



Inquiry Approaches

Initial Inquiry

What is soap made from?

Fats, lye, sodium hydroxide, potassium hydroxide, oils and tallow are all possible answers. Lye is a combination of sodium hydroxide and potassium hydroxide that was traditionally leached from wood and used in soap-making along with fats. In this activity, sodium hydroxide and vegetable shortening are used.

How is soap important in our everyday lives?

Soap is important in human hygiene. Proper hand washing with soap can prevent the spread of disease.

Experimental Procedure Inquiry

Why is the ratio of sodium hydroxide to fat important?

The ratio is important because it ensures that all of the fat and sodium hydroxide is reacted. If any sodium hydroxide is left over, the soap will be too basic and will irritate skin. If too much fat is left over, the soap will feel greasy.

How can you tell that a chemical reaction took place when the fats and sodium hydroxide were mixed together?

The colour, texture, and properties of the final product are different. Also, the soap cannot be changed back to the starting materials.

Can you explain how saponification (making soap) is an acid-base reaction?

The definition of an acid-base reaction is a chemical reaction between an acid and a base. In the saponification activity, a chemical reaction occurs between a fatty acid and a base to form a salt of the fatty acid and glycerol. Vegetable shortening is used as the acid and sodium hydroxide as the base. However, a variety of acids and bases can be used. For example, olive oil and potassium hydroxide can also be used.

In-Depth Inquiry

Why is it advantageous that soap is basic?

Soap is used to clean off grease and oils, which are acidic because they contain fatty acids.

Can you explain how soap cleans?

Soap forms micelles around grease particles, allowing the grease to be washed away. Soap brings otherwise immiscible substances, such as oil and water, together by forming an emulsion.