

Investigating Insulating

When you fill a container full of hot water in the morning to make a hot drink for lunch, you want to make sure that it stays warm, which is why you put it in a thermos or dewar flask. Alternatively, in the middle of summer you put your drinks in an esky to keep them cool.

Well, your house is just like a thermos or an esky, in winter you want to keep the insides warm and in summer you want the heat to stay out. What both the esky and the thermos have in the walls of the container is insulation material.

Things to Get

Beaker of boiling water

Two Cardboard boxes (one 2.5cm x 2.5cm smaller than the other one) with a small hole in the middle of each box for the thermometer to go through

Two thermometers

Foam, Shredded newspaper, Wool or other materials to test

Clock or stopwatch

Things to Do

1. Place the small box inside the larger box, making sure that the box is in the middle.
2. Stuff the gap between the two boxes with the first type of insulation material.
3. Turn the boxes upside down and carefully insert the thermometer through the holes in centre of the two boxes.
4. Tape the second thermometer to the outside of the larger box.
5. Fill a beaker with boiling, or very hot water.
6. Place the boxes over the beaker, making sure that the thermometer is not touching the beaker of water.
7. Record the temperature differences between the outside and inside of the box every two minutes for ten minutes.
8. From your results and those from the groups who used different materials, which of the materials would make the best insulator?

Results

Our groups insulation material was:

Table of Results:

Time						
Inside Temp						
Outside Temp						

The best insulation material from our class was:

Can you think of any materials which would not be good insulators? Why?

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