

Solar Oven

You can make different kinds of ovens from materials found around the home. A solar oven, made from two cardboard boxes, aluminum foil, and a turkey oven bag, can be used in sunny weather to cook food and purify water. It does not require any fuel other than direct sunlight, and there is no fire hazard.

Solar ovens work on three principles:

1. Sunlight is converted into heat as it is absorbed by dark colored surfaces in the oven.
2. Additional sunlight is channeled into the oven by reflective flaps.
3. Heat builds up in the oven and is trapped through airtight seals and insulation.

Following these principles, you can adapt these plans to make your oven hotter and even more efficient.



Supplies:

- One corrugated cardboard copy paper box and its lid. This will be the outside of the oven.
- One corrugated cardboard box at least two inches shorter in width and length than the copy paper box and at least four inches taller. This will be the inside of the oven.
- One roll of heavy duty aluminum foil
- One can of high-temperature, flat black, "non-toxic when dry" spray paint
- One turkey-sized oven cooking bag
- A stack of newspapers
- One wire clothes hanger
- One trivet or small rack that fits inside the inner box
- Dark non-reflective metal or glass cooking pot or pan that fits inside the inner box.

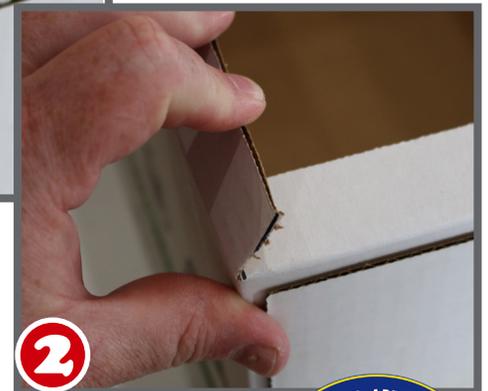


Tools:

- Utility knife and/or scissors
- Wire cutter and pliers
- Ruler/straight edge
- Marking pen
- White glue
- Stapler
- Heavy duty packing or duct tape

Instructions:

1. Slit the corners of the copy paper box down one inch. Using a straight edge, lightly score the inside of the box one inch from the top of the box. Do not cut all the way through.
2. Carefully fold the flaps, but do not yet tape them together.



✓ **Make a Plan** ✓ **Get a Kit** ✓ **Be Informed** ✓ **Get Involved**
For more preparedness information: BeReadyUtah.gov



3. Glue aluminum foil, shiny side up, to the inside of the copy paper box. Start on the bottom and overlap the foil on the sides. Now tape the one inch flaps closed, creating a one inch lip around the top of the box.



4. Set the inner box on top of the copy paper box and trace a line around it onto the folded lip. Cut along the traced line to form a hole that fits the inner box.



5. Put five to six wads of crumpled newspaper for insulation in the bottom of the copy paper box, creating a loose layer. Place the inner box in the copy paper box on top of the newspaper and tamp it down into place, leaving a one inch space between the bottom of the two boxes.



6. Stuff crumpled newspaper all around and between the walls of the boxes.

7. Slit the corners of the inner box down to the top of the copy paper box. Lightly score the outside of the inner box to create flaps that lay over the top of the copy paper box.



✓ **Make a Plan** ✓ **Get a Kit** ✓ **Be Informed** ✓ **Get Involved**
 For more preparedness information: BeReadyUtah.gov

8. Trace the outer edge of the copy paper box onto the underside of the inner box flaps and trim the inner box flaps to meet the outer edge of the copy paper box. Do not yet tape the inner box flaps in place.



9. Glue aluminum foil, shiny side up, to the inside of the inner box.

Now tape the flaps of the inner box to the one inch lip of the copy paper box, joining the two boxes together.

The base of the oven is now complete.



10. To make the solar oven lid, draw a line on the copy paper box lid, forming a rectangle the same size as the opening of the oven base. Cut around two short sides and only one of the long sides. Then score and fold the resulting flap up, forming the reflector flap.



11. Glue foil, shiny side out to the inside of the reflector flap.



✓ **Make a Plan** ✓ **Get a Kit** ✓ **Be Informed** ✓ **Get Involved**
For more preparedness information: BeReadyUtah.gov

12. Make the prop for the reflector flap by cutting a length of wire from the hanger about twelve inches long. Bend the wire as shown and insert the ends of the wire into the corrugations of the paper box lid and the reflector flap.



12



13

13. Open the turkey bag and cut off one side making a single sheet of plastic. Keep the other half as a replacement since the plastic will become opaque and brittle after a few weeks of constant use in the oven. This plastic sheet needs to be clean and clear to allow as much sunlight in as possible. Trim the sheet to be an inch wider on all sides of the flap opening. Tape the bag in place on the inside of the lid, making an airtight seal.



14

14. Slide the lid onto the base of the oven. The oven is now finished.

To increase the heat created by your oven, you can spray the outside of the oven with the flat black, high-temperature spray paint. If you paint the lid, be sure to NOT get any paint on the turkey bag sheet or the aluminum foil covered reflector flap.

You can also tape additional reflector flaps

to the lid to direct more sunlight into your oven. Make additional wire props to hold the reflector flaps open. Add a trivet or small rack to the bottom of the oven to allow hot air to circulate under your food dish. Place an oven thermometer in the oven to monitor temperature.

To cook, place food in a dark colored pan with a lid inside the oven and replace the oven lid. Put the oven outside, in direct sunlight, minimizing shadows inside the oven. For fastest cooking times, reposition the oven every 20 minutes according to the movement of the sun. The best times for cooking in the solar oven are between 10:00 AM and 3:00 PM. With sufficient sunlight, cooking time will be about twice as long as in a standard oven, depending on your solar oven's efficiency.

✓ **Make a Plan** ✓ **Get a Kit** ✓ **Be Informed** ✓ **Get Involved**
 For more preparedness information: BeReadyUtah.gov

