture:  %

## 6. Question Details

Lighting a Bunsen Burner [2678725]

Put the following steps in order for the proper use of a Bunsen Burner.

- first*
- 
- 
- 
- last*

## 7. Question Details

Centrifuge Use [2678724]

Put the following steps in order for the proper use of a centrifuge.

- first*
- 
- 
- 
- 
- last*

8. Question Details Finding powder mass using beam balance [2679162]

Put the following steps in order for the proper use of a beam balance to find the mass of a powder.

*first*

*last*

9. Question Details Drops in a mL [2679163]

About how many drops are in a mL? (consult the lab sheet)

10. Question Details Generic percent formula [2679570]

What is the generic formula for calculating percent?

Assignment Details

Name (AID): **01a Separation Lab (4622173)**

Submissions Allowed: **5**

Category: **Homework**

Code:

Locked: **Yes**

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