



Which Melts Fastest?

Predict whether an ice cube will melt faster in freshwater or saltwater?

Procedure:

1. Pour ~200 mL of tap water into two clear cylindrical containers.
2. Add ~20mg of salt into one glass and stir until the salt is dissolved. Mark or make not of the control jar (freshwater FW) to tell it apart from the salty jar.
3. Stop the saltwater from swirling, gently put an ice-cube into each jar and set the timer.
4. Look for melting and observe closely. If you can't see what is going on, gently put on drop of food colouring on top of each ice cube.

Materials:

Two clear jars of the same size, ~200mL of water in each jar

~20mg of salt (4 tsp) and something to mix with

Two ice cubes (~same size)

Food colouring

Pen and data table. Phone or camera optional. Timer optional

Complete the data table below:

Observations noted on:	Ice-cube melting in freshwater	Ice-cube melting in saltwater
Ice-cube melt Time to full melt = T (units) Notes on what you see looking closely:	Time zero= Time to fully melted=	Time zero= Time to fully melted=
Water circulation		
Water mixing		
Water layering or stratifying into different density layers		



Review:

1. Name three factors (variables) in the ice-cube melting experiment, that are controlled (kept the same in both the saltwater and freshwater experiments:

2. In the ice-cube melting experiment, what variable is manipulated?

3. What is the result of the melting experiment?

4. Based on your results, which polar scenario is more likely to result in density driven currents?
 - a. Cold fresh water (such as melting glaciers) running onto a cold salty ocean
 - b. Sea ice forming with salt is “squeezed’ out into an already cold salty ocean.

5. What surprised you in this experiment?

6. Make three suggestions of ways this experiment could be improved or better designed.

7. Discuss with a partner how atmospheric CO₂ links to changes in the ocean temperature and salinity. Record three connections that you made.