

# The Solar CookKit



SOLAR COOKERS  
INTERNATIONAL

- ✓ Feeds four to six people
- ✓ Cooks meats, vegetables, grains, breads, etc.
- ✓ Pasteurizes water
- ✓ Safe for kids — no fire, no smoke
- ✓ Nutritious slow cooker
- ✓ Great for
  - camping
  - emergencies
  - daily use in sunny, warm months

*Cook naturally ...  
with the Sun!*



## WELCOME

Tens of thousands of people worldwide have discovered the effectiveness of this simple, affordable solar cooker. Soon you will too!

Foods cook gently in the Cookit, maintaining healthful nutrients and requiring minimal supervision. For most dishes you need only put the food in the cooker and let it be until mealtime. Best of all, you'll save money and help the environment each time you use it.

So, use it, share it, tell your friends and neighbors about it. If you enjoy your Cookit and believe solar cooking is something that others need to know about, please consider supporting our nonprofit efforts to spread solar cooking skills to those most in need, particularly in sun-rich, fuel-poor countries in Africa.

*Solar Cookers International assists communities to use the power of the sun to cook food and pasteurize water for the benefit of people and environments.*

Here is my contribution of  
\$25 \$50 \$\_\_\_\_\_

Name \_\_\_\_\_  
Address \_\_\_\_\_

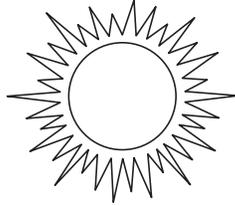
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or a check payable to: SCI  
(Please mail to address on back)

## HOW SOLAR COOKERS WORK

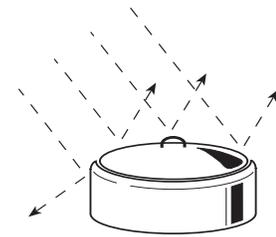
### Fuel: sunlight

Sunlight is the fuel. A solar cooker needs an outdoor spot that is sunny for several hours. Solar cookers don't work at night or on cloudy days.



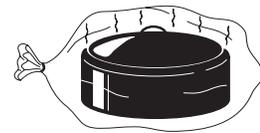
### Convert sunlight to heat energy

Dark surfaces get very hot in sunlight. Food cooks best in black pots with tight lids to capture the heat.



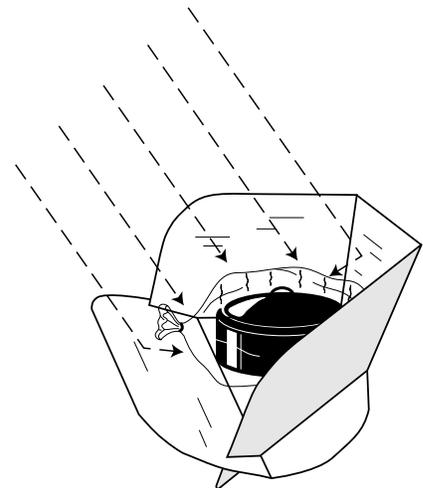
### Retain heat

A transparent heat trap around the dark pot lets in the sunlight, then holds in the heat. In the Cookit this is a plastic bag or large inverted glass bowl.



### Capture extra sunlight

Shiny reflectors capture extra sunlight from an area about three times as big as the pot.



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# SOLAR COOKING

## Guidelines

### What can I cook?

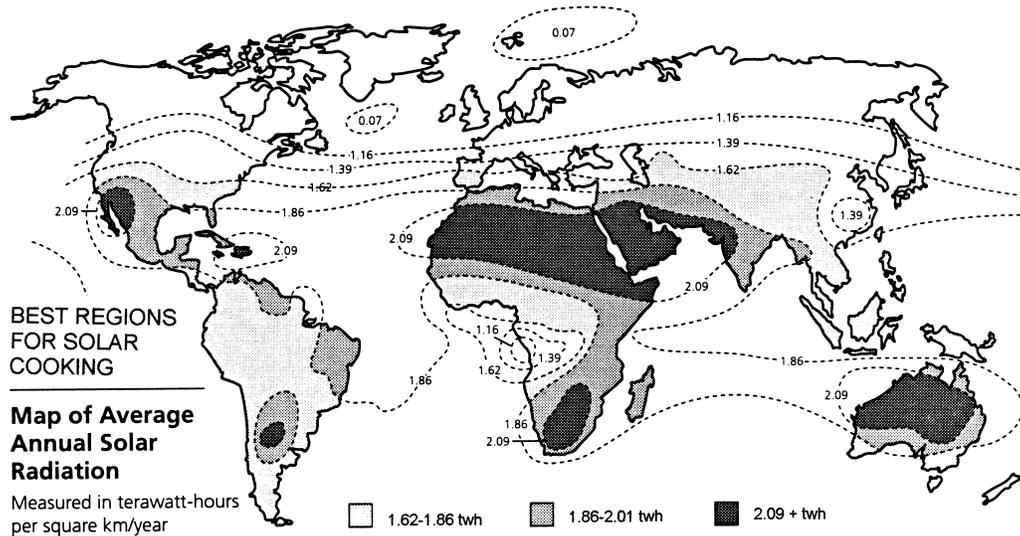
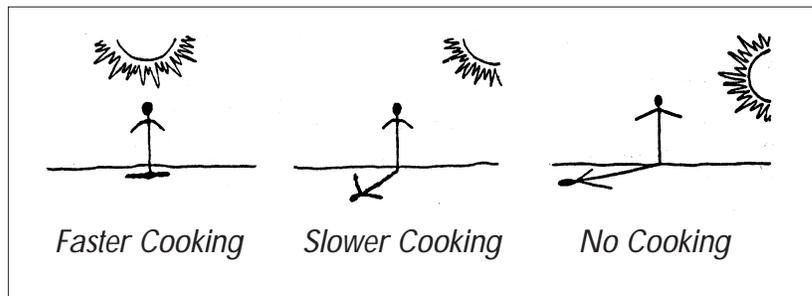
Use your CookKit to cook vegetables, fruits, meats, grains, legumes and most other foods. You can even bake breads and desserts! You cannot stir-fry or cook flat breads that require high temperatures.

### Do I need to add water to foods that will be solar cooked?

Vegetables, fruits and meats cook great without water, which tends to slow cooking and wash away nutrients. For grains and legumes, use the amount of water you use with other cooking methods. If the food comes out too moist or dry, adjust the amount of water next time.

### What time of year can I cook?

In general, you can use the CookKit when the length of your shadow on the ground is shorter than your height. This is an indicator that the sun is high enough in the sky to cook. In many countries there are a few months each year when the CookKit cannot be used. People living in the darker areas on the following map tend to have longer cooking seasons.



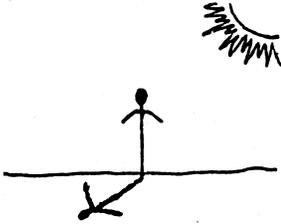
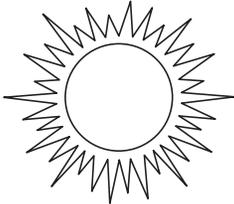
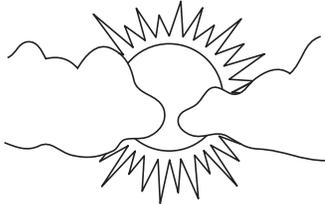
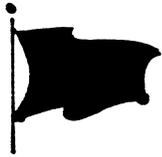
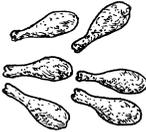
### What time of day can I cook?

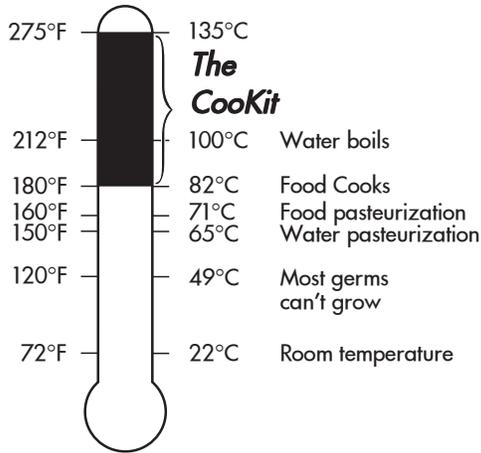
You can typically cook two meals per day — a noontime meal and an evening meal. You cannot cook early in the morning or after sunset. The sun is most intense between 10:00 a.m. and 2:00 p.m., which is when breads and pastries should be baked if possible.

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## How long do foods take to cook?

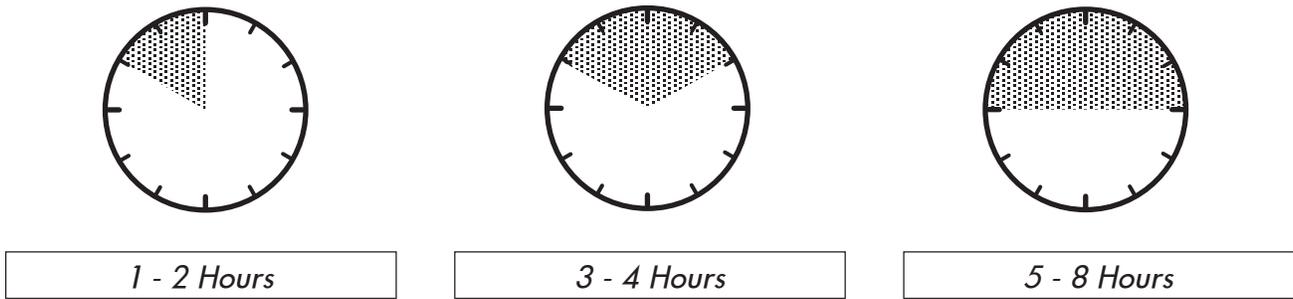
There are many factors that affect the speed with which your food cooks in a CookKit, including time of year, amount of sun, type of pot and amount of food. The following graphic summarizes some important factors.

	Faster Cooking	Slower Cooking
<i>Time of year and day:</i>		
<i>Amount of sun:</i>		
<i>Amount of wind:</i>		
<i>Thickness of pot:</i>		
<i>Amount and size of food:</i>		
<i>Amount of water:</i>		



The CookKit, under normal conditions, will cook at temperatures from 180°F (82°C) to 250°F (121°C) or more. Since food cooks at 180°F (82°C) to 195°F (91°C), these temperatures are hot enough to cook food, but not so hot as to burn or dry out foods or damage healthful nutrients. Also, most foods can cook for several hours without overcooking, which allows food to be placed in the CookKit early in the day and left until mealtime, without needing to be stirred or monitored. (As always, if cooked food cools to room temperature for several hours, reheat it thoroughly before eating.)

The graphic below lists typical cooking times required for a range of foods.

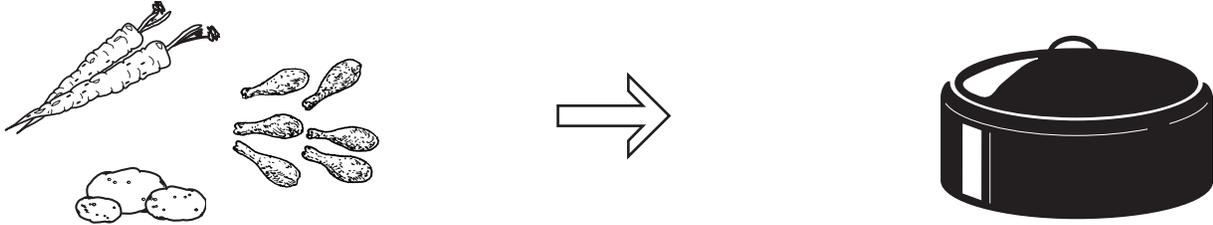


- |                           |                     |  |
|---------------------------|---------------------|--|
| EGG                       | POTATOES            |  |
| RICE                      | VEGETABLES (roots)  | LARGE ROASTS (all meats get more tender) |
| FRUIT                     | SOME BEANS, LENTILS | SOUP AND STEW                            |
| VEGETABLES (above ground) | MOST MEAT           | MOST DRIED BEANS                         |
| FISH                      | BREAD               |  |
| CHICKEN                   |                     |  |

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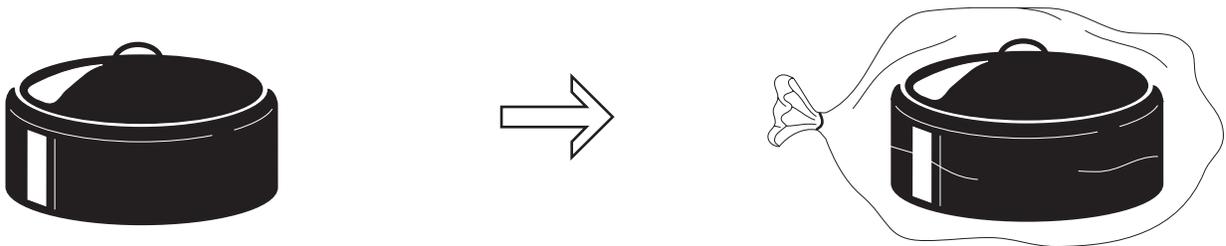
## Cooking directions

- 1** Put food in a dark pot, with a dark, tight-fitting lid.

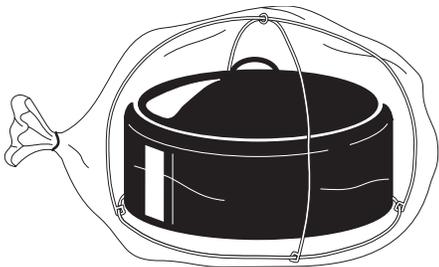


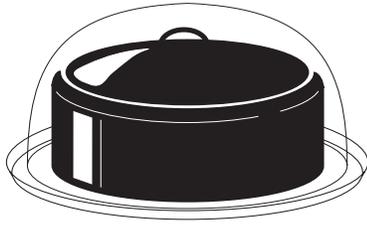
*What type of pot should I use?* Thin, black, metal pots are ideal. If necessary, pots and lids may be painted black on the outside with flat, nontoxic latex paint. Tinted glass baking dishes, heavy cast-iron pots and dark ceramic pots work, but may slow cooking. Glass jars may be used if painted black on the outside. Lids should have a small hole in them or be loosely screwed on to release steam pressure. Tip: place a vertical strip of tape on the jar before painting, then remove the tape, leaving a space to view food while cooking.

- 2** Put the pot in a clear, heat-resistant plastic bag, and bind the open end of the bag or simply fold it under the pot in such a way as to prevent air from escaping. The bag should be loose enough that a small, insulating layer of air exists around the pot.

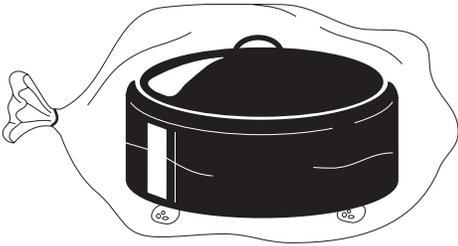


*What type of bag should I use?* Appropriate types of bags include polypropylene (like the bags that come packaged with the CookIt), nylon (e.g. Reynolds® Oven Bags), or polyester. These bags should all be reusable a number of times. High Density Polyethylene (HDPE) bags — the crinkly-sounding bags that are common in stores in the United States and many parts of the world, often bearing the #2 recycle symbol — are acceptable if they are mostly clear. These bags are inexpensive or free, but are more fragile and tend to tear more easily. Small tears can be patched with clear tape on the outside of the bag. Less heat-resistant bags can be used if a wire frame or similar structure that envelops the pot is created, over which a bag can be slipped, thus preventing the bag from touching the pot and melting.

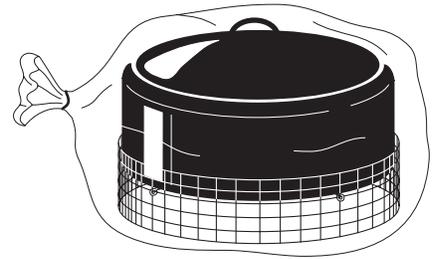
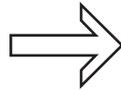
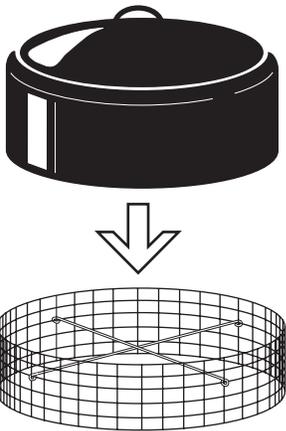




Is there an alternative to using bags? It is sometimes possible, depending on the size of the pot used, to replace the bag with an inverted clear glass or Pyrex® bowl, creating a domed “greenhouse” over the pot. Due to the amount of moisture created, however, it is recommended that the bowl and pot sit on a clear glass tray or dish with a slightly raised edge to prevent accumulated moisture from running onto and damaging the CookKit.

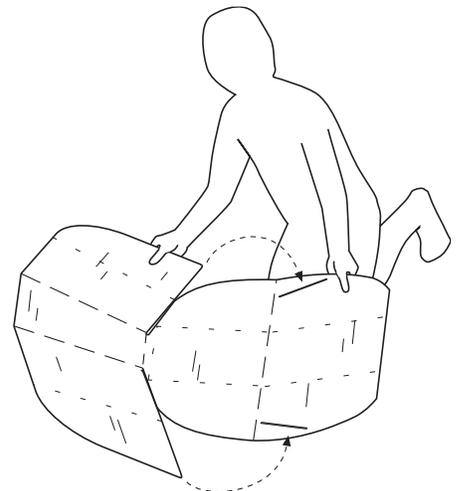


*Optional:* Cooking efficiency may be marginally improved by placing the pot on a pot “stand” — three or four stones, a couple of twigs, a small wire rack, etc. — located inside the bag. This helps create a thin layer of air under the pot, reducing heat loss to the cooker itself. For optimal performance, Dr. Steven Jones of Brigham Young University recommends raising the pot 6 cm with an open-mesh wire stand located inside the bag. This allows sunlight to be reflected underneath the pot as well as on the sides and top. For best pot stability make the wire stand slightly wider than the pot, and slightly taller than 6 cm, so that the pot can rest inside the stand on two crossed wires at the 6 cm height.

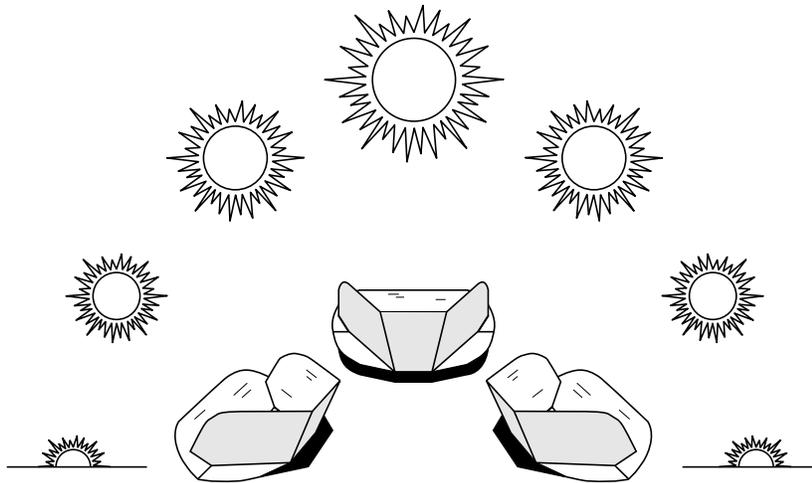


**3 Assemble the CookKit.** In a shaded area, unfold the CookKit and lay it flat, shiny side up, so that the wide (back) panel is away from you. Tilt the back panel towards you and carefully slide the ends of its flaps into the slots on the shorter front panel that is nearest to you. (As you do this you will need to also tilt the front panel up.) Clamp the inserted flaps, on the underside of the front panel, using clothespins or similar device.

**4 Set the cooker on a dry, level surface in direct sunshine away from potential shadows.** For best results, solar cooking requires continuous, direct sunshine throughout the cooking period.



**5 Orient the CookKit according to the details below.** Once oriented, the CookKit doesn't need to be moved again during three to four hours of cooking. For longer cooking, or for large quantities of food, reorienting the cooker every couple of hours speeds cooking a little.

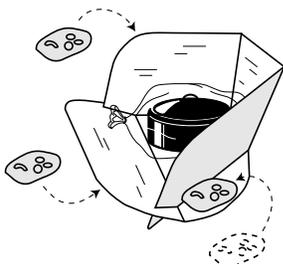
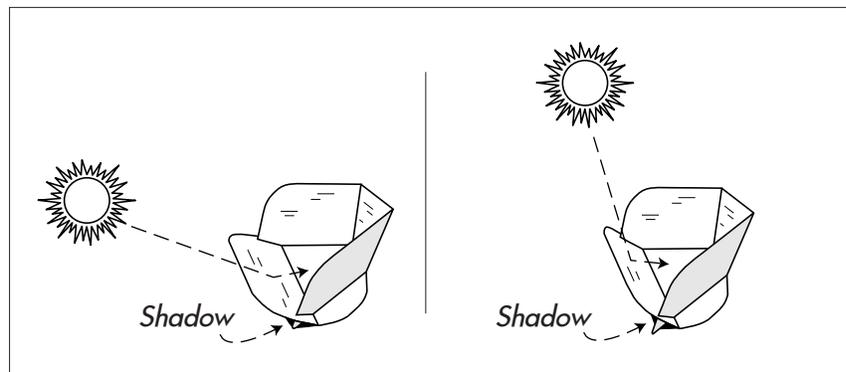


*To cook a noontime meal,* orient the cooker so that the shorter, front panel faces easterly, or approximately where the sun will be mid-morning. In general, it is good to get the food out early and not to worry about it until mealtime. For most dishes you should start cooking by 9:00 or 10:00 a.m.

*To cook an evening meal,* orient the cooker so that the shorter, front panel faces westerly, or approximately where the sun will be mid-afternoon. For most dishes, it is best to start cooking by 1:00 or 2:00 p.m.

*For all-day cooking,* orient cooker where sun will be at noon or early afternoon and food will be ready and waiting for the evening meal.

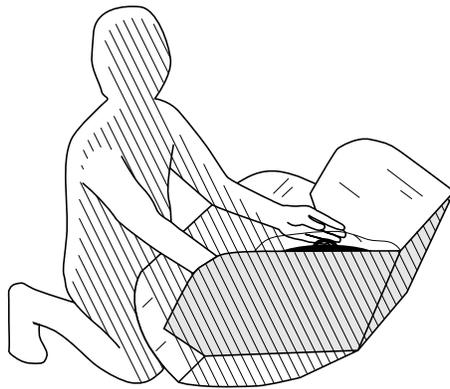
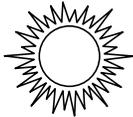
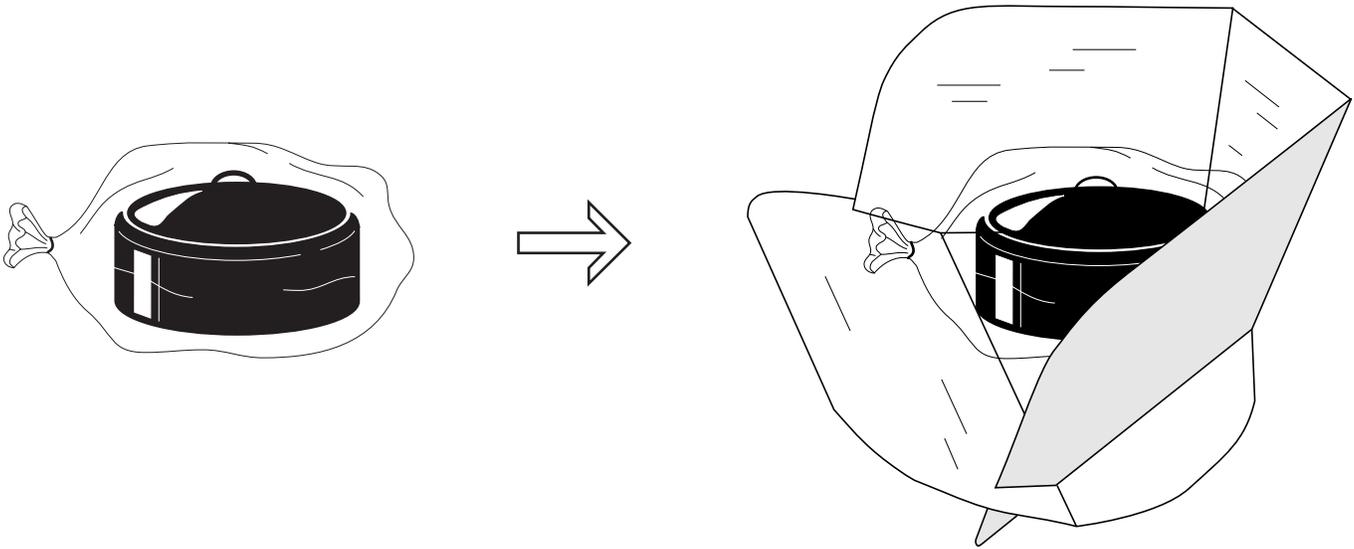
**6 Raise or lower the front flap so there is a shadow of about half its width under it.** The flap should be angled higher when the sun is high and lower when the sun is low. You want the front flap to reflect the sun, not block it.



On windy days, large stones or bricks can be placed on each side of the flat part of the CookKit that extends beyond the side reflective panels, as well as under the front panel.

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**7** Set the bag-enclosed pot on the flat part of the CookKit.



For less glare from the reflector when putting in or taking out food, stand or squat in front of the CookKit with your back to the sun to make a shadow. Many solar cooks also wear sunglasses.

**8** Leave food to cook for several hours or until done. There is no need to stir food while it is cooking.

**9** Remove the pot with pot holders. (Pots get VERY hot.) To prevent steam burns, open the bag away from you when removing the pot, and slide pot lid toward you when opening pot.

*Enjoy a delicious meal!*

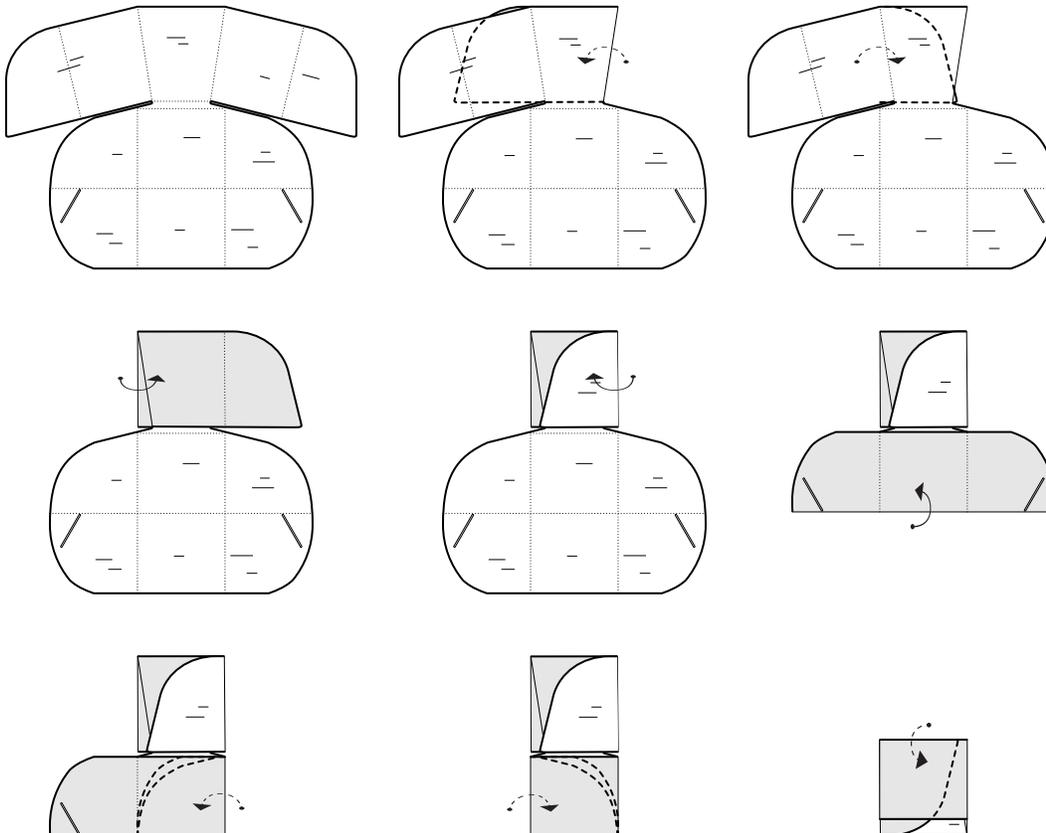
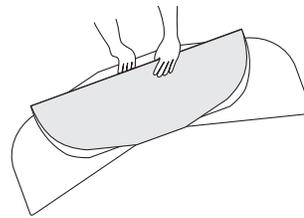
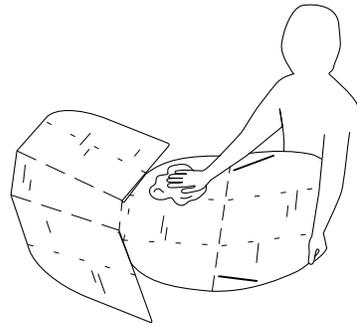
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## Care and storage

Store the CooKit in a safe place away from moisture and animals, preferably indoors. Periodically wipe reflective surfaces gently with a dry cloth. If the cardboard (carton board) accidentally gets wet, lay it flat — shiny side down — until dry.

Allow plastic bags to air-dry or gently wipe dry with a towel. Heat-resistant bags, handled properly, should last 10 or more uses. Bags gradually become brittle from exposure to sunlight and heat, and will eventually develop small tears. Tape can be applied to the outside of small tears to temporarily extend bag usefulness.

The CooKit is designed to be compact and portable. When not in use it can be simply folded lengthwise into thirds or, if needed, folded flat to about 33 centimeters (13 inches) square.



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## Recipes

Here are a few recipes to get you started.

Most of the recipes you currently make will work fine in the CookIt. Be sure to allow more time, and adjust or eliminate the water as appropriate. When recipes instruct to "add this, cook 10 minutes, then add that," you can usually just put all the ingredients in at once.

Bon appétit!

### Spinach quiche

- 1/2 cup onion, chopped
- 1/2 cup mushrooms, sliced
- 1 cup Swiss cheese, shredded
- 1 10-ounce package frozen spinach, thawed and drained (or fresh equivalent)
- 3 eggs
- 1 1/2 cups cream or evaporated milk
- 1/2 cup flour
- 1 teaspoon baking powder
- 1/2 teaspoon salt
- 1/4 teaspoon black pepper
- 1/4 teaspoon nutmeg

Lightly butter or oil a dark, 9-inch round pot. Mix the vegetables and cheese in the pot. Beat together the remaining ingredients and pour over the vegetables.

Cover and bake 2-3 hours.

### Rosemary potatoes

- 1 pound potatoes, cubed
- 1/4 cup olive oil
- 2 tablespoons fresh rosemary leaves
- salt
- black pepper

Place potatoes in a dark pot. Drizzle with olive oil. Sprinkle with rosemary, and salt and pepper to taste.

Cover and bake 3-4 hours.

### Chicken and rice

- rice
- herbs (optional)
- vegetables, chopped (optional)
- chicken, cut into pieces

Put rice in a dark pot and add water (about 1 part rice to 1 1/2 parts water). Stir in herbs and vegetables if desired. Put chicken pieces on top.

Cover and bake 2-3 hours.

### American Indian fancy cornbread

- 1/4 cup butter
- 1/3 cup honey
- 2 eggs
- 1 cup canned pumpkin
- 1/4 cup milk
- 1 1/2 cups blue cornmeal
- 3/4 cup whole wheat flour
- 3 teaspoons baking powder
- 1 teaspoon salt
- 1 cup blueberries
- 1/2 cup nuts, chopped

In a dark pot, beat butter, honey and eggs together until smooth. Stir in pumpkin, milk and cornmeal. Sift in flour, baking powder and salt until combined. Fold in blueberries and nuts.

Cover and bake 2-3 hours.

(Source: *Solar Cooking Naturally*, by the late Virginia Heather Gurley.)

### "Refried" beans

- 1 cup pinto beans
- 1/2 cup onion, chopped
- 3 cups water
- 1/2 teaspoon cumin
- 1/2 teaspoon salt
- garlic powder
- black pepper

Mix beans, onions and water in a dark pot.

Cover and bake for 4-5 hours. (Cooking time is reduced by an hour if beans are pre-soaked.)

Drain and reserve liquid from cooked beans. Mash beans with a potato masher, adding reserved liquid to adjust to consistency you prefer. Mix in cumin and salt, and garlic powder and pepper to taste.

### Solar apple plexus

- 6 baking apples, peeled
- 1/3 cup sugar
- 1/3 cup flour
- 1 teaspoon cinnamon
- 1 box yellow lemon cake mix
- 1 stick butter or margarine, melted or thinly sliced

Slice apples into a dark, 9-inch round pot. In a large paper bag shake apples with flour, sugar and cinnamon, and return to pot. Evenly cover with dry cake mix. Dribble melted butter or margarine over top.

Cover and bake 2-3 hours.

(Source: Solar Cookers International volunteer Don Coan.)

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## SOLAR PASTEURIZATION

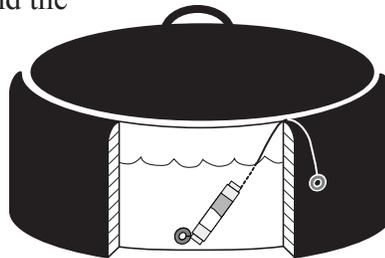
Disease-causing organisms in water and milk are killed by exposure to heat in a process called pasteurization. Water heated to 149°F (65°C) for a short period of time is free from microbes including *E. coli*, *Rotaviruses*, *Giardia* and the *Hepatitis A* virus. At around 160°F (71°C), milk and foods are pasteurized.

The Cookit can pasteurize water for a family at a rate of about one liter per hour. Solar Cookers International's reusable water pasteurization indicator (WAPI) can be used to determine when the water has reached pasteurization temperatures.

### Pasteurization directions

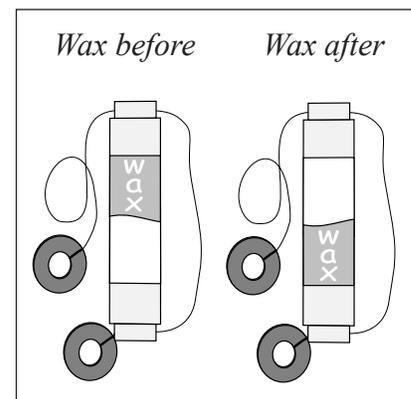
- 1 Pour water into a black pot or jar of the type used for cooking.**
- 2 Slide the WAPI to the end of the string so that the wax end is furthest from the washer.**

- 3 Place the WAPI, wax end up, in the water with the opposite end of the string draped outside the pot or jar.** The WAPI should rest on the bottom of the pot or jar (near the middle) and the wax end should be higher. Replace the lid. If using a glass jar, the lid should have a small hole in it or be loosely screwed on to release steam pressure.



- 4 Orient the solar cooker as you would for cooking.** In general, face your cooker easterly in the morning and westerly in the afternoon.
- 5 Set the pot or jar in the cooker.** If using a panel-type solar cooker, such as the Cookit, you can speed pasteurization by placing the pot or jar inside a clear, heat-resistant plastic bag. Though a plastic bag is required for cooking in this type of cooker, it is often not necessary for pasteurizing.
- 6 Leave the cooker in a sunny place for a number of hours, reorienting if necessary.** Allow at least one hour per liter of water.
- 7 When the WAPI wax melts and falls to the bottom of the WAPI, the water has been pasteurized.** Even if the water has cooled by the time you check it, as long as the wax is at the bottom of the WAPI then pasteurization has occurred.
- 8 Allow the water to cool before drinking.**

Keep pasteurized water covered until use to prevent recontamination. Don't let fingers or unclean objects touch clean water. If you aren't sure, re-pasteurize water.





*This mother and her 11-year-old daughter walk for hours with burdensome loads so they can cook for their family.*

## WHY SOLAR COOK?

For people who are fortunate enough to have gas or electric stoves in their homes, the choice to solar cook is just that: a choice. For them, the convenience and environmental benefits of solar cooking are reason enough to solar cook.

But for billions of people around the world who cook over fires fueled by wood or dung, and who walk for miles to collect wood or spend much of their meager incomes on fuel, solar cooking becomes less of a choice and more of a blessing. This is especially true for millions of people who lack access to safe drinking water and become sick or die each year from preventable waterborne illnesses. For them, solar pasteurization is a life-saving technology.

Regardless of your situation, there are numerous advantages to cooking the natural way —with the sun!

## Solar cooking advantages

### Health

- Nutritious meals cooked over moderate heat
- Safe water to drink
- No smoke to irritate lungs and eyes
- No heavy fuel to carry
- No dangers associated with fires

### Environment

- Pollution-free cooking
- Saves trees and fossil fuels
- Cooler kitchens reduce load on air conditioners and refrigerators in summer

### Economics

- Saves fuel and energy costs

### Convenience

- Food doesn't burn
- Pots easy to clean
- Food doesn't require stirring, allowing for "absentee" cooking
- Heat water for household chores
- Portable



## Solar Cookers International

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