

MAKE SOLAR OVEN S'MORES

Harness the power of the Sun to create a classic summer snack

What you'll need:

Solar oven

- Big cardboard box (pizza box, cereal box or cake box)
- Aluminum foil
- Wooden stick or ruler (15-25 cm)
- Pencil or marker
- Tape
- Glue
- Black sheet of paper
- Scissors or a utility knife

S'mores

- 2 graham crackers (or your favourite cookies, crackers or potato chips)
- 1 large marshmallow (or 5-6 small)
- 1-2 squares of chocolate
- 1 heat-resistant shallow dish (an aluminum pie plate, for instance, or something similar you create using aluminum foil)
- Large glass bowl (or baking dish)
- Oven mitts

Activity setup:

Solar oven

1. If your box does not have a single-flap lid, you'll need to make one. Draw a rectangular outline on the top of the box that is 2.5 centimetres in from the box edge. With **adult assistance**, use the scissors or utility knife to cut along three of the four sides of the rectangle. Do not cut the fourth side, because this will act as the hinge, and needs to connect the lid to the box.
2. Cover the inside bottom of the box with black paper.
3. Using glue and tape, line the rest of the inside of the box with aluminum foil.
4. To prop the flap open, glue or tape one end of the stick to a corner of the flap opposite the hinge. Glue the other end to the rim of the box on the same side.
5. You're ready to cook!



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Activity setup:

S'more

1. Put a graham cracker on the aluminum pie plate.
2. Top the graham cracker with the marshmallow and then the chocolate.
3. Place the pie plate onto the black paper inside the oven. Put the overturned glass bowl on top.
4. Place the solar oven outside in direct sunlight, so that the open flap faces the Sun. Try to minimize any shadow.
5. Check on the chocolate and marshmallow every 15 minutes until you get your desired texture—melted chocolate and gooey marshmallow. (Use oven mitts when checking on or removing from the oven because the pie plate may be hot!)
6. Remove the pie plate from the solar oven and allow the s'more to cool for a few minutes.
7. Place the other graham cracker on top.
8. Take the s'more from the dish, press the graham crackers together and enjoy!

What else could you make using your solar oven? How about cheese nachos or an English muffin pizza? Is there an optimal time to use your solar oven? Experiment and record your results! (Safety note: Do not cook meat or fish in your solar oven.)

How does it work?

Energy from the Sun enters the solar oven directly and penetrates the glass bowl. Additional heat is introduced when sunlight is reflected off the shiny aluminum foil on the inside of the flap and then into the box. The black paper shelf acts as a heat sink by absorbing the sunlight. The shelf warms up then radiates heat. This thermal energy heats the air inside the solar oven, allowing it to cook the s'more. (Note that lighter-coloured paper would absorb less heat. Similarly, since darker colours absorb more heat, the chocolate is placed on top of the marshmallow to help everything melt faster.) The glass bowl acts as an insulator, helping to conserve the heat in the air inside it. The glass roof and walls of a greenhouse use this same principle to retain heat.

Want s'more?

The name for this classic summer snack is the contraction of the phrase "some more." Because who wouldn't want more ooey-gooey marshmallow and chocolate goodness?

