

Cherry Coke Distillation Laboratory:

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Students' Guide

Goals

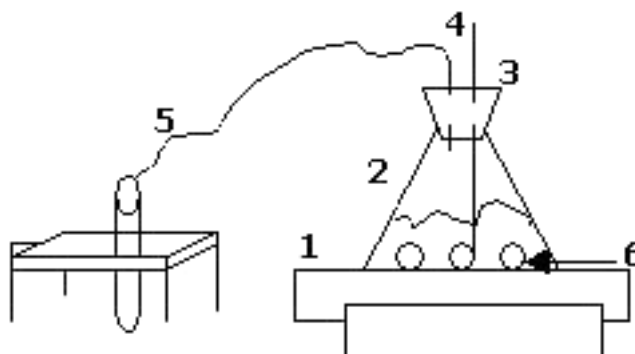
- To use a new technique for separating mixtures
- To relate chemical principles to everyday life

The Laboratory

In this laboratory, you will distill Cherry Coke in order to learn about separation methods and food content. You should be able to identify at least three components: CO_2 , food flavorings, and distilled water. The reaction of CO_2 with lime water is demonstrated before the experiment.

Materials for Each Group

- Cherry Coke or grape soda
- Test tube rack
- Two 50 ml test tubes, one empty and one with lime water
- Ice bath
- Stopwatch
- Graduated cylinders: 100 ml and 5 ml
- Apparatus for distillation:
 1. Hot plate,
 2. 500 ml Erlenmeyer flask,
 3. A suitable rubber stopper for the flask with two holes,
 4. Thermometer in one hole,
 5. A tygon/plastic tubing connected to a short glass tube in the other hole,
 6. Boiling chips.



Note: professional distillation equipment can be used, if available.

SAFETY

Wear safety goggles at all times during the demonstration and laboratory.

Do not touch hot plate or hot vessels with bare hands.

Before heating, show the teacher your distillation apparatus: tighten all connections and open the tubings.

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Instructions

1. Put a boiling chip or glass bead into the Erlenmeyer flask.
2. Add 100 ml Cherry Coke or grape soda.
3. Close the stopper tightly, when both the thermometer and the tubing are connected to it.
Make sure tubing is tightly connected, otherwise the CO₂ gas escapes!
4. Put the tubing into the test tube with lime water. Have the empty test tube ready on ice.
5. Put the flask on the hot plate and start the stopwatch going
6. Heat the Cherry Coke/soda pop gently, to about 30°C, for about 20 minutes.
- 7a. Notice the bubbles in the lime water and their cloudy appearance. Record the time of appearance:

- 7b. Smell the odors coming out of the distillation apparatus. Record the smell(s) that you recognize and time of appearance: _____

8. When the temperature starts to drop, remove the tubing from the lime water. Wash end of tubing with distilled water and insert it into the test tube which is on the ice.
10. Stop the distillation.
11. Note the clear fraction and measure its density: _____

Measure an empty 5 ml graduated cylinder. Put in exactly 2 ml of the distilled fraction. Weigh the sample on a semi-analytical balance. Record the weight: _____

Density is calculated as gr/ ml. What is the measured density? _____

What substance is this? _____

Discussion

Which flavorings did you smell? _____

Did the flavoring come out before or after the carbon dioxide? _____

Where are the flavorings at the end of the experiment? _____

What is left in the flask? Read the label on the bottle and write down the other components which you haven't identified: _____

Summary

Define chemicals. Are there chemicals in your Cherry Coke? _____

