

STICKY ICE?

This cool science shows how ice can behave surprisingly depending on temperature, moisture, and conditions. Is it sticky, slippery, or something in between? Time to test and find out!

Scientific Method

Question: Is ice always slippery? What factors affect its slipperiness?

Hypothesis: If ice has a higher temperature or is on a smooth surface, it will be more slippery because the thin water layer will form more easily.

Test Ice Temperature:

Take three ice cubes: keep one very cold (from the freezer), one at room temperature, and one slightly warmed, and place on trays or plates (not paper). Test each cube by gently pushing the ice cube with your finger or slightly tilting the surface to see how easily the ice cube slides.

Record observations about slipperiness:

Test Surface Texture:

Place an ice cube on a smooth surface (tray) and another on a rough surface (sandpaper on tray).

Use both push (gently with finger) and tilt methods (tilt surface slightly) to observe how the ice behaves on each surface.

Record which surface makes the ice slide easier.

You can try out a variety of surfaces on the tray, such as parchment paper, wax paper, silicone baking mat, aluminum foil, or even a wooden cutting board

Test Pressure:

Place a small weight (like coins) on one ice cube and slide it on a smooth surface. Compare it to an ice cube without any added weight using the same methods. Record the differences in slipperiness.

Observation and Data Collection:

Write down which ice cube slid the farthest or fastest in each test.

Note if certain conditions made the ice stick slide or not.

Use a thermometer to check if temperature differences affect slipperiness.

Results:

Analyze which factor (temperature, texture, or pressure) made the ice most slippery.

Materials

Ice cubes

A smooth surface
(tray or cutting board)

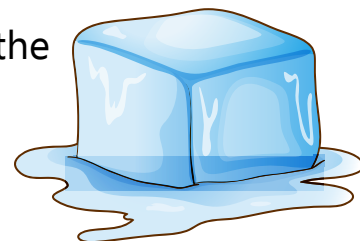
A rough surface
(sandpaper or textured mat)

Freezer-safe thermometer
(optional)

Small weights (like coins)

Stopwatch

Observation worksheet



STICKY ICE?

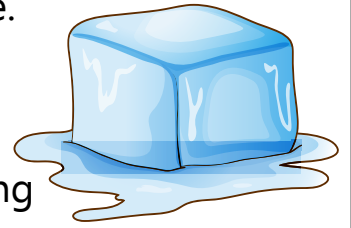
Is Ice Slippery, or Is Ice Sticky?

Ice isn't always slippery, and it's not always sticky either! Ice feels slippery or sticky depending on temperature, surface texture, and pressure.

Slippery Ice:

Warmer ice and smooth surfaces create a thin water layer that makes ice slippery and easy to slide.

Rough surfaces or very cold ice reduce slipperiness by disrupting or preventing the water layer from forming.



Sticky Ice:

Ice feels sticky when it's very cold and freezes the moisture on your skin. This frozen layer creates a bond between the ice and your skin.

Sticky ice is more noticeable if your skin is wet, as the water freezes faster.

Tips and Tricks

Start with a fun question: "Why do ice rinks feel slippery, but frozen ground doesn't?" Share real-world examples, such as penguins walking on ice or curling teams using special shoes.

Encourage kids: to use descriptive language as they observe ("The ice felt sticky," or "It slid quickly across the smooth tray"). Younger kids can draw pictures of their observations.

Discuss Real-World Applications: Relate the experiment to real-life situations, such as walking on icy sidewalks, ice sports, or how salt is used to reduce slipperiness in winter.

Simplify for Younger Kids: Focus on one test and let them playfully experiment with sliding ice cubes. Use toy cars or figurines for added fun.

Add Challenges for Older Students: Introduce variables like adding salt to the ice or testing different materials. Include math by measuring and comparing sliding distances.

Encourage Collaboration: Let students work in pairs or small groups to test different factors and then share their results. This fosters teamwork and communication skills.

Extend Learning Beyond the Experiment: Provide books or videos about winter weather, states of matter, or the science of ice skating. Let them brainstorm follow-up experiments.

STICKY ICE DATA & OBSERVATIONS

<u>Test</u>	<u>Condition</u>	<u>Did it slide easily? (yes/no)</u>	<u>Did it feel sticky? (yes/no)</u>
Temperature	Very cold ice		
	Ice at room temp for 5 min		
	Slightly warmed ice		
Surface	Smooth surface		
	Rough surface		
Pressure	Ice with weight		
	Ice without weight		

Did all the ice cubes behave the same way? Why or why not? _____

Which ice cube was the slipperiest? Why do you think that happened? _____

On which surface did the ice slide the farthest? _____

When might ice feel sticky in real life? Have you ever experienced this? _____