



SMITHSONIAN

Ages 8 and up

WARNING:
CHOKING HAZARD - Small parts.
Not for children under 3 years.

Conforms to ASTM-D4236

Rock Candy

No. 3266-08

119140

Dear Customer,

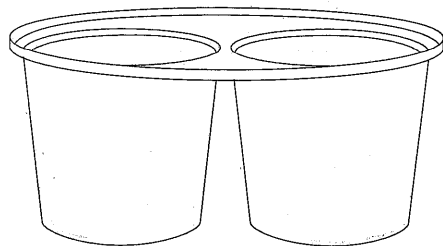
NSI is the manufacturer of this kit. We hope you enjoy our Rock Candy. If you find that we have made an error or if something is missing or damaged, let us know so that we can correct the problem for you. Please include the following:

- Name of item
- Date of Purchase
- Purchase Price (please include sales slip)
- Model number
- Place of Purchase
- Brief description of the problem

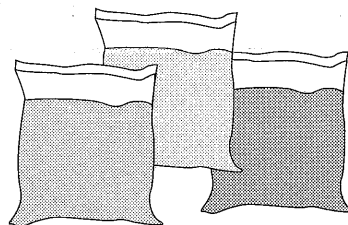
Do not return the kit to the store where you purchased it, or contact the Smithsonian. They will not have replacement parts! Send all correspondence to: **Natural Science Industries**

105 Price Parkway, Farmingdale, NY 11735-1318
Attn: Quality Control Department

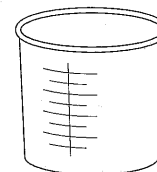
YOUR SET INCLUDES THE FOLLOWING ITEMS:



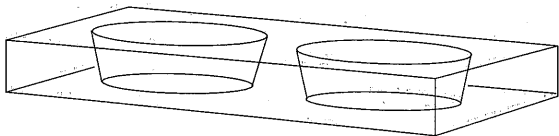
Rock Candy Growing Chamber



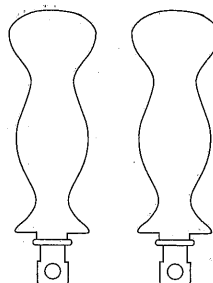
Cherry, Lemon and Berry
Flavored Food Coloring
(3.54 grams each)



Measuring Cup



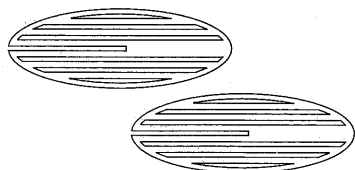
Stand



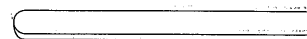
Swizzle Sticks



Cotton String



Lids



Mixing Stick

Note to Parents:

This set requires the use of boiling water. **ADULT SUPERVISION REQUIRED!**
Wash all components with warm water and soap before starting this project.

ABOUT THIS KIT

Rock candy is made by the process of crystallization—a natural process in which molecules of a given substance arrange themselves in a specific and organized pattern. When enough molecules have joined together, crystals are formed that are so large you can see the pattern with the naked eye, unaided by a microscope.

The shape of a crystal is determined by lots of factors, but the most important is the way the atoms are joined together in the basic molecule of the substance the crystal is made of. The shape of the crystal, in the absence of other factors such as variations in temperature and pressure, or the presence of other substances, will tend to reflect the shape of the underlying arrangement of atoms in the molecule.

Mostly, we think of crystals in terms of gems and minerals, but organic substances can be arranged in the form of crystals as well. Sugar is one of those substances.

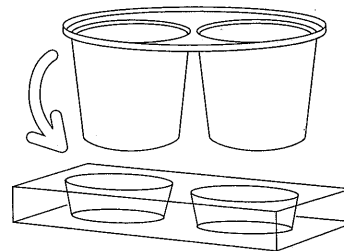
The making of rock candy echoes the process by which many crystals are formed in nature. The process starts with a supersaturated solution—that is, a solution in which so much of the substance, in this case sugar, is dissolved that the solution can't hold any more of it. As the solution cools and evaporates, the dissolved solids have to go somewhere. One by one, the sugar molecules attach themselves, in their characteristically organized way, to a handy surface. The molecules adhere more easily if the surface is a rough one, like string, or a wooden stick. And when seed crystals are provided—in this case, tiny grains of granulated sugar—the molecules will organize themselves around these seed crystals, creating large, visible crystals. As more water evaporates, the crystals will grow larger—especially if the solution and the crystals that are forming are left undisturbed during the process.

For more information on crystals, consult your local library.

ROCK CANDY

Before you begin:

1. Wash all parts of the rock candy chamber and mixing cup with warm water and soap. Rinse and dry thoroughly.
2. The following items will be needed to complete this project. Assemble everything before you begin:
 - Regular granulated sugar (not superfine)
 - Water
 - Stove top
 - Heat-safe oven mitt
 - Small saucepan (Teflon coated is best)
 - Liquid measuring cup
 - Wooden spoon
 - Wax paper or a paper plate
 - Scissors
3. This project requires the use of a heating element such as a stove top.
Adult supervision is required at all times!
4. Scissors will be required to cut the cotton string and to open the packets of food coloring. Adult supervision is recommended when using scissors.



Place the Growing Chamber in the Stand.

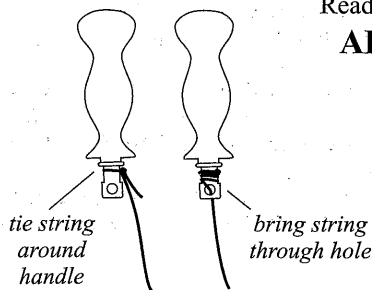
CAUTION:

Food coloring may stain fabrics. Keep food coloring away from carpeting, upholstery and clothing.

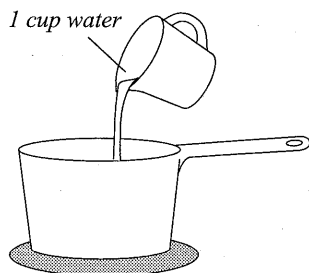
ROCK CANDY

Read all directions and cautions on the bottom of page 2.

ADULT SUPERVISION REQUIRED!



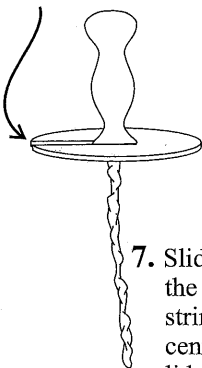
1. With adult supervision, measure and cut 8" of cotton string for each handle. Tie the string around the notched part of the handle just above the small hole. Wrap the string a few times around, then bring it through the hole.



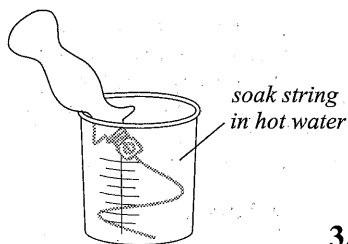
4. With adult supervision, pour 1 cup of water into a small saucepan and bring to a full boil. Remove pan from heat.



center slot on lid

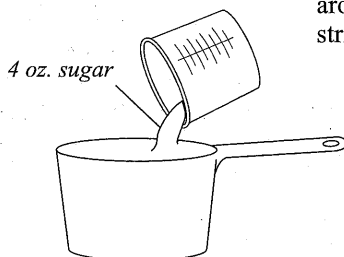


7. Slide handle with the sugar-coated string into the center slot of the lid.



soak string in hot water

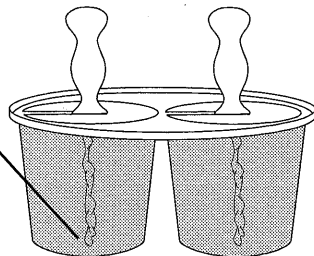
2. Fill the measuring cup with hot tap water. Soak the string in the hot water.



4 oz. sugar

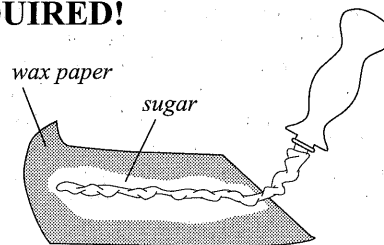
5. Measure 4 oz. of sugar in the measuring cup and add to the boiled water. With a wooden spoon, stir until all sugar granules are dissolved. Add another 4 oz. of sugar and stir until dissolved. Continue this process 3 more times (adding 4 oz. of sugar each time, stirring well after each addition) for a total of 5 times, or 20 oz. of sugar. Return pan to the heat, stirring constantly until all visible sugar granules have dissolved and water has returned to a full boil. Remove pan from heat.

Adult supervision required!



Do not let string touch bottom of container. Excess string should be curled back up.

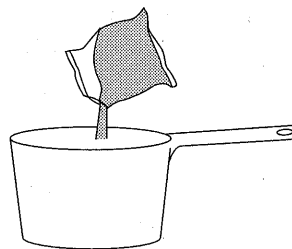
8. Pour the cooled-down sugar water into the rock candy chamber. Place lids on top. Note: There should be enough water in each container to cover the top of the string attached to the handle. Place covered chamber in a safe location where you can watch the crystals grow without accidentally knocking it over.



wax paper

sugar

3. Pour about 1/4 cup of sugar on a piece of wax paper or paper plate. Roll the moistened string around in the sugar. Coat the string thickly and completely, including the part of the string wrapped around the handle. Allow the sugar-coated string to dry for at least 1 hour.



6. Add 1 packet of flavored food coloring to the sugar water. Stir to dissolve. Allow mixture to cool for 30 minutes.

HINTS:

- Flavored food colorings can be mixed together for different results.
- Adding more sugar will result in more crystals (although smaller in size) and a more rapid appearance of the crystals.
- For best results, keep rock candy chamber in a place least likely to be disturbed. Place a small piece of foil or plastic wrap over the top to keep dust and other particles from falling in.

Do not try to bite the rock candy off the string. Break the pieces off with your hand.

The Smithsonian Institution

The Smithsonian Institution is home to more than 141 million objects, ranging in size from insects and diamonds to locomotives and spacecraft. It is the world's largest museum complex, comprising 15 museums and galleries and the National Zoo in Washington D.C., and two additional museums in New York City. Millions of visitors each year visit the nation's capital to view such treasures as the Hope Diamond, the Star Spangled Banner, and the Wright Flyer. A broad range of exhibits provides a fun and educational experience for young and old alike.

One of the world's leading scientific research centers, the Institution has facilities in eight states and the Republic of Panama. Research projects in the arts, history, and science are carried out by the Smithsonian all over the world. Some of the Smithsonian's research centers include the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts, the Smithsonian Marine Station at Link Port, in Florida, and the Smithsonian Tropical Research Institute, in Panama.

For membership information or pre-visit planning material, write or call the Visitor Information and Associates Reception Center, Smithsonian Institution, Washington D.C., 20560, (202) 357-2700 (voice), (202) 357-1729 (TTY). You may also visit the Smithsonian through our web site, www.si.edu.

History

James Smithson (1765-1829), a British scientist, drew up his will in 1826 naming his nephew, Henry James Hungerford, as beneficiary. Smithson stipulated that, should the nephew die without heirs (as he did in 1835), the estate would go to the United States to found "at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge..."

On July 1, 1836, Congress accepted the legacy bequeathed to the nation by James Smithson, and pledged the faith of the United States to the charitable trust. In 1838, following approval of the bequest by the British courts, the United States received Smithson's estate—bags of gold sovereigns—then the equivalent of \$515,169. Eight years later, on August 10, 1846, an Act of Congress signed by President James K. Polk established the Smithsonian Institution in its present form and provided for the administration of the trust, independent of the government itself, by Board of Regents and Secretary of the Smithsonian.

Smithsonian Museums, Galleries and Zoo

Smithsonian Institution Building ("Castle")	National Museum of American History, Behring Center
Anacostia Museum	National Museum of the American Indian
Arthur M. Sackler Gallery	National Museum of Natural History
Arts and Industries Building	National Portrait Gallery
Cooper-Hewitt, National Design Museum	National Postal Museum
Freer Gallery of Art	National Zoological Park
Hirshhorn Museum and Sculpture Garden	Renwick Gallery
National Air and Space Museum	S. Dillon Ripley Center
National Museum of African Art	Smithsonian American Art Museum

REFILL PARTS FOR ITEM NO. 3266-08 ROCK CANDY

		Number of sets	Total Price
3266-01 Rock Candy Growing Chamber	\$ 2.00	_____	\$ _____
3266-03K Lids and Swizzle Sticks	\$.60	_____	\$ _____
3263-02 Cherry Flavoring	\$ 1.00	_____	\$ _____
3263-04 Berry Flavoring	\$ 1.00	_____	\$ _____
3263-05 Lemon Flavoring.	\$ 1.00	_____	\$ _____
5117-14 Cotton String	\$ 1.95	_____	\$ _____
2890-11 Popsicle Stick.	\$.05	_____	\$ _____
2890-12 5oz. Measuring Cup	\$.25	_____	\$ _____

Mailing label: Please print clearly

Name _____

Street _____

City _____

State _____ Zip _____

Add shipping and handling: **\$ 4.00**

Total amount enclosed: \$ _____

Allow two extra weeks for check processing

We also accept Visa or Mastercard

Name of card _____ Exp. _____

Card No. _____

Signature _____

Mail this form with check, money order or credit card info to:

NSI, Ltd.
105 Price Parkway
Farmingdale, NY 11735-1318