GRADE LEVELS: 3rd - 5th

Time Allotment: 55 Minutes

Lip Balm Science

Basic Science

Vocabulary:

- Melt: To change from a solid to a liquid state.
- Solidify: To change from a liquid to a solid state.
- Ingredient: A component part of a mixture or compound.
- Lip Balm Base: The main substance used to make lip balm.
- Flavor Oil: An oil used to add scent and flavor to lip balm.

Materials:

- Lip Balm Base (1 oz)
- Beaker (1)
- Stirrer (1)
- Lip Oil (2 ml)
- Pipette (1)
- Lip Balm Containers (6)
- Lab Glasses (optional)

Discussion Points:

- Begin by asking students if they have ever used lip balm and what they know about it. Encourage them to share their experiences and observations.

- Introduce the concept of matter and its states (solid, liquid, gas) in a simple and relatable way. You can use examples like ice melting into water or butter solidifying in the refrigerator.

- Show the students the ingredients used to make lip balm (lip balm base, flavor oil) and ask them to describe the properties of each ingredient. Guide them to understand that the base is solid at room temperature but can be melted, and the flavor oil is a liquid that is added for scent and taste.

- Explain the process of melting and solidifying using the lip balm base as an example. Emphasize that heating the base causes it to melt into a liquid, and cooling it down causes it to solidify again.

- Discuss the importance of following instructions carefully in a lab setting. Explain that precise measurements and steps are necessary to ensure the lip balm turns out well and is safe to use.

- Encourage students to ask questions and participate in the discussion. Use their responses to guide the conversation and reinforce key concepts.

- Summarize the discussion by highlighting the main points about matter, states, ingredients, and the importance of following instructions.

Let's Make Lip Balm!

Procedure:

1. Preparation: Read the entire procedure before you begin.
2. Safety: Clean your work surface and put on your safety glasses and lab jacket (if available).
3. Organize: Arrange all ingredients and materials in the order they will be used.
4. Prepare Containers: Place lip balm containers on paper or a tray on a level surface.
5. Melt the Base: Using a craft stick, transfer the lip balm base from the jar to the beaker. Microwave for 2 minutes or until fully melted.
6. Add Flavor: **Shake the flavor oil** to ensure it's well mixed before adding to melted base. Using a pipette, add 1-2 drops of flavor oil to the melted base while it's still hot. If pouring, do so carefully to avoid spills Stir: Use the stirrer to blend the flavor oil thoroughly into the mixture.
7. Fill Containers: Pour the mixture from the beaker into the lip balm containers, filling them just below the top surface.

Cool: Place the containers in the refrigerator (with lids off) for 60-90 seconds to harden. If no refrigerator is available, let them sit out for about 10 minutes.

Next Generation Science Standards (NGSS) Alignment:

Grade 3:

- **PS1.A: Structure and Properties of Matter**
  - Students can develop an understanding of the properties of matter and that materials can exist in different states—solid, liquid, and gas.

Grade 4:

- **PS1.A: Structure and Properties of Matter**
  - Students can develop an understanding of the properties of substances before and after they undergo a change or interaction that alters the substances' composition.

Grade 5:

- **PS1.A: Structure and Properties of Matter**
  - Students can develop an understanding of the properties of different kinds of matter, including mixtures and substances.

- **ETS1.A: Defining and Delimiting Engineering Problems**
  - Students can define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

These standards align with the lip balm lesson plan by focusing on the properties of matter, changes in state, and the application of scientific knowledge to solve a simple engineering problem.