

Iced drinks

In which type of drink will the ice cube melt the fastest?

Notes

In this investigation the students place an ice cube in glasses of different types of drinks, they then time how long it takes for the ice cube to melt.

This is quite a nice experiment to use to highlight the different types of variables and give them practice at collecting and analysing data. The prediction can also be used to start a discussion and get their ideas. Some of them will come up with some very interesting theories.

The downside to this investigation is that an explanation as to why it will melt in some drinks over others is dependent on several different factors (which can compete with each other) and it's not reasonable to ask the students to come up with their own explanation.

-Non-diet carbonated drinks are denser than water (due to the huge amounts of sugar) so the ice cubes float, this means that one side of the ice cube is insulated as it is exposed to the air.

-Any solute (such as salt or sugar) will lower the melting point of water, this speeds melting of the ice cube.

-The viscosity of the drink will also affect the rate of flow of the water around the ice cube. So the more viscous it is the slower the ice cube will melt.

As an extension, depending on the ability of your group you could ask them to Google the answer.

Resources needed

-Different types of drinks E.g. Cola and diet cola, milk, lemonade, juice, water, milk, squash.

-250 mL beakers/glasses.

-Stopwatches.

Variables

Independent variable (the one you change): The type of drink

Dependant variable (the one you measure): The time it takes the ice cube to melt.

Control variables (the one you keep the same): The size of the ice cube. The volume of liquid.

Method

The students fill 250mL beakers with 200 mL of different types of drinks. They place an ice cube in the drink and time how long it takes to melt.

You can delete the method section if you don't think it necessary, it is quite a simple explanation and will take time away from the lesson. But the students might need practice in writing one.

Risk assessment

A risk assessment is not necessary for this investigation. But you will need to remind the students that they cannot drink any of them.

Collecting results

Between 3-5 different drinks should be investigated. The students don't need to repeat the experiment three times.

A table is included on the sheet, but delete the column headings or the whole table as appropriate for your group.

Presenting results

These results can be presented as a bar graph of the different types of drink against time (seconds).

Interpreting data

The students should be able to quantitatively compare the time it takes different ice cubes to melt.