

Rock Candy Science

The next time you've got a restless young earth scientist on your hands and a rainy day outside, try this exciting experiment. You can use it to demonstrate what a crystal is and in the process, create that enchantingly sweet, fully edible, traditional kid favorite: rock candy. Here's how.

What You Need:

- 4 cups sugar (two pounds)
- 2 cups water
- Small cooking pot with tall sides, to avoid spatters
- Large cooking spoon for stirring
- Candy thermometer (optional)
- Tall, clean glass jar
- Cotton string
- Something to hold the string down in liquid (such as a clean, heavy screw)
- Parchment paper, foil, or waxed paper
- Plain pencil, which will hold the string over the jar



What You Do:

1. Rock candy is made by creating a "supersaturated" solution: one with much more sugar dissolved in the water than you could possibly do at room temperature. Have your child start the experiment by pouring just the water into the saucepan, and then heating it to a boil. If you have a candy thermometer on hand, place it in the pot for a mini experiment in temperature. (Caution, parents: do be sure you supervise these hot stages!)
2. Once the water is boiling, pour the sugar into it. Notice that at first the mixture is chalky, since the sugar isn't melted at all. But as the sugar melts, there will be a distinct change: the entire solution will become clear. Do be sure that you and your child stir constantly throughout this phase—if the sugar sticks to the bottom of the pot, it will burn and that will not be so fun! If you're using a thermometer, don't forget to monitor the temperature during this stage to see how hot the solution gets.
3. Keep stirring and melting until the solution is completely clear and gets to a full rolling boil (that's a boil with lots and lots of bubbles, but not a boil that's overflowing the pot).
4. Pull the pan off the burner, and then gently pour it into the jar. Use a piece of waxed paper to cover the jar.
5. Now tie the string around the screw-weight and dip it into the sugar solution, about 2/3 to the bottom of the jar. Let it get nice and wet, and then lay it on another piece of waxed paper or a piece of parchment paper, to dry for several days. In the meantime, let the jar of sugar solution sit on a countertop.
6. In about 2-3 days, you'll notice that the string is dry, and if you use a magnifying glass, you will start to see little crystals formed all along it. That's just what you want! These are the little edges on which the big crystals of rock candy will start to cling and form.
7. CAREFULLY place the string back into the jar of supersaturated sugar water, suspended from the pencil and weighted down on the other end by the screw and leave it be for a few days. DO NOT jiggle the jar at any point during that time, and do NOT check the string—there is delicate work underway! The sugar molecules, which were previously suspended in the liquid, are now re-forming, and if you move the solution, you interrupt their progress.
8. By 4-5 days later, you'll see a delightful thing: the crystals on your string should be visible, with points and angles and very cool "faces," which have been created as unique sugar molecules

found their way to one another. This process of crystallization happens in nature as well, giving us uniquely beautiful crystal formations from all parts of the globe.

This is a great time to open a geology book and study more...but don't be surprised if your child considers that a distant second step to a pressing matter at hand: EATING this way cool experiment!

© Copyright 2006-2012 Education.com All Rights Reserved.