

Dehydration of Sucrose

“The Black Snake”

Purpose

To demonstrate chemical versus physical change and a chemical process of dehydration.

Materials

tall form beaker

sucrose

concentrated H₂SO₄

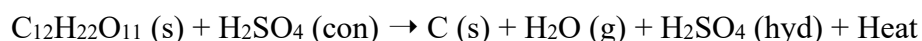
stirring rod

Procedure

1. Place the beaker on a mat of paper towels and add 50 grams of table sugar to the beaker.
2. Add 50 mL of concentrated sulfuric acid to the sugar, stir the mixture briefly with a glass rod, and step back to observe.
3. Note the changes in color as the reaction proceeds:
white → yellow → brown → black
4. A column of black carbonaceous residue will result.

Additional Information

1. Small pieces of the black residue can be broken off and washed in an aqueous solution of sodium bicarbonate. Take care that the acid is not trapped within the residue structure.
2. The beaker can be easily cleaned with soap and water after the black residue is removed.
3. The chemical reaction is as follows:



Disposal

The black material can be broken out of the beaker and thrown away. Extra care should be taken when removing the material from the bottom of the beaker as it may contain some remnants of the concentrated acid. The beaker can then be washed and cleaned normally.

Reference

Shakharshiri, Bassam. Chemical Demonstrations, Volume I, 1983.