

Exploding Chalk Paint!

Estimated Time: 30-45 minutes

SUMMARY

What's more fun than decorating your walkways with chalk? Creating masterpieces and then making them fizz and foam, of course! In this activity you will use some basic kitchen items to create a chalk paint. For added chemistry fun, spray with a mild acid solution (like vinegar or citric acid) to create a fizzy reaction.

WHAT YOU'LL LEARN

- Acids and bases react to form carbon dioxide, which you can observe as bubbles
- There are differences between chemical reactions and physical reactions

Materials Used per Student	
<ul style="list-style-type: none"> ● Cornstarch ● Baking soda ● Citric Acid or Vinegar ● Food coloring ● Paintbrushes ● Water 	<ul style="list-style-type: none"> ● Small containers for paint (example- muffin tin or ice cube tray) ● Empty spray or squeeze bottle ● Side walk or driveway
Online Resource http://www.chem4kids.com/files/react_intro.html	

WHAT TO DO

1. In a large bowl, mix together equal parts baking soda and cornstarch. Baking soda is the base, which means it measures between 7.1-14 on a pH scale and will be part of our exploding reaction. Add an equal amount of water. (For example, if you added $\frac{1}{4}$ cup of baking soda to $\frac{1}{4}$ cup of cornstarch, you would add $\frac{1}{4}$ cup water).
2. Add several drops of food color to get a vibrant color. Repeat for each color of chalk paint you want to create.
3. Stir well – you may have to stir again while using this mixture as the baking soda and cornstarch fall out of the solution after a little while.
4. In a separate bowl or glass measuring cup, dissolve 1 tablespoon of citric acid in a cup (8 oz) of water. Make sure all the citric acid is dissolved. Pour into a squeeze bottle or spray bottle. For this reaction, citric acid is the acid. This is a solution, which is a solid dissolved into a liquid, and it is acidic which means it measures between 6.9-1 on the pH scale.
5. Use your baking soda/cornstarch solution to paint! Stir as needed if the solution thickens up. You can add additional water, but be aware it will dilute the color.
6. Once you are finished with your creation, spray a small spot of your citric acid solution to see the reaction. Talk about what you are seeing, then continue to spray until all the chalk paint has erupted! This is an acid/base reaction. This is an example of a chemical reaction, where molecules interact and change. The result of this reaction is a solution that should be closer to neutral – not an acid or a base, which means it will measure a 7 or close to 7 on a pH scale.

TIPS

- Wet the sidewalk with water before coloring to help blend the colors.
- If you don't have access to citric acid, you can substitute vinegar.
- This experiment cleans up with water.