

# Basic Decomposition



## Annotation:

The following demonstration will allow students to witness an acid/base reaction while also encouraging them to guess one of the compounds involved. Pupils will also be able to see the decomposition of a solid base in an acidic liquid as well as the evolution of a gas.

## Georgia Performance Standards:

SCSh4. Students will use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

SCSh6. Students will communicate scientific investigations and information clearly.

SCSh8. Students will understand important features of the process of scientific inquiry.

SPS2. Students will explore the nature of matter, its classifications, and the system for naming types of matter.

SPS6. Students will investigate the properties of solutions.

## Materials:

Two beakers, two pieces of chalk (approximately equal in size) distilled vinegar, water.

## Safety:

Caution should be used when handling the vinegar, as it is an acid.

## Procedure:

Allow students to observe that both pieces of chalk are the same size. Fill one beaker with enough vinegar to completely cover one piece of the chalk. Fill the other beaker with the same amount of water. Add one piece of chalk to each beaker.

## Key Questions:

1. What is happening in the beakers?
2. Where are the bubbles in the beaker coming from?
3. Why are there no bubbles in the other beaker?
4. Which liquid is in the bubbling beaker? How do you know?
5. What is happening to the chalk in the bubbling beaker?
6. What kind of reaction might this be? How do you know?
7. What is the gas being produced?
8. How could we test this hypothesis?
9. What is the composition of chalk?
10. What do you know about acid rain?

## Explanation:

The chalk is basic and is reacting with the acidic vinegar. The fact that CO<sub>2</sub> is given off might give way to a carbonate; then students can discuss chalk and perhaps come up with calcium carbonate as its chemical formula. The bubbles will stop forming when all of the vinegar has reacted with the chalk and there is no more acetic acid in the solution. Students may find a discussion of acid rain interesting, particularly how it wears away old statues.