

Title

So everyone knows those trucks that come by and drop off either sand or salt in the winter to melt ice. Well I want to see which one melts ice faster salt or sand. This might not effect everyone but let me give an example so in the elementary they always got ice on the cement in the winter so they had to melt it before the kinder gardeners went to lunch so they should know which one melts ice faster.

What melts ice faster sand or salt or ice by its self

First we gathered all of the materials like bowls, ice, salt, sand and a pipet. Next we put three ice cubes into each of the bowls and poured sand over one and salt over the other. Then you put them into the fridge and wait. We waited about three hours or so. We got them out and measured the water and did the experiment two more times.

For the first experiment I noticed just by looking at the ice that the salt melted the ice more but we still had to measure it and the numbers we got were. The salt melted 50.6 percent of the ice the sand melted 10.9 percent of the ice and the ice its self melted 3.79 percent of the ice.

My project was a investigation project because I had to test what melts ice faster so I came up with an experiment and and tested it multiple times. I met my objective of figuring out what melts ice faster.

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Intro

So everyone knows those trucks that come by and drop off either sand or salt in the winter to melt ice. Well I want to see which one melts ice faster salt or sand. This might not effect everyone but let me give an example so in the elementary they always got ice on the cement in the winter so they had to melt it before the kinder gardeners went to lunch so they should know which one melts ice faster. In my opinion I think that the salt is going to melt the ice faster.

Research

In my tests I used “table salt” otherwise known as sodium chloride which is the element NaCl which has a ratio of 1:1 ions. Sodium chloride is an ionic compound. The main characteristics of an ionic compound are they form crystals, are brittle, they conduct electricity in solutions, and they have high melting points and boiling points.

Salt works to melt ice because salt and water has a lower freezing point than plain water. Depending on the concentration of the salt solution the freezing point varies. Water freezes at 32 degrees Fahrenheit but adding salt the freezing point lowers. For example 10 percent concentration lowers the freezing point 20 degrees Fahrenheit while a 20 percent solution lowers the freezing point down to 0 degrees Fahrenheit.

Salt will not melt the ice if it is below 0 degrees F. In that case sand is often used but not for what you think it is used for. Salt in many places is used to create traction on the ground and not to melt the ice.

Many cities use another ionic compound called calcium chloride element CaCl₂. Which is better to use because calcium chloride has an ion ratio of 2:1. Which makes calcium chloride more effective when it gets below 0 degrees. Na has 11 ions and Ca has 20 ions which causes Ca to react faster and work at lower temperatures.

Materials

- 3 bowls
- 9 ice cubes
- Salt
- Sand
- A 1/2 tsp
- A pipet

procedures

1. Set up three bowls, each containing three ice cubes
2. Put 1/2 tsp of salt on top of the ice in one bowl, 1/2tsp of sand on top of the ice in another bowl, and the third bowl had just ice .
3. Put all three bowls in the refrigerator for a controlled environment.
4. Checked every hour until the ice in at least one of the Bowls was half melted
5. This took three hours
6. Measured the melted water in each bowl and recorded
7. Left all three bowls at room temp to melt the rest of the ice
8. Then measured the melted water in each of the bowls to find total amount of water in each bowl
9. Repeated experiment two more times

Results

1st test

	Amount melted	Amount remained	Total amount	Percent melted
Ice with Salt	41 ml	40 ml	81 ml	50.6%
Ice with sand	6 ml	54 ml	60 ml	10.9%
Ice	3 ml	78 ml	81 ml	3.79%

2nd test

	Amount melted	Amount remained	Total amount	Percent melted
Ice with Salt	33ml	53 ml	86 ml	38.3%
Ice with Sand	1ml	82 ml	83 ml	1.2%
Ice	1/2 ml	93 ml	93 1/2 ml	0.53%

3rd test

	Amount Melted	Amount Remained	Total amount	Percent remained
Ice with Salt	45 ml	31 ml	76 ml	40.8%
Ice with Sand	0 ml	87 ml	87 ml	100%
Ice	3 ml	73 ml	76 ml	96.1%

4th test

	Amount melted	Amount remained	Total amount	Percent remained
Ice with salt	43 ml	31 ml	74 ml	41.9%
Ice with sand	4 ml	61 ml	65 ml	93.8%
ice	2 ml	65 ml	67 ml	97%

Conclusion

My hypothesis was correct the salt did melt the ice faster than the sand or the ice its self. The sand also melted the ice faster than the ice its self. The test went smoothly I guess we had a few issues one been that my results were kind of every where but other than that it was all good. And to add to this experiment you could use sugar see if that melt the ice as well

Acknowledgement

I would like to thank Mrs.Colomb for helping me through everything I also would like to thank my mom for helping me with my experiment. I would like to thank my uncle for helping get all my stuff done as well. I would also like to thank my grandma for helping me research my project.

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Ice

Sand

Salt



At the beginning of the experiment

