Virtual SUMMER CAMPS

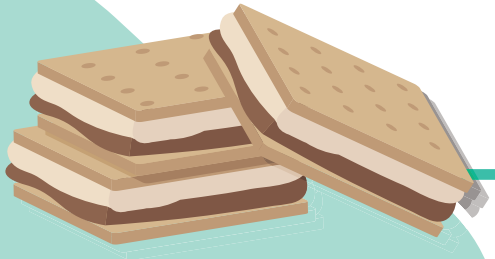
PHIL COOK'S

SOLAR OVEN S'MORES

It's only fitting that a science teacher named Cook would love the chemistry of food. TikTok's favorite chemistry teacher Phil Cook is famous for experiments with candy, ice cream, and soda. But what really gets him cooking is combining solar power, science, and s'mores.

Why spend a sunny day in the kitchen when you can make an oven out of the sun itself? Solar power isn't just for giant panels on rooftops; you can harness those rays to make yourself dessert, too.

Ready to become a solar chef? This homemade solar oven is just the tool you will need to get sizzling and snacking in the summer sun.



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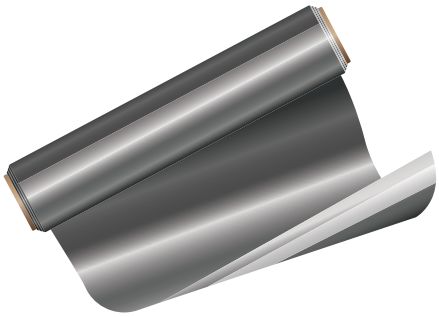
Varsity Tutors

Your Homemade Solar Oven

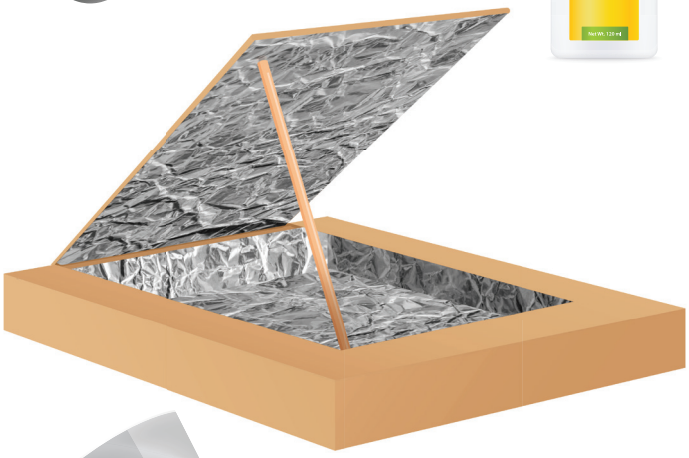
SUPPLIES

- A cardboard box with a tightly fitting lid. The box should be deep enough to fit a small aluminum baking tin inside.
- A sharp pair of scissors or exacto knife (with adult supervision ONLY)
- Aluminum foil
- Clear plastic wrap
- Tape
- Glue
- A small stick about one foot long to prop lid up

1 Have an adult cut a three sided flap out of the box lid one inch in from the edge on all three sides. When complete, you should be able to fold this back and adjust the angle of your flap.

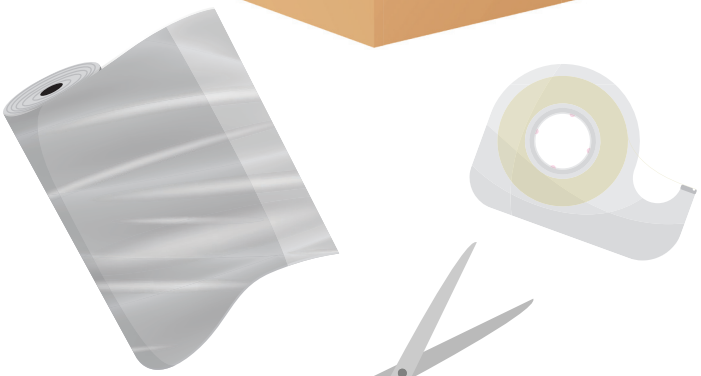


2 Cover the underside of the flap that was just cut with a piece of aluminum foil gluing it into place as smooth and flush to the edge as possible.



3 Cover the inside of the box with additional aluminum foil, also gluing it into place as smoothly as possible.

4 Tape two pieces of plastic wrap across the opening that was cut into the lid. One piece should be taped along the top portion of the lid. The other piece should be taped along the inside bottom portion of the lid.



5 Test the best way to prop the lid open with your stick. You may need to glue or tape the stick into place.

Making S'Mores with Your Solar Oven

SUPPLIES

- Graham crackers
- Large marshmallows
- Thin chocolate bars
- A small aluminum baking tin

1 Set your oven in direct sunlight on a sunny day when the temperature is at least 85 degrees Fahrenheit.

2 Prop the flap open to direct sunlight into the box and allow to preheat for 30 minutes.

3 Meanwhile, prepare your baking tin by placing 2 or 3 graham cracker halves onto the bottom of the tin. Set one marshmallow on top of each graham cracker.

4 Place the baking tin in the preheated solar oven.

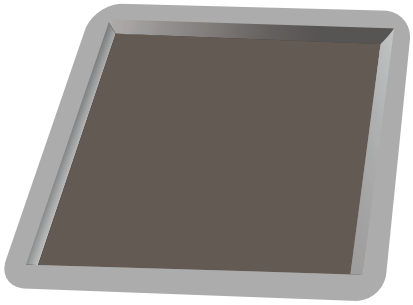
5 Ensure the lid is securely on top of the oven and the flap is propped open, directing sunlight onto the graham crackers.

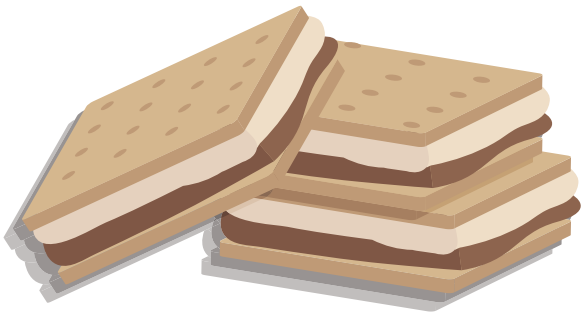
6 Depending on the outside temperature and how directly the sunlight is hitting the crackers, the marshmallows should take approximately 30 - 60 minutes to melt.

7 Once the marshmallows are melted, open the lid and set a thin square of chocolate on top of each marshmallow. Also, place one more half of a graham cracker on top of the chocolate and press slightly to squash the marshmallows.

8 Return the lid to its appropriate position and allow the chocolate to melt for a few more minutes.

9 Enjoy your solar cooked treat!





Science Lesson

What just happened? **The radiant heat from the sun is reflected off of the aluminum foil and trapped inside the oven, with the plastic wrap acting as an insulator.** The heat stays inside the oven, increasing the inside temperature relative to the outside temperature quite significantly. This allows the oven to slow cook the food inside.

This process is the same concept as what takes place inside Earth's atmosphere. **Greenhouse gasses in our atmosphere trap the sun's heat in the same way as the plastic wrap** on your oven allowing Earth's temperature to increase relative to freezing cold temperatures found in outer space.

What is solar radiation?

Solar radiation is heat from the sun. The surface temperature of the sun is approximately 9,941 degrees Fahrenheit). That heat moves outward from the sun toward the earth as radiant heat. The sun is so hot that even though it is 93 million miles from Earth, the heat that radiates away from the sun is enough to warm the Earth to a temperature that is habitable...and that can cook your s'mores!

"If after your s'mores you want some more, see what other melty foods you can cook in your solar oven, like quesadillas or grilled cheese. Then compare results and see if some foods cook faster or taste better than others."