

Avi's Sensational Salt Dough

from Celebrating Chemistry



Brick is made by shaping clay and then drying or baking it at high temperatures. It is so strong and durable that it can still be found in grand structures that were built over 5,000 years ago, like the ancient Egyptian temples, Roman aqueducts, Inca pyramids, and the Great Wall of China, to name a few. Builders also use brick for smaller structures such as homes, either as part of the structure or decoration. Can you think of any places where bricks could be used around your home? In this activity, you and your adult partner will mimic how bricks are made. You will shape and bake creations from a dough that is made from flour, salt, and water.

Materials

- ❖ Conventional or toaster oven
- ❖ $\frac{1}{2}$ cup measure for dry goods
- ❖ White flour
- ❖ Salt
- ❖ Large bowl
- ❖ Large spoon
- ❖ $\frac{1}{4}$ cup liquid measure
- ❖ Warm water
- ❖ Aluminum foil
- ❖ Cookie sheet or metal tray
- ❖ Clock or timer
- ❖ Oven mitts
- ❖ Food coloring (optional—add to the water before pouring)
- ❖ Rolling pin and cookie cutters (optional)
- ❖ Smock or apron (optional)



NOTE: Different types of flour or addition of spices can give texture or color variation to the dough. Sculptures may be painted once they have dried. Unused dough can be stored in the refrigerator, in an airtight container, or plastic wrap, for up to a week.



Be sure to follow Milli's Safety Tips and do this activity with an adult.

Have your adult partner operate the oven and carry out the oven-related steps. Do not eat or drink any of the materials in this activity.



Procedure

1. Have your adult partner preheat the oven to 200° F.
2. Measure and pour $\frac{1}{2}$ cup flour and $\frac{1}{2}$ cup salt in the bowl, and mix together with the spoon.
3. Slowly add $\frac{1}{4}$ cup warm water while stirring the flour and salt, and continue to mix until the ingredients blend into a dough.
4. Knead the dough with your hands until it is smooth and elastic. If dough is sticky, add more flour. If too dry, add more water.
5. Shape the dough. Use tools that your adult partner has approved to help make your creations.
6. Cover the cookie sheet or metal tray with aluminum foil and carefully place your designs on the foil.
7. Ask your adult partner to place the tray in the oven. If you have a glass oven door, you can keep an eye on the dough.
8. Have your adult partner take the tray out of the oven with the oven mitts and check to see if they have finished baking after about 15 minutes. When dry and ready, your designs will be less shiny. The thicker your creations, the more time they need to bake, just as with sturdier bricks.
9. When the creations have dried, have your adult partner remove the tray from the oven with the oven mitts and place the tray on a heat-resistant surface. Be careful. Everything from the oven will be hot!
10. Wait for your adult partner to tell you when your newly created art is cool enough to touch.
11. When it has cooled completely, remove your sensational salt dough creation from the cookie sheet.



12. In the "What Did You Observe?" section, describe what the dough felt like before and after you baked it.
13. Thoroughly clean the work area and wash your hands.

Try this...

Try changing the amounts of salt and flour used to make the dough. Use a straw to make a hole near the top of your creation. After it has baked and cooled, you may tie a string or ribbon through the hole to make an ornament.

Where's the Chemistry?

In this activity, a chemical change occurred when you baked the dough. It was soft and elastic at first and then became hard and rigid during baking. When a chemical change happens, things cannot be made to go back to what they were like originally and something new is formed. You can notice these changes by observing how it looks or how it feels. The color may be different, or it may feel solid instead of soft. In order for chemical changes to occur, heat may be required like in this activity.



What Did You Observe?



How did the dough feel as you started to shape it? After you baked it?



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

