

# Homemade Play-Dough

## Introduction

“Play-Doh” is a commercial modeling compound made of flour, water, salt, boric acid, and silicone oil. It was first manufactured in Cincinnati, Ohio, as a wallpaper cleaner in the 1930’s. When a classroom of children began using it as a modeling compound, the product was reworked and marketed to Cincinnati schools in the mid-1950’s, earning nearly \$3 million in sales in 1958 (over \$22 million today). Between 1955 and 2005, over two billion cans of Play-Doh were sold in 95 countries across the world, and it is considered one of the most memorable and creative toys of the twentieth century.



In this lab, you will prepare homemade “play-dough” using many of the same ingredients as the commercial product. The flour provides the bulk, the salt prevents the growth of microbes, the oil provides lasting moisture, and the cream of tartar improves the elasticity of the dough. The resulting product is non-toxic and lasts a long time in an airtight container!

## Materials

cream of tartar  
flour  
food coloring (gel)

salt  
sandwich zipper bags  
vegetable oil

## Equipment

beaker, 600-mL or 1-L  
beaker tongs  
hotplate

measuring cup, 1-cup  
measuring spoons, 1-Tbsp & 1-tsp  
stirring rod

## Safety Considerations

- Sometimes chemicals from previous labs still remain in glassware and on other lab equipment; wash all lab equipment before and after performing this lab.
- Wash your hands thoroughly after completing this lab.

## Procedure

1. Thoroughly mix together the following dry ingredients in a large pot until there are no lumps:
  - 1 cups flour
  - ½ cup salt
  - 2 tsp cream of tartar
2. Mix in the following wet ingredients and stir until no lumps remain:
  - 1 cup water
  - 1 Tbsp vegetable oil
3. Cook on high 3-4 minutes until a dough forms.
4. Separate into several portions and add food coloring, kneading until uniform in color.
5. Store your play-dough in a zippered sandwich bag when not in use.

## Clean-up

1. Dispose of any leftover solids in the trash, NOT THE SINK.
2. Clean all used lab equipment with soap, water and a test tube brush.

3. Return all equipment to its proper location.
4. Wipe down your lab area and wash your hands before leaving the lab.

**Questions**

1. Describe how your play-dough turned out – is it similar to or different from commercially made Play-Doh? Explain.

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2. What is one advantage and one disadvantage of this homemade play-dough when compared to commercially made Play-Doh?

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3. Commercially made Play-Doh contains a small amount of borax. Based on your knowledge of borax, why do you think this chemical is used?

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4. Almost everyone has fond memories of playing with Play-Doh as a child. What is your favorite thing to make using Play-Doh, and why?

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5. If you would like to make smoother play-dough, would you increase or decrease the amount of oil in the mixture? Why?

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