



STARBASE Challenge: Flubber Flows

For this challenge, you are going to explore a substance called “flubber” and how this material behaves. Make careful observations of this unusual substance as your experiment. Then use this smaller example to make predictions and model the properties of glaciers which can cover enormous surfaces of a planet!

CAUTION: This activity requires adult supervision. Flubber is TOXIC so DO NOT EAT any of it!

Part 1: Make the Flubber

Note: Using gloves to work with the flubber may make it more difficult. It really is not as sticky as you might think!

Materials:

- Measuring cups
 - Measuring spoons
 - 2 mixing bowls
 - 1 cup of white glue
 - 5 drops of green or blue food coloring (optional)
 - 1 1/4 cup *warm* water
 - 2 teaspoons of Borax
1. Mix 3/4 cup warm water, 1 cup of white glue, and 5 drops of blue or green food coloring, and set aside.
 2. *Separately* mix together 1/2 cup of warm water and 2 teaspoons of Borax
 3. Combine the two mixtures and work it through your hands for several minutes until a consistent texture forms. Drain excess water, and work into a ball.

Part 2: Explore the Flubber

Spend a few minutes feeling the flubber and rolling it around in your hands. Use your observations to answer the following questions:

1. Would you describe flubber as a solid, a liquid, or a gas? Why?
2. What are some words you would use to describe flubber? Is it hard or soft? It is gummy, gooey, or sticky? Rigid or flexible?
3. Can you break the flubber?
4. Would you expect flubber to flow – or change shape – quickly or slowly? Why?

Part 3: Set up the Flubber Test

Materials:

- 1 (20" x 30") or larger piece of foam core or heavy cardboard
 - 1 pint sized Ziploc baggie (for flubber storage)
 - 1 permanent marker
 - 1 pair of scissors
 - Ruler
 - Pencil or pen
 - Timer or clock
1. Form your flubber into a 12.5 cm by 15 cm rectangle. Then draw a line across the center of the flubber with a marker.
 2. Carefully place the flubber at the top center area of your board. Draw a line even with the bottom of your flubber "glacier" across the board.
 3. Prop up your board lengthwise against a wall, with the bottom of the board 30 cm away from the wall.
 4. Make a prediction about what you think will happen in the space below.
 5. Set a timer for 15 minutes and move on to Part 4.

Part 4: Exploring Glaciers

Learn more about glaciers by watching this video: [How Do Glaciers Move?](#) or <https://tinyurl.com/sbctglaciers>

Use what you've learned in the video to answer these questions before you check on your flubber again:

1. How do glaciers form in places like the Alaskan ice field?
2. How does the pressure melting point relate to how glaciers move?
3. How can we use glaciers to help us understand climate change?

Part 5: Final Flubber Observations

Once the timer goes off, return to your flubber and use your observations to answer these questions:

1. What are your observations of the flubber? (Think about size, shape, position, the mark you drew, etc.)
2. How do your observations compare to your prediction?
3. How can you explain the changes the flubber experienced?
4. How is flubber similar to a glacier?