# REACTION RAINBOW

#### STUDENT WORKBOOK



## **RESIN AND REASONS**

If you have ever blown bubbles, washed dishes, or taken a bath, you have experienced some light and foamy fun. The cause of bubbles is usually not a mystery, though. Have you ever seen bubbles with an unknown cause?

#### **TREE BUBBLES**

#### **Shaping Up**

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Imagine walking through a wooded area after heavy rain and you come across an odd sight. There are foamy bubbles at the base of a tree trunk.

People around the world have reported that foam sometimes collects on tree trunks. This does not happen with every tree and it does not happen every day. It only seems to happen in certain conditions. For example, it only happens after heavy rain, and only forms on trees that have thick, bumpy bark and lots of resin. Resin is a sticky, thick, sugary liquid that protects plant tissues from injury and flows on the outside of plants, such as on a tree trunk.

Because plants, especially trees, are important to people for many reasons, finding foam at the base of a tree can be alarming. It is only rarely encountered, so the person who finds it is unlikely to know whether it is harmful to the tree. It can be confused with other things that happen to trees, like slime flux. Slime flux is a parasitic infection of a tree that results in a slimier and darker foam than tree bubbles.

Are tree bubbles harmful? What is their cause? These are questions asked by most observers of the phenomenon. Most plant experts agree that the foam is not harmful to the tree and that is a natural process. This means that it is not caused by pollutants or contaminants in the soil, air, or rain.





Resin can often be found coating the bark of trees.



Slime flux often attracts insects that use it as a food source.

Molarity is the most frequently used quantitative description in the field of chemistry, and it helps provide information about acids and bases. The higher the molarity, the stronger the properties of the solute.



### THINK ABOUT IT!

**?** 1. Bath bombs contain mostly citric acid and sodium bicarbonate. Explain how their storage and use show that reactions between solids happen in solution.

<sup>2</sup> 2. Acids are often labeled as corrosive and dangerous. However, people encounter acidic solutions without experiencing harm, such as stomach acid, orange juice, soda, rain, urine, and coffee. Explain how this is possible using the concept of concentration.

**3**. Vinegar is a solution. Look at the vinegar bottle in the kit to determine what the solute and solvent are in the vinegar. Sketch a particle diagram showing the solute in the solvent, and label one particle of each.

An indicator in the analyte changes color when the endpoint of the reaction is reached. This endpoint can be any predetermined pH as long as it corresponds to a change in the color of the indicator.



Once a titration is complete, the volume of standard solution used can be used to determine the concentration of the analyte. A **titration curve**, or graph of concentration and volume for a pair of solutions, can help with this step. In a titration curve, the equivalence point shows the pH of the analyte for different volumes of standard solution.





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Kit	SU-RERAIN
Instructions	SU-RERAINS
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