

The **thermal property** of a material determines how it responds to heat.

- ▶ **Conductors** are materials that **conduct heat well**.
- ▶ **Insulators** are materials that **do not conduct heat well**.

### Conductors

#### Metals



copper



aluminum

### Insulators

#### gases (air), wood, ceramic, plastic



wood



ceramic

### CFU

Why is the skillet<sub>3</sub> made of metal? Explain.



Why is the handle on the skillet made of plastic? Explain.

The **thermal property** of a material determines how it responds to heat.

- ▶ **Conductors** easily transfer **heat** to colder objects or absorb **heat** from warmer ones.
- ▶ **Insulators DO NOT** easily transfer **heat** to colder objects or absorb **heat** from warmer ones.

### Conductors



A metal cup easily absorbs heat from coffee.  
Coffee cools faster.

### Insulator



A Styrofoam cup does not easily absorb heat from coffee.  
Coffee stays hot longer.

### CFU

Why is aluminum foil used for barbecuing food? Explain.



How do plastic ice chests keep food cold? Explain.



1. Read the text.
2. Describe thermal properties of materials. (complete organizer)

<sup>1</sup>Thermal conductors are materials that allow heat to pass through them easily. <sup>2</sup>Examples of good thermal conductors are metals, such as copper, aluminum, steel, and iron. <sup>3</sup>Thermal conductors are useful when it is necessary to cool objects down, or heat them up, quickly. <sup>4</sup>For example, a metal frying pan allows heat to transfer quickly to the food inside it.

<sup>5</sup>Thermal insulators are materials that prevent heat from passing through them. <sup>6</sup>A good thermal insulator will keep cold items cold and hot items hot for a long time. <sup>7</sup>Examples of good thermal insulators are wood, plastic, and many fabrics, such as wool and cotton. <sup>8</sup>Thermal insulators are good materials for keeping people warm. <sup>9</sup>Carpets, clothing, and curtains are examples of everyday thermal insulators.

### Compare thermal conductors and insulators

	Conductors	Insulators
<b>Definition</b>		
<b>Example materials</b>		
<b>Real Life Examples</b>		

**Skill Closure**

1. Look at the picture.
2. Answer the question. (write)

**Why is the workman wearing leather gloves while holding the hot torch?**



1. The workman is wearing leather gloves because ...

**Concept Closure**

**What happens to the handles of a silver spoon and a plastic spoon if you place them inside a scorching cup of coffee?**

**Summary Closure**

**What did you learn today about describing thermal properties of materials?**

**Word Bank**

- ▶ thermal properties
- ▶ conductors
- ▶ Insulators
- ▶ heat transfer

1. Read the passage.
2. Complete by using conductors or insulators.

<sup>1</sup>Do you like toast? <sup>2</sup>Did you ever look inside a toaster while it's toasting bread? <sup>3</sup>When you push down the lever to turn on the toaster, the metal inside starts to glow orange almost immediately. <sup>4</sup>The metal gets hot so quickly because metals are good \_\_\_\_\_ of thermal energy.

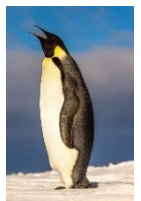


<sup>1</sup>A big goal of building a home is to reduce the transfer of heat into or out of the home. <sup>2</sup>This not only saves money but is also good for the planet. <sup>3</sup>There are many different types of materials that are great \_\_\_\_\_. <sup>4</sup>Some examples are fiberglass, polystyrene, mineral wool, etc. <sup>5</sup>These materials work by trapping tiny pockets of air to slow down the movement of heat out of the house in the winter and into the house in summer.



### Read the passage. Answer the question.

<sup>1</sup>In the wild, many animals have developed their own solutions for conserving heat loss. <sup>2</sup>The Emperor Penguin lives in the Antarctic which is the coldest place on Earth. <sup>3</sup>To keep warm, penguins have dense, oily feathers and a thick layer of fat beneath their skin. <sup>4</sup>This acts like insulation, keeping their natural body heat in!



**What is the role of the dense, oily feathers and a thick layer of fat beneath the skin of an Emperor Penguin. Explain.**