

## Keep the heat in! Keep the heat out!

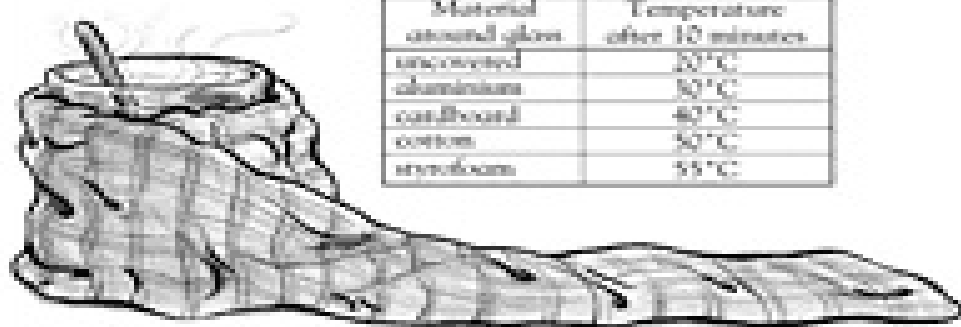


### Science facts

Matter that allows heat to pass through it is a *thermal conductor*. Metals are excellent thermal conductors, though the best thermal conductor is diamond. Diamonds are crystals made of carbon. Glass, water, wood, and air are poor thermal conductors. Matter that is a poor conductor of heat is called a *thermal insulator*. Some types of matter are better thermal insulators than others.

### Science activity

Five glasses containing water at  $60^{\circ}\text{C}$  were each wrapped in different types of matter. After 10 minutes, the water temperature in each glass was recorded. The results are shown in the table below.



Material around glass	Temperature after 10 minutes
uncovered	$20^{\circ}\text{C}$
aluminium	$30^{\circ}\text{C}$
cardboard	$40^{\circ}\text{C}$
cotton	$50^{\circ}\text{C}$
styrofoam	$55^{\circ}\text{C}$

Which type of matter is the best insulator? Explain. Why was one glass uncovered?

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### Science investigation

Animals that live in cold climates have thick layers of fat. Fats and oils have similar properties. Using vegetable oil, design and conduct an experiment to test the purpose of the fatty layers.