Relay Education

Suite 240, 401 Ricmond St W.
Toronto, Ontario
Canada M5V 3A8

www.relayeducation.com

Solar Thermal Oven

Description

Have you ever thought about harnessing the sun's heat energy for food? In this activity we are going to build a solar thermal oven, which can be used to melt chocolate and heat up a s'more. For this activity most of the materials are in your kitchen but double check the materials list to see if you are already prepared.

Exploring the sun's power through radiant heat

Materials List

1 Cardboard box ***(A shoe box or pizza box works best.)***
1 black piece of paper or fabric
1 roll of aluminum foil
1 roll of plastic wrap

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A pair of oven mitts
Strong tape
A ruler
A pair of scissors
A pen
An apron (optional)
2 graham crackers
1 marshmallow
1 piece of chocolate

Procedure

1. Using your ruler and pen, measure out 1.5 inches from the edge of the lid of your box.
2. Using your scissors cut out 3 sides only of the square. Bend the box lid open along the line that is uncut. This forms the lid.
3. Line the inside of the box with aluminum foil (including the lid) shiny side facing out. Secure with tape.
4. On the bottom of the box, place black paper or fabric. This will attract more sunlight allowing your oven to heat up.
5. Assemble your s'more and place it inside the solar oven.
6. Take your plastic wrap and stretch it over the opening and use your tape to secure the plastic wrap as tightly as possible without tearing.

OPTION TO GO OUTSIDE ON A SUNNY DAY

7. Use the ruler to prop open the flap (window) of the solar oven.
8. Depending on the temperature outside it will take about an hour to melt the chocolate and cook the s'more.

Critical thinking questions

1. How do conventional ovens generate heat? Gas, Electricity
2. How does our thermal oven generate heat? Solar power
3. What is the purpose of the flap? The angle flap reflects light down so we can get more sun transferred into the oven