

Making Your OWN Solar Oven

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**Educational Goals:** To build and use a Solar Oven

**Description:** Each student will get to build and test his or her own solar oven.

**Time:** Multiple Sessions (Actual time will vary from class to class but we recommend that you schedule at least three build days and one test day accordingly). Make sure to check weather forecasts and schedule the test day or “cooking day” on a day providing optimal weather and sunlight.

**Materials Needed:**

* Instructional Photo PowerPoint
* Solar Oven Kit User Guide
* Scissors
* Zip Dry Paper Glue
* Ruler
* Scotch Tape
* Ball Point Pen
* S’mores Kit and Thermometer (on test day)

**Directions:**

Before starting to build:

1. Make sure each student has their own oven and all the supplies needed to construct it.
2. Load the instructional PowerPoint so that you and your students can scroll through pictures as you build.

Making the Reflector Box:

1. Cut out the large parts from Sheets 1 and 2 of the reflective material. Make

sure to cut the solid lines as close as you can. DO NOT CUT THE DASHED LINES. Be sure to cut out the small rectangular pieces around the two large parts as well. When you’re done cutting you should have all the pieces shown on slide 4 of the PowerPoint.

1. Lay the two big pieces together as shown on slide 5 of the PowerPoint. Align

the two pieces so that the arrows line up pointing to each other. Using three or four small pieces of tape connect the two pieces together.

1. Next you’ll glue pieces A through D of the small rectangular parts, reflective side down, as detailed through the color dot diagram on slide 6. Pieces A through C should be glued vertically and the two D pieces should be glued horizontally. Make sure not to glue these pieces over the arrows because we’ll be folding along those dashed lines next. Once you’re done gluing it should look like what you see on slide 7 and you should only be left with the 4 small E pieces as shown on slide 8.
2. Using a ballpoint pen, roll the pen tip along all the dashed lines lightly to score them before folding as shown on slide 9. You can also use a ruler to help you score the lines as well. Your reflector box should look like what you see on slide 10 when you’re done scoring.
3. Begin gluing and folding along the dashed lines of your reflector box as detailed on page 3 of “The Solar Oven Kit User Guide” and slides 11 & 12. Your reflector box should look like what you see on slide 13 when you’re done folding and gluing.
4. Turn your reflector box facedown and glue the 4 small E pieces on the corners of your box, reflective side down, as shown on slide 14. Your reflector box should now look like what you see on slide 15.

Insulating the Reflector Box:

1. Take the thin foam and center it lengthwise over the back of the reflector

make sure there’s enough foam to cover all but about ½” of the box on both of the longest sides as shown in slide 16. Once you’ve done this glue the foam onto the part of the box shown on slide 17. Now glue the foam onto the longest sides of the box. This should leave you with only the shortest sides of the box to glue the foam to.

1. The foam that extends over the shortest sides of the box was not cut to fit, therefore you will need to fold and cut it so that you can glue it on and cover those sides as shown on slide 19. There’s no right or wrong way to do this but you must make sure that you cover both sides in their entirety. Once you’re done your box should look like what you see on slide 20.

Making the Oven Box:

1. Take the black aluminum shown on slide 21 and carefully cut around the

imprinted patterns. Once you’re done you should have the two pieces shown on slide 22.

1. The smaller piece is for the wooden oven box base. Place the piece of

basswood over the center of the foil and fold the sides up and over the edges of the basswood as shown on slide 23 & 24.

1. Take the larger piece of foil and fold over the four sides one at a time. Fold over the flaps and mold the aluminum into a box shape as shown on slide 25. When you’re done molding your box it should look like what you see on slide 26.

Making the Solar Box Cover:

1. Take the clear plastic transparency shown on slide 27 and center your

reflector box on it face down. Now take a pen or a marker and trace around the edges of your box as shown on slide 28. Cut out the shape of the top of your box you just traced as shown on slides 29 and 30.

1. Align the trimmed transparency over your reflector box and use a few pieces of tape to attach it to only ONE of the LONG sides. You can now put the oven box inside the reflector box and use the paper clips to seal the sides of the transparency that you didn’t tape. Your completed solar oven should look like the one shown on slide 32.
2. Congratulations! You have just completed YOUR solar oven!

**Additional Resources:**

* Solar Oven Kit User Guide

**Topics to Discuss:**

* Solar Power
* Optimum Sun Angle Orientation
* Solar Oven Design and Material Choice
* Acceptable Food Suggestions

**Mentor Notes:**

 **- IMPORTANT: Tips, Food Suggestions, and Concepts to Research are all included on**

 **back of the Solar Oven Kit User Guides that come with each kit.**

 **- Make sure to carefully inspect each solar oven your kids make before testing and**

 **allowing them to take it home.**

 **- On the testing/cooking day make sure you place aluminum foil over the base of**

 **oven box’s so that the kids can use them again if they wish to. Let them know that**

 **they should do this every time they use their oven if they want it to stay nice and**

 **clean. Also make sure to record the highest temperature the ovens reached for**

 **future reference.**

 **- Let your students know that we strongly advise against cooking items with egg**

 **because the ovens may not reach temperatures high enough for them to be safe**

 **enough to eat.**

 **- Take plenty of pictures of the building/testing and have fun!**