KITCHEN SCIENCE: LIP BALM

INTRODUCTION

This activity shows how we can engineer substances to make them have the properties we want. Review with students the difference between physical and chemical properties and changes. This activity engineers the physical properties of a mixture.
In World War II, lanolin, which was used in lotions and lip balms, was in short supply and was needed for industrial lubricants. If people wanted to make their own, they could use other natural products. Beeswax is too hard and oil is too soft to make a lip balm. Mixed together, they have intermediate properties. If you have time, you can have students modify the recipe to their requirements. In the summer you might need a harder recipe; in winter, you might need a softer recipe.

MATERIALS

+ 3 tsp beeswax pellets
+ 5 tsp sunflower oil
+ 6 drops essential oil
+ 1 tsp honey
+ A thermometer

If you use cooking pots it will be easier to clean and reuse them for other purposes. Wax is difficult to remove from many containers.

STANDARDS

NGSS 5 PS1-3
Make observations and measurements to identify materials based on their properties.

NGSS 5 PS1-4
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

NGSS MS PS1-2
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

NGSS MS PS1-3
Gather and make sense of information to describe that synthetic materials come from natural resources andimpact society.

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In upper elementary and into middle grades, students are developing their concepts of matter and how matter changes and reacts. This activity examines how the physical properties of materials change in a mixture. It also considers how engineers design substances to have necessary properties by controlling the proportions in a mixture. It engages students in the Science and Engineering Practices of Defining Problems and Asking Questions, Designing Solutions and Constructing Explanations, but only if you make sure the discussion includes designing a material with desired properties AND consideration of whether or not this represents a chemical reaction or creation of a mixture.

NAME: DATE:

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During World War II, there were many shortages of common household items. People got used to making their own things and making do with what was on hand during the Great Depression, and they continued making do through the war. To make substances have the characteristics you want, you need to know about the properties of their ingredients. Sometimes what we make involves physical properties and physical changes, and sometimes it involves chemical properties and chemical changes.

Follow the instructions to make something exciting to use. Determine if what you're making involves chemical or physical changes.

LIP BALM

In a jar or bowl combine the following:

+ 3 tsp beeswax pellets
+ 5 tsp sunflower oil
+ 6 drops essential oil
+ 1 tsp honey

Heat the combined substances on a hot plate. All the substances will melt. You may have to stir them together occasionally until they do. Monitor the temperature of the mixture. Record the temperature at which the mixture becomes liquid. Take the mixture from the hot plate and carefully use a disposable dropper to add the mixture to your jar. In the jar, the mixture will cool and become solid. Record the temperature at which it starts becoming solid.

Temperature at which all substances are liquid:

Temperature at which it starts solidifying: