

A Cool Baked Alaska

Frogs, Mice, Birds, Insects

What you need!

- 3 egg whites
- 1 big, thick, hard cookie
- 1 cup of really hard, frozen ice cream
- Baking sheet
- Aluminum foil
- Mixing bowl
- Hand mixer
- A grown up!



Did you know that air provides one of the best insulation against hot or cold temperatures? Well, animals do. Birds have thousands of downy feathers that trap air against their bodies. Frogs and insects spend the winters underneath a layer of fluffy, airy snow. Now you can find out how air insulation works - and make yourselves a tasty treat!

What you do:

1. Heat your oven to 260° Celsius (500° Fahrenheit)
2. Cover a baking sheet with aluminum foil.
3. Put the egg whites into a bowl and beat with the mixer for about five minutes, until they're stiff.
4. Keep beating the egg whites while adding the sugar a little at a time until the mixture is fluffy and shiny. You've just made meringue.
5. Put the cookie on the baking sheet.
6. Place a scoop of ice cream on the centre of the cookie.
7. Completely cover the cookie and the ice cream with the meringue so there are no cracks.
8. Ask a grown up to help you put it in the oven for three to five minutes until the meringue is a delicate, light brown.
9. Take it out of the oven, put it on a plate, admire it and then eat up!

Ask yourself

- Why is the ice cream still frozen after being in a hot oven?
- What do you think would happen to the ice cream without the meringue coating?
- What makes the meringue such good insulation?
- Why do you think air help to maintain a steady temperature?

Think of other types of insulation found in nature. How do these protect animals from the cold and heat?

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What did you find out?

Insulation keeps hot stuff hot and cold stuff cold. Some of the best insulation is created by air. When egg whites are beaten, tiny air pockets form within the meringue. This provides excellent insulation for the ice cream when it is exposed to high heat.

Heat passes most easily through objects with molecules that are very close together. That's why heavy metals, with little air space between molecules make the best pots and pans. Air is a gas, which means air molecules are quite far apart, and as a result they don't transfer heat as effectively.

Nature has used the insulating properties of air for millions of years. The fur of mammals and the feathers of birds are terrific insulators because they can trap air in many, many small pockets. Fluffy snow is also an excellent insulator because of air. Most small mammals like mice and shrews do not hibernate in the winter, they remain happy and active beneath layers of snow. Here, insulated from outside temperatures that may be 40°C colder, small mammals can easily survive the winter.

Specific Learner Expectations (SLE)

Grade 2 Topic D: Hot and Cold Temperatures.

SLE 9: Identify materials that insulate animals from the cold: e.g., wool; fur; and feathers; and identify materials that are used by humans for the same purpose.

SLE 10: Design and construct a device to keep something hot or cold.