

Sun-Powered S'mores Oven

The Bible tells us that God made the sun on the fourth day of creation (Genesis 1:16). Without heat from the sun, earth would freeze. But if the sun were too close, our planet would overheat. Our wise Creator placed the sun the perfect distance from earth to provide the exact amount of light and heat for life to thrive.

Most of the sunlight that reaches our planet is absorbed by the earth. Have you ever worn a dark shirt on a sunny day and felt it get nice and warm? Dark colors absorb the sun's rays—rocks, buildings, oceans, and the ground all soak up sunlight and heat earth's surface. Earth also has a layer of gases floating above it called the atmosphere. These gases act as insulation, trapping in heat. Lighter colored parts of the earth, like snow and ice, reflect some sunlight back into space. This reflected sunlight doesn't provide any heat for our planet.

You can model how sunlight heats the earth by building a sun-powered oven using things you probably already have in your house. So grab a chocolate bar, a marshmallow, and graham crackers, and let's make a s'mores oven!



I'm **Roger Patterson**, the host of *Unlocking Science* on Answers TV. Let's have some fun as we investigate God's amazing creation.

Let's do it!

Material

- Pizza box
- Marker
- Ruler
- Scissors
- Tape
- Aluminum foil
- Plastic wrap
- Black paper
- Craft glue
- Craft stick
- Newspaper
- Chocolate bar
- Marshmallow
- Graham crackers



Instructions

1. Using a ruler and marker, measure and draw a square on the top of the box, about one inch from the edges.
2. Ask an adult to help you cut along the bottom and sides of the square, leaving the top edge attached like a flap. Fold up the flap.
3. Cut a piece of aluminum foil large enough to cover the underside of the flap.
4. Wrap the foil tightly around the underside of the flap and tape it in place.
5. Cover the square window with plastic wrap, securing it with tape.
6. Line the inside bottom of the pizza box with black paper and glue it in place.
7. Roll up the newspaper and stuff it along the sides of the box. Make sure you can still close the lid.
8. Bring your oven outside and set it in direct sunlight.
9. Put a chocolate bar and marshmallow on a graham cracker and place them in the oven. Close the plastic-covered lid.
10. Use a craft stick to prop the flap open at an angle so the foil reflects the sunlight into the oven.
11. Be patient—it may take several minutes for the chocolate to melt and the marshmallow to puff. Once it's ready, carefully remove your s'more, add a graham cracker on top, and enjoy!

How Does It Work?

The foil flap reflects the sun's rays and bounces them directly into the opening of the box. The plastic wrap ensures that the oven is airtight. Once the rays go through the plastic wrap, they can't escape, so they heat up the air trapped inside, just like earth's atmosphere.

The black paper at the bottom of the oven absorbs the sun's rays and converts them into thermal (heat) energy. The newspaper insulates the oven, keeping the warm air from escaping. Once the air inside heats up enough, it's the right temperature to melt chocolate and heat a marshmallow.

Helpful Hint

The sun's rays are typically strongest between 11 a.m. and 3 p.m., when the sun is highest in the sky. This is the best time to cook in your solar oven.