

INTEGRATING PHYSICS**● Adobe**

Adobe soil, which is a type of clay soil, has been used as a building material for centuries. Indians from the American Southwest were using adobe for building before the arrival of Christopher Columbus in the Americas. In fact, in recent years, building adobe houses is very fashionable in the American Southwest.

Adobe is a mixture of clay, sand, and silt. As a building material, adobe has many advantages. Particularly, adobe is a good insulator—houses built from it are much easier to keep warm in the winter and cool in the summer. In addition, adobe is fireproof.

Heat Conductors and Insulators

What makes a substance a good insulator? A good insulator is simply a poor heat conductor. A good conductor, like most metals, allows energy to flow very quickly when there is a temperature difference. Therefore, a good insulator is a substance that does not allow energy to flow very quickly when there is a temperature difference.

So, an insulator slows down energy transfer. Thick adobe walls act as good insulators and therefore keep the house cool in summer. In winter, the house stays warmer much longer after heating the house.

No substance is a perfect insulator. Eventually, energy is transferred as heat. Therefore, in winter, when the source of heat is turned off, the house eventually becomes cold.

Your Turn to Think

1. What is adobe soil made from?
2. Describe the difference between a good heat conductor and a good heat insulator.
3. Why are the walls in a house not made from metals?