

Sec: _____ Name: _____

Experiment: Sedimentary Rock Formation &
Concretions (E. Science 9-4-4c)

Purpose: To demonstrate the process by which
some sedimentary rocks are formed.

Materials: **Part A:** 25 g alum sand metric ruler
margarine container 100 mL graduated
cylinder stirring rod 250 mL beaker mass
balance

Part B: cardboard dropper
food coloring patching plaster
pie pan (disposable) spoon
stone with flat side (or shell) water waxed paper

Methods: **Part A: Forming Sedimentary Rock**

1. Use the stirring rod to dissolve 25 g of alum in 100 mL of warm water.
2. Fill the bottom of the margarine container to a depth of 2 cm with sand.
3. Pour the alum solution onto the sand in the container. Stir the mixture so that the alum solution is evenly distributed throughout the sand.
4. Pour off and throw away any excess solution. Gently tap the margarine container to help the sand grains settle together.
5. Place the container in a location where it can cool slowly and evaporate to dryness. Usually takes 24 hours.
6. Gently twist the side of the container to free its contents. you have created a (soft) sedimentary rock.
7. Describe your rock in terms of color, density, and overall appearance in results.

Part B: Concretions

Background Information: Concretions are features found in sedimentary rocks. They may be spheres or flattened ovals. Concretions are formed when successive layers of cementing material are deposited and precipitated around a central core. Concretions may be harder than the surrounding rock. They are exposed as the surrounding rock is weathered away.

1. Place a piece of waxed paper on a piece of cardboard.
2. In the pie pan, mix some plaster with water. Add the water drop by drop until the plaster will spread but not run.
3. Place the stone flat side down (or shell) on the waxed paper. Spread the plaster over its exposed sides. Record the color of the layer in results table.
4. Clean the pie pan thoroughly.
5. Place the stone in a location where it can dry undisturbed.
6. On the second day, repeat steps 2 through 5. Mix a drop of food coloring in the plaster. Record the color of the layer in results table.
7. On the third day, add another layer using a different color. Record the color of the layer in results table.
8. On the fourth day, add another layer using a third color. Record. Contours may be thicker in some places since concretions are not always smooth.
9. On the fifth day, remove the cardboard and waxed paper. Sketch the bottom of the concretion in results.

Results: **Part A: Forming Sedimentary Rock**

1. appearance: _____

Part B: Concretions

Day	Color	fifth day sketch
1		
2		
3		
4		

Conclusions:

1. How is your rock from part A similar to a piece of real sandstone?
2. How is your rock from part A different from a piece of real sandstone?
3. Alum is acting as a gluing agent in part A. Was the sandstone of part A formed by the process of compaction or cementation?
3. What do the different layers in the concretion (Part B) represent?
4. What causes the different layers in naturally formed concretions?
5. Why are concretions found only in sedimentary rocks?
6. Sometimes fossil hunters crack concretions open. Why do you think they do that?

Discussion:

1. List and then define the three ways that sedimentary rocks can form (you may have to look at the next two section titles of the chapter to answer this).

- a.
- b.
- c.

2. What are sediments?

3. What are sedimentary rocks?

4a. Read Matthew 7:21-29 to record where the wiseman and where the foolish man would build their homes.

wiseman: _____ foolish man: _____

4b. Why would the wiseman's home withstand the forces of the storm, while the foolish man's home would collapse?

wiseman:

foolish man:

4c. Not only are we to accept the Lord by saying "Lord, Lord", but what are we to do (like the wiseman) to enter heaven (verses 21-23)?