Ice Melting Blocks

P6-7060

INSTRUCTIONAL GUIDE

Contents

Ice Melting Blocks:

- One black aluminum block
- One black high-density foam block
- Two rubber O-rings

Background

Heat can be transferred by conduction, convection, or radiation. In this experiment, students will discover the different rates at which materials can conduct heat. Aluminum is a better conductor of heat than high-density foam.

Investigation

1. Touch both blocks. Which feels warmer? (The foam block will feel warmer.) Predict which block will cause ice to melt faster.
2. Place the O-rings on the blocks to prevent water from flowing off. Place an ice cube on each block.
3. Observe the rates at which the ice cubes melt. Which material is conducting heat into the ice faster? (The aluminum block will melt ice much faster than the foam block.)
4. After a few minutes, remove the ice and water, and touch the blocks again. Explain what you observe. (The aluminum block feels even cooler now, and it is cooler. Energy stored as heat inside the block was transferred to the ice when it melted. Now the block has less thermal energy than before.)
5. The aluminum block felt cool at the beginning for the same reason that it melted the ice faster. It is better at conducting heat away from your hand, and makes your skin feel cool.

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Related Products

Thermal Conductivity Bars (P6-7090) Study heat conductivity in different metals. Observe the temperature gradients along the metal bars, and watch them evolve.

Ball and Ring Apparatus (33-0630) This brass ball fits easily through the matching ring when they are both at room temperature. Heat the ball in a flame, and experience the results of thermal expansion.

Compound Bar (P6-7070) Thin strips of two different metals are laminated together in this simple demonstration, also known as a Bimetallic Strip. Demonstrate thermal expansion.