

## Separating Mixtures part 3 What is Distillation?

Purpose (Learning Target) Students will use the physical property of boiling point the method of distillation to separate a salt solution.

Hypothesis: How could you use distillation to separate a mixture?

If we use the method of distillation by heating the mixture to its boiling point, then we will separate the salt from the water.

### Materials:

1. Water

2. Salt

3. 500 ml Beaker

Etc 100 ml graduated cylinder, bunsen burner, scale, round bottom flask, condenser, cork, thermometer, stand, salinity probe.

Procedure: Develop a procedure to test your hypothesis.

1. Demo

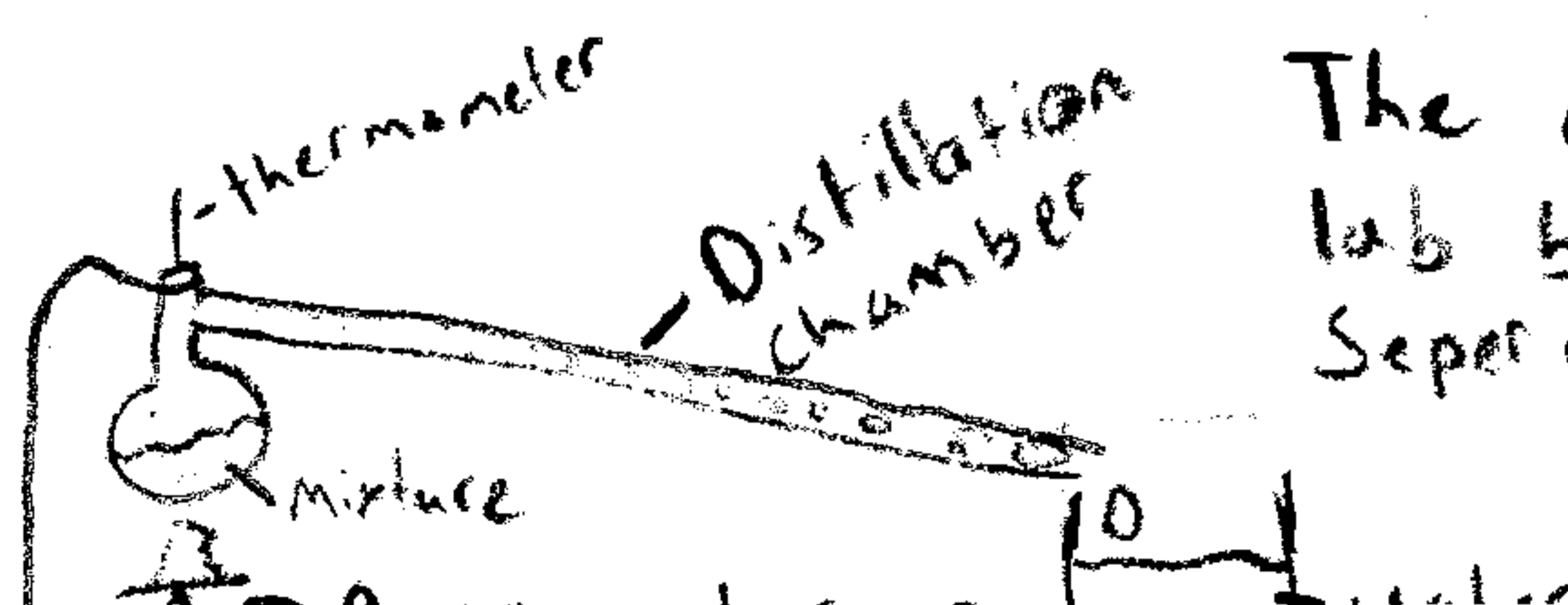
2.

3.

Data/Results/Observations: Data Table needed for analysis question 3

Hr.	Solution leave	Salt Content	Collection Beaker
0	800 ml	.10	—
0.5	700 ml	.20	80 ml
1.0	600 ml	.30	160 ml
1.5	500 ml	.40	240 ml
2.0	400 ml	.50	320 ml
2.5	300 ml	.60	400 ml
3.0	200 ml	.70	480 ml

-It took a little longer than I thought it would for the water to evaporate into the collection beaker.



The example of the lab below has not completely separated yet.

Analysis (Levels 1-4 are required)

Level 1: Define Distillation. The process for separating substances in a mixture by evaporating a liquid and recondensing its vapor.

Level 2: Explain how you can use distillation to separate mixtures.

You could use distillation to separate mixtures by bringing the substance to a boiling point then one of the substances in the mixture will evaporate into another container leaving behind the other substance.

Level 3: Using data you collected support why using distillation is a good way to separate a mixture. Remember it must be tangible. <sup>a little more data</sup>

The salt content <sup>goes</sup> from 10 ml at 0hr to 70 ml at the end, and we know that the salt <sup>amount</sup> doesn't change. That means that not the salt but the water evaporated and went into the collection beaker. That means that you have salt in one and water in the other.

Level 4 Compare in detail the results of this lab to an outside occurrence.

This experiment reminded me of making crude oil, because the crude petroleum is heated and turned into a gas. Then it is pushed through a distillation column and it condenses into a liquid. That is what happened to the water in our lab too.

Conclusion (Required)

1. Conclusions must be written in paragraph form. Do not number or bullet a conclusion.
2. Restate the purpose / question / problem.
3. Tell whether you accept or reject the hypothesis based on the results from this experiment.
4. What did you learn in this lab?
5. Now I wonder? (What are possible further experiments or questions that you could ask based on this experiment?)

The purpose of this lab was to use the physical property of boiling point the method of distillation to separate a salt solution. I accept my hypothesis because based on my results the solution's volume decreased from 800 ml to 200 ml, and there was 400 ml of water in the collection beaker so that means that remaining substance is salt and the water is in the collection beaker. In this lab I learned what distillation is and how you could use boiling point to separate a mixture. Now I wonder if you could separate a mixture of oil and sugar using boiling point!