

Instant Ice

Student Worksheet

Name _____

Overview: Superman may have used this technique to freeze bad guys, and now you'll know how it works. You'll agree that supercooling is super cool!

What to Learn: You should understand that supercooling is making a liquid stay a liquid even though it is cold enough to turn into a solid.

Materials

- water
- glass
- bowl
- ice
- salt, NaCl ([MSDS](#))
- thermometer

Lab Time

1. Put a glass of water into a bowl filled with ice. Make sure the level of the ice is higher than the level of the water.
2. Add salt around the ice (but not in the water!)
3. Wait 15 minutes
4. Take the water out very gently and set it on the table.
5. Put a piece of clean ice into the water and observe.

Instant Ice Data Table

Item/Object	Temperature (°F)
Room temperature water	
Water in ice bath after 5 minutes	
Water in ice bath after 10 minutes	
Water in ice bath after 15 minutes	

Ice/Water at end of experiment	
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Exercises Answer the questions below:

1. Why was salt added to the ice?
2. What would happen if you accidentally spilled some salt in the water?
3. What does supercooling mean?
4. In nature, you'll find supercooled water drops in freezing rain and also inside cumulus clouds. How could this be dangerous for a pilot flying an airplane?

Exercises

1. Why was salt added to the ice? (The salt lowered the freezing point of ice, which made the water in the glass extra cold.)
2. What would happen if you accidentally spilled some salt in the water? (The experiment would not work, because the salt lowers the freezing point, making it even harder to freeze.)
3. What does supercooling mean? (Making a liquid stay a liquid below its freezing point.)
4. In nature, you'll find supercooled water drops in freezing rain and also inside cumulus clouds. How could this be dangerous for a pilot flying an airplane? (It could cause the instrument ports or wings to freeze super fast, causing all kinds of problems.)

Closure: Before moving on, ask your students if they have any recommendations or unanswered questions that they can work out on their own. Brainstorming extension ideas is a great way to add more science studies to your class time.