



Solar Ovens

Create and learn about an oven that's sustainable, easy to make, and fun to use!

As climate change worsens, we need to turn to more sustainable sources of energy. Figuring out how to do this requires a lot of engineering! Scientists have come up with solar ovens, an efficient and environmentally-friendly cooking device.

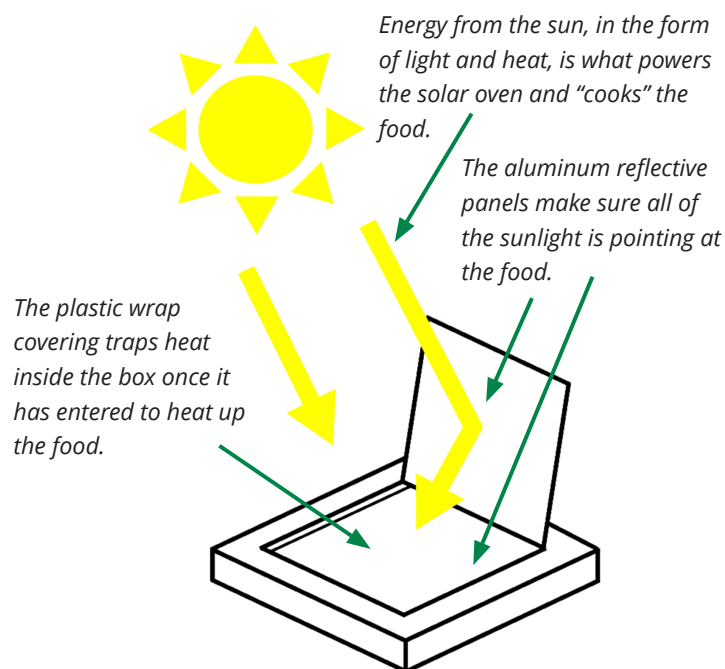
Today, you will understand the science behind them and make one yourself!

What is a Solar Oven and How Does it Work?

A solar oven is a cooking device that uses the power of the sun to cook food. The sun gives off energy in the form of light but also in the form of heat. This heat can be used to cook food, albeit very slowly. If you've ever left a candy bar out in the sun for too long, you know what happens: it melts. How do we focus the sun's energy so that cooking is faster? We could turn a box, with food inside, to face the sun, and add reflective panels that reflect all of the light onto the food item. To keep the heat inside, we could add a clear covering to the top so that light from the sun can get in, but the heat trapped inside cannot get out. The heat from solar energy will be able to cook the food, just like an oven that uses an energy source like electricity or gas!

Because the internal temperature of a solar oven can vary greatly, depending on box materials, size, and light intensity, the solar oven described here should not be used to cook meat or any other food that has to reach a minimum temperature to be safe to eat.

Solar Oven at Work



The Greenhouse Effect and Climate Change

- In our solar oven, the heat is kept inside by the plastic film. This is called the greenhouse effect, when light and heat from the sun can enter, but cannot get out. You've felt this if you've ever been inside a greenhouse: it's what keeps it warm!
- However, this effect can also have severe consequences. Factories are producing gases that rise up in the atmosphere and stay there, creating a thick layer that does not allow heat to escape the Earth. This will have horrific impacts on our world and the environment. To combat this, we should be more energy-efficient. Start by using a solar oven at home instead of a regular oven, by following the instructions on the back!

How to Make a Solar Oven

Materials

- Small box
- Marker
- X-acto knife
- Tape
- Aluminum foil
- Plastic wrap
- Popsicle sticks



1. Find a box large between 1.5 and 3 inches thick.



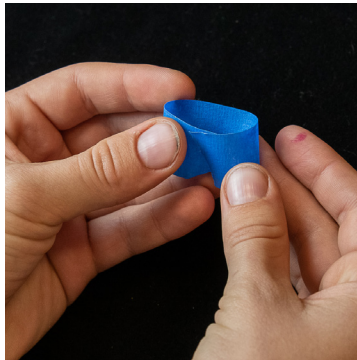
2. Trace a cutout on the lid, leaving a one-inch margin.



3. Have an adult cut line with X-acto knife.



4. Open the box and make sure the cutout can move.



5. Make eight small tape rolls and set aside.



6. Put four of the tape rolls on the bottom of the box.



7. Cut aluminum foil to size of box.



8. Press foil firmly to bottom of the box.



9. Put the other four rolls on the back of the cutout.



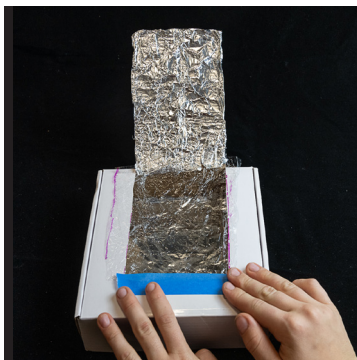
10. Cut aluminum foil to size of cutout.



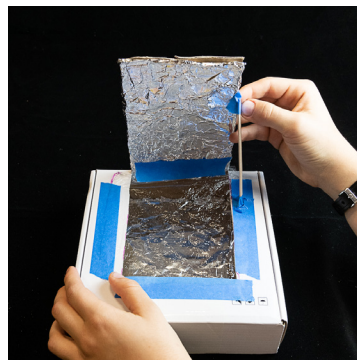
11. Press foil firmly to back side of cutout.



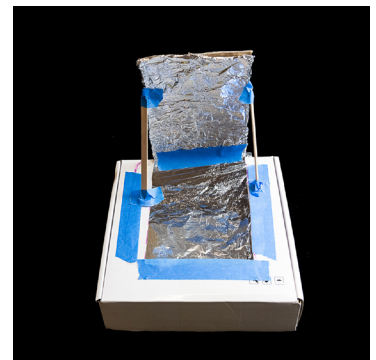
12. Cut a piece of plastic wrap to fit cutout.



13. Tape plastic wrap to lid of box to cover cutout.



14. Use popsicle sticks to prop up cutout.



15. Voilà, a solar oven!