

# Solubility Lab

## Objective:

Investigate how much sodium chloride, calcium sulfate, and potassium nitrate will dissolve in 100 grams of water.

## Materials:

- hot plate
- thermometer
- (3) 250 mL beakers
- stirring rod
- 25 g sodium chloride
- 25 g calcium nitrate
- 25 g potassium nitrate



## SAFETY

Students and instructors should wear safety goggles and aprons.  
Since a hot plate is in use, students should take care to avoid contact with all hot surfaces.

## Pre-lab Questions:

1. Explain how water causes materials to dissolve.
  
2. Describe at least three ways to increase the speed at which a powder can dissolve in a container of water.

## **Procedure:**

1. Begin by dissolving 25 grams of one salt in 100 grams of water. For this step, set the hot plate to 5°C.
2. If the salt does not fully dissolve, raise the temperature to 30°C, and stir to further dissolve the salt at the new temperature.
3. If the salt still has not fully dissolved, raise the temperature to 50°C, and stir to dissolve.
4. When you are done, repeat steps one through three for the remaining salts.
5. Record your observations for all three salts. Create a graph that illustrates how well the salts dissolved at each of the three temperatures.

## **Questions:**

1. Look at the data you collected for the three white powders, and rate them from the easiest to the most difficult to dissolve.
2. Was there a relationship between solubility and temperature? Provide a molecular-level explanation of your observation. You may choose to draw a particle model.