



MAKE YOUR OWN IGNEOUS ROCKS

CAUTION: This project involves very hot liquids, so get an adult to help.

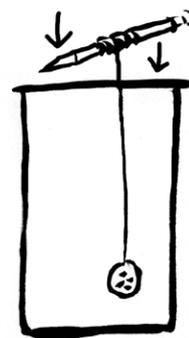
When a volcano erupts, the rocks that form can have minerals that are big enough to see, or so small they can't be seen. Sometimes a mineral doesn't form at all and the rock is a glass. Try some of your own "lava" to see why each of these types of rocks form.

1

Grease the cookie sheet with cooking spray and place it in the freezer.

2

Tie one end of the string to a button and wrap the other end around a pencil. Place the pencil on top of one of the glass jars so that the string hangs down into the jar. Adjust the length of the string so that the button is just above the bottom of the glass. Do the same thing with the second jar.



3

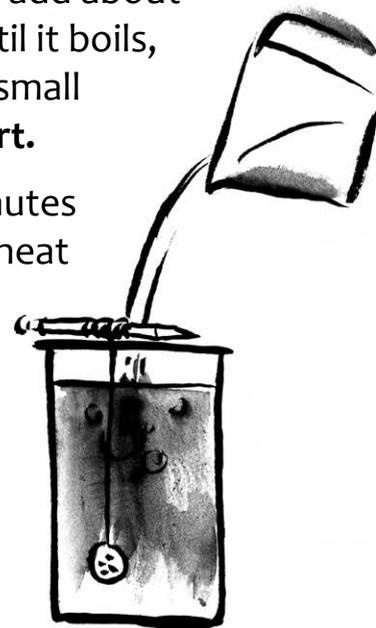
Pour about $1\frac{1}{2}$ cups of water into a saucepan and add about 3 cups of sugar. Heat the sugar-water mixture until it boils, stirring until the sugar dissolves or the syrup has small bubbles in it. **Have an adult help you with this part.**

4

Cook the sugar syrup over medium heat for 3 minutes without stirring. Remove the saucepan from the heat and let cool for 2 minutes.

5

With your adult helper, carefully pour the syrup into each jar to just below the brim. If there is extra sugar on the bottom of the saucepan, do not let it flow into the jars. Using a potholder, move the jars to a warm place where they can be easily seen, but will not be disturbed.



6 Put the remaining cup of sugar in the saucepan. Heat the sugar on low to medium until the sugar turns brown and melts. Be patient—it will take about 10 minutes. As soon as the sugar melts completely, get an adult to help you pour it into the cookie sheet. Be very careful—the sugar is very hot.

7 Place the cookie sheet in the refrigerator or freezer until the sugar syrup has hardened, about 10 minutes. Then pry the sugar glass out of the cookie sheet and look at it carefully. Do you see any crystals?

8 Set aside your sugar glass while you wait for crystals to grow on the cotton string. Be patient! After a few days, take out one of the strings with small sugar crystals. Wait for at least a week before taking the second string out. The longer you wait, the bigger the sugar crystal will grow. If no crystal forms, or if the whole glass of syrup turns into a solid lump, you may have stirred it while it was boiling. Try again!

THINGS TO NOTICE

- + Compare your three examples of sugar. How do you think they might compare to hot magma or lava cooling?
- + Which type of your crystals do you think might represent magma that cools underground and has a lot of time to cool?
- + Which type do you think might represent lava that cools quickly on the surface?
- + Which type do you think cools so quickly that crystals can't form?

SUPPLIES:



- cookie sheet with sides
- freezer
- cooking spray
- cotton string
- two buttons
- two pencils
- two glass jars
- water
- saucepan
- 4 cups sugar
- potholder
- stove