

Minerals

Investigation Data Sheet



Growing Crystals

Minerals are made of chemicals that are arranged in repeating patterns, which form particular geometric shapes known as crystals. Some minerals are formed by molten lava that cools slowly. Some crystals form when water evaporates from solutions containing those minerals.

Objective

Grow crystals of four different minerals that are soluble in water.

Materials

- a magnifying glass
- four Petri dishes
- a stirring rod
- hot water
- copper sulfate
- protective gloves
- borax (hydrated sodium borate)
- alum (aluminum potassium sulfate)
- a marker
- beakers
- a teaspoon
- table salt (sodium chloride)
- an apron or lab coat
- safety glasses

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Procedure

- Put on your protective gear. Use the marker to label the petri dishes 1, 2, 3, and 4.
- Combine two teaspoons of table salt with 200 mL of hot water in the beaker. Stir the solution until the salt is completely dissolved. Pour this solution into the dish labeled 1.
- Clean the stirring rod with fresh water.

- Using the same procedure, repeat the process, putting the dissolved borax into dish 2, the alum solution in dish 3 and the copper sulfate solution into dish 4. Be sure to clean the stirring rod after mixing each mineral solution.

- Why do you think that it is important to clean the stirring rod?

- Allow your mineral solutions to sit out for several days. What is happening to the water?

- Use the magnifying glass to observe the mineral solutions each day. Record your observations.

Note which minerals form crystals first, and the differences in the appearance of the various crystals. They'll be different shapes and colors. The shape, color and transparency of all your crystals will depend on many things, including how fast they formed.

Conclusions

- What do you see? Is it what you expected?

Data Table: Crystal Formation

	sodium chloride	borax	alum	copper sulfate
Day 1				
Day ___				
Day ___				
Day ___				
Day ___				