



Stellar Solar Oven

The sun at the center of our solar system is a powerful source of energy! On its surface, our **sun measures 9,941 degrees Fahrenheit**. The heat and light energy from the sun **travels 94 million miles** before reaching earth's surface. This energy warms our planet and allows plants to *photosynthesize*, or convert light into sugars that are used by other organisms. We **harness the energy of the sun** with solar panels, greenhouses, and other innovations. You can explore the sun's power at home by building a **solar oven** for cooking delicious snacks!

Solar Oven Construction Materials

- Pizza box or other box with a lid
- Pen or pencil
- Stick, straw, or other support
- Black construction paper
- Aluminum foil
- Tape
- Wax paper or plastic wrap
- Scissors or utility knife (young scientists find help from an adult)

Ingredients for Solar Oven S'mores*

- Graham crackers
- Chocolate pieces**
- Marshmallows

*You can cook many snacks that require a low temperature in your solar oven. S'mores can be a fun and easy place to start!

**Tip: grated chocolate will melt faster in your solar oven!

Solar Oven Construction

Step 1: Using your pen or pencil, draw a large rectangle on the lid of your box. Cut out three sides of this hole, making sure to leave one edge intact that will act as a hinge.

Step 2: Flip up the rectangle flap you created in Step 1 and wrap it in aluminum foil. This will reflect the sunlight into your solar oven.

Step 3: Seal the hole left in the lid of your box by taping a piece of wax paper or plastic wrap over the rectangle to create a “window.” This window will allow the sun’s rays to reach the inside of your solar oven while trapping the heat inside.

Step 4: Line the bottom and sides of the inside of your solar oven with black construction paper cut to size, and tape the paper in place. Since the color black absorbs all wavelengths of sunlight (rather than reflecting it away), the inside of your solar oven will become warmer faster with this lining.

Step 5: When you’re ready to cook (see below), prop open the reflective flap to your oven using a stick, pencil or other support. You can use tape to help your support stay in place. Light will reflect off of this door, through the window below, and into your solar oven to speed up the cooking process!



Solar Oven S'mores

Step 1: Assemble your s'mores! Layer chocolate and a marshmallow on a graham cracker segment. Save another segment to sandwich your s'more once it has cooked.

Step 4: Place your solar oven in a sunny place outside, ideally facing south (where the sun is located most of the day). Open the lid to the box (which contains the window you created), place your s'more stacks inside your solar oven (on a plate or small tray if you'd like), and close the lid. Be sure the window you made is secure, and prop open the reflective solar oven flap so that it reflects the sun into your oven.

Step 4: Wait for your s'mores to cook! As the sun moves across the sky, adjust the position of your solar oven so that the reflective flap reflects the sunlight into your oven. Check on your s'mores every 15 minutes until the chocolate has melted and the marshmallow has softened. *Be careful – parts of your oven and its contents may be hot.*

Step 5: Remove your cooked s'mores from your solar oven, sandwich them with another graham cracker segment, and enjoy!

