

Make Your Own Solar Oven

Materials

- Pizza box (The larger the box, the better the oven should work.)
- Pencil or pen
- Ruler
- Utility knife or scissors (Always make sure you have adult help when using knives and other sharp objects.)
- Aluminum foil
- White glue
- Plastic wrap
- Shipping tape or black electrical tape
- A sheet of black paper
- A wooden skewer or pencil

Preparation

- If needed, clean out the pizza box so it is ready to become a solar oven. Remove any liners that the box came with.
- Don't forget to use caution when cooking with the solar oven as it can get quite hot!

Procedure

- On the top of the pizza box's lid, draw a square that is about one inch inward from each edge.
- Get an adult's help to use a utility knife (and the ruler as a straightedge) to carefully cut along each side of the square you just drew except for the side that runs along the hinge of the box. Cut all the way through the cardboard on those three sides of the square. Then fold the flap back slightly along the attached side.

- Line the inside of the cardboard flap with aluminum foil. Fold the edges of the foil over the flap to help hold the foil in place and glue the foil onto the flap. Keep the foil as smooth as possible. *What do you think the purpose of this foil is?*
- Cover the opening made by the flap (in the lid) with a layer of plastic wrap. Attach the plastic wrap to the opening's edges using shipping tape or black electrical tape. Make sure there are no holes in the plastic wrap and that all of its edges are completely attached to the lid. *Why do you think it's important to make sure the plastic wrap completely seals the lid's opening?*
- Line the inside of the box with aluminum foil so that when you shut the box the entire interior is coated with foil. It is easiest to do this by covering the bottom of the box with foil and then covering the inside part of the lid (going around the plastic-covered opening) with foil, too. Glue the foil in place. *Why do you think you should coat the inside of the box with foil like this?*
- Glue or tape a sheet of black paper to the bottom of the box, centered there. This will act as your solar oven's heat sink. *How do you think it will help cook your food?*
- Lastly, use a wooden skewer or pencil (and some tape) to prop the solar oven's lid up, at about a 90-degree angle from the rest of the box.
- Leave the solar oven outside on a hot day (nonwindy days of at least 85degrees Fahrenheit work best). *Does the oven get very warm?*

Experiments:

Use a thermometer to quantify how efficient your oven is; record the temperature readings inside your oven over time. *How hot can it get? How does this compare with a real oven?*

The weather outside can significantly affect how well a solar oven performs. *How well does it cook on a warm day versus a very hot day? What about a sunny day versus an overcast one?*

Notes:
