



Eco Footprint – South Africa

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“FREE FROM THE SUN”

Introduction to cooking in a solar oven

The majority of the recipes and cooking hints I am sharing with you, I have gathered, and cooked, over the past 2 – 3 years. Most of the recipes are from my own personal experiences whilst using my solar oven. I love to cook, and have been thwarted, and discouraged, by the ever increasing costs of conventional power. Solar cooking has provided me with a cooking opportunity which is costing me nothing.

I must also add, though, that I have included a few recipes which I have come across on the Net and which I have tweaked – adding other local ingredients, actually stating cooking temperatures, or advising on the duration of cooking time. These recipes invariably came from organizations which promote the use of solar cooking and / or sell solar ovens.

Using your solar oven, and cooking in it, can initially be a daunting task. It is an unfamiliar cooking method, with seemingly uncontrollable temperatures.

The most important rule of cooking in your solar oven, (whenever time and opportunity allows) is to preheat the oven, and to use dark (preferably black) cooking pots / pans with tight fitting lids.



Some recipes call for your cooking vessel to be heated – **do not** skip this step. This can be done simultaneously whilst pre-heating the oven – you will reap the benefits in the finished product.

BE WARNED: Your solar oven is an oven – the cooking vessels, lids and food which are heated / cooked in it, will be hot. Always use potholder when removing food from the solar oven.

Once your solar oven has reached the required temperature, and providing that it is facing the sun, and it is neither too early, nor too late in the day, the temperature will remain constant - more so than a conventional oven. There is no electrical power switching on and off whilst it is heating the oven, causing the oven temperature to fluctuate. Solar power is constant, providing that the solar oven and the reflectors are correctly positioned to reflect the light into the solar oven. It is the easiest, most cost effective and the healthiest manner to prepare your meals.

Food does not easily burn in a solar cooker – the worst that can happen is that your baking can dry out. (And if that should happen, simply slice the loaf / cake into thin slices and then turn them into biscuits ☺) As for poultry or meat – proving they are in a covered vessel, they will only get more tender the longer they cook. In addition, the food which is being cooked requires less water than food cooked on the stove top or a conventional oven – the food will produce its' own delicious juices.

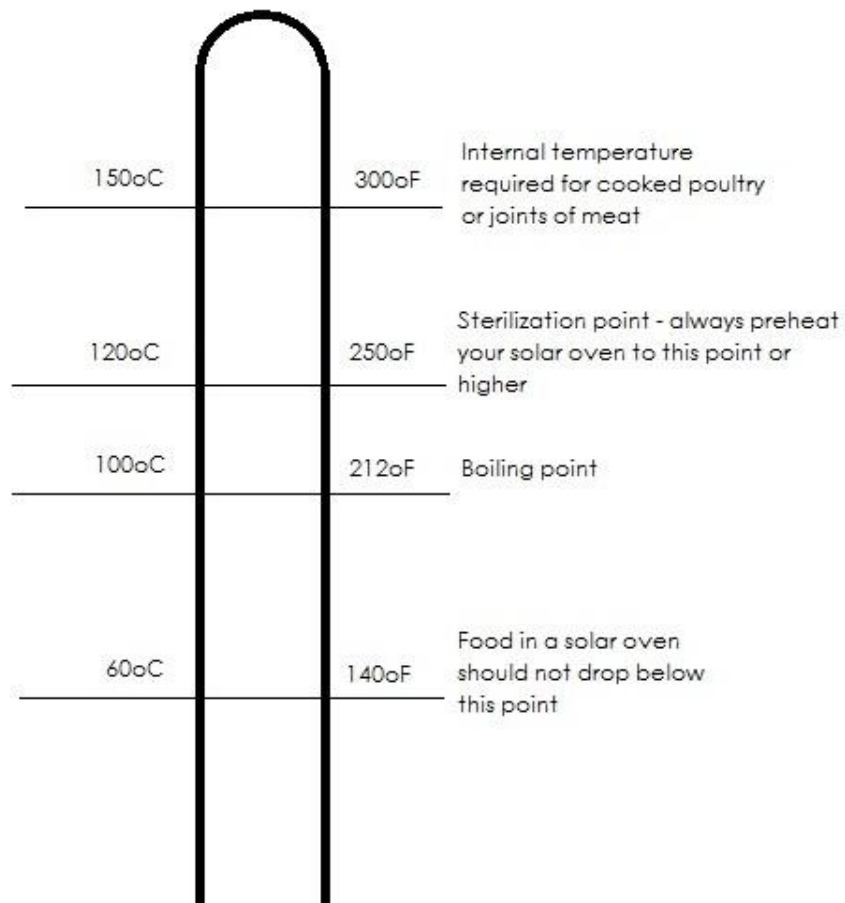
It is advisable to use a meat thermometer when cooking whole poultry or joints of meat. That ensures that the correct internal temperature of 150 – 165°C (300 - 340°F) has been reached, and the food is ready.

Should you have access to a hot / hay box that could be used to keep the food sufficiently hot, then you are able to delay the serving of the food for 1 – 2 hours. **Important:** Ensure that the food which goes into the hay box is bubbling, or that the internal temperature is above 150°C.

The best weather in which to use your solar oven is:

- GOOD:** Clear and sunny. Oven will preheat to 140 – 150°C (275 - 300°F)
- FAIR:** Hazy or partly cloudy. Oven will preheat to 100 – 110°C (200 - 225°F)
- BAD:** On a completely cloudy day one cannot cook with the sun. If the clouds completely block the sun whilst cooking, finish cooking your food on a conventional stove / oven.

SOLAR OVEN TEMPERATURE GUIDELINE



It is possible to cook in a solar oven, using the following methods:

BOILING & SIMMERING:

Boiling water will obviously take less time than getting a stew to boiling point. This is due to the mass of the stew, compared to the mass of the water. However, once it has reached boiling point it will continue to simmer just as it would on a stove top or inside an oven.

BLANCHING:

Fruit and vegetables can easily be blanched in a solar oven. However no water is required. As that is required is to place the food in a heated Dutch oven inside the solar cooker, and, depending on the size, density and amount of food to be blanched, blanching will take place in approximately 20 -30 minutes. Typical foods which sometimes require blanching are: tomatoes, peppers, peaches and any vegetables which are going to be stir fried.

STEAMING:

Food, in a covered pot and suspended above boiling water will easily be steamed in a solar cooker. Fill a cooking vessel with 3 – 5cms (1½ – 2 inches) of water, and pre-heat. As soon as steam collects in your solar oven place the food in the vessel and steam for the same amount of time you would normally use on the stove top. *Note:* Steamed puddings will take 40 - 60 % longer to cook in a solar oven.

BAKING, ROASTING AND TOASTING:

Foods which can be baked, roasted and toasted in a solar oven are: bread, cakes, biscuits, poultry, roasts, nuts and seeds.

They should be cooked in a preheated metal (preferably covered cast iron) vessel such as a skillet, flat casserole dish, pie tray and muffin pans. For baking and poultry / roast meats the food should be cooked in a covered vessel or in a sealed cooking bag on a black roasting tray.

Biscuits / cookies should not be cooked in a covered vessel. To bake cakes or bread, preheat the cooker for at least ½ hour before adding the food.

GENERAL HINTS & TIPS:

A chicken recipe which calls for 2 hours of cooking will be so juicy that it will fall of the bone if cooked for longer than the 2 hours. The major advantage of solar cooking is the flexibility in cooking times. You can remove the food any time after it is done.

When cooking whole fresh fish, you can judge when the fish is cooked when juice production begins to drop. If you cook fish on a rack, it is easy to see this change. Don't forget to check to see that the fish is cooked to the bone in the thickest part. Ideally, use a see through lid on your cooking vessel – this will help to prevent the aroma of fish lingering in your oven.

For best results, do not overcook the following food: green vegetables, cookies, cakes, and bread.

You do not need to stir food whilst it is cooking. However, you can check on the food providing you quickly replace the lid.

Place the hard-to-cook or larger quantity items in the back of the cooker where they will receive more of the direct sun. When using several pots simultaneously, place the easy-to-cook food in the front of the cooker.

To keep the food hot after the sun goes down, add several dark bricks or heavy stones when you pre-heat the oven – leave them in the oven whilst you are cooking. To maximize heat retention, lower the reflective lid onto the glass, and cover the cooker with a blanket. Alternatively, move the covered cooked food to a hot box whilst it is still bubbling, and it will still be more than hot enough to eat 2 – 3 hours later.

Many meals may be cooked without refocusing your solar oven, and you will learn how to achieve this through experience. Position the cooker so that halfway through the cooking time the sun will be directly in front of the cooker.

When cooking large quantities of food, or on less than full sun days, re-focus the oven once or twice. If you are cooking a large amount of food, it will cook more quickly if distributed between two or three smaller pots instead of one large pot. Several small, uncovered bowls may be placed inside a larger covered pot to cook.

Leftovers are easily reheated in the solar cooker.

Solar ovens cook in much the same way as crock pots / slow cookers - lower heat for longer cooking times.

The temperature of boiling water is reduced as the altitude increases. For instance the boiling temperature of water is only 95°C (200°F) degrees at 1800mtrs (6,000 feet). Vegetables and dried beans will require longer cooking times at high altitudes because of this effect.

You may try cooking your food in canning jars placed inside a larger dark pot, with the regular canning lids and rings tightened. The rubber seal allows excess pressure to be released but a low increase in pressure is retained and speeds

cooking. Only use standard canning jars and lids as they are designed for pressure.

Enjoy cooking in a solar oven. Be aware that you are making a small contribution to this planet, as well as preparing far healthier meals for your family / guests. And enjoy all the extra time you have not being tied to the kitchen stovetop / oven!

Important information on maintaining your solar oven:

Depending on how often you use your solar oven, clean the reflective surface of your oven often, as well as both the inner and outer surface of the glass lid. And don't forget to occasionally wipe the inside walls and floor of your oven with a soft damp cloth.

Due to normal wear and tear to the floor of your solar oven, due to pots scraping it, the interior surface may occasionally need to be repainted in order for the oven to work at its' peak efficiency. Ordinary water based black house paint is fine, paint used for barbeques is better, but do NOT use high temperature paint designed for car exhausts (it gives off toxic fumes). After painting the oven, always "cook" the newly painted surface prior to using your solar oven again. Heat the newly painted solar oven to a minimum of 150°C (300°F) and allow it to bake the paint for at least 3 - 4 hours - then air well.

Finally, if your cooking has produced a lot of steam, ensure that you tilt your cooker sideways for 10 minutes when you are finished, to allow any water which has gathered, to drain out.

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The benefits of cooking in a solar oven:

NUTRITION	The sealed temperature controlled cooking environment retains vitamins, carbohydrates and proteins. Evaporation and fluctuating temperatures using electricity, LPG or wood fires leads to loss of approx. 80% of the food value.
HEALTH	The homemaker will not necessarily inhale poisonous gases which can be emitted whilst cooking on a wood fire and he / she is not exposed to the heat that is produced.
HYGIENE	The cooking environment inside the closed compartment of the solar oven is bacteria free, and tightly fitting lids on the cooking vessels leave the air odourless and the aroma of food remains intact.
ENERGY LOSS	There are no energy losses while cooking on in solar ovens whereas cooking on LPG, Kerosene and wood leads to 70-80% of energy loss.
MEDICINAL VALUE	Solar cooked food is extremely tender and therefore easily digestible. The shelf life of solar cooked food can be 4-5 times longer.
ACCIDENT FREE	There are no chances of explosion or fire whilst using a solar oven.
ENVIRONMENT	If 3% of the population start using solar oven millions of tons of wood and LPG could be saved annually and, correspondingly, millions of tons of carbon dioxide emission would be reduced.
NATIONAL SAVING	If 3 % of the population start using a solar oven foreign exchange worth billions of dollars could be saved by third world countries, or even developed nations, which import LPG.

COST	A solar oven is cheaper than a microwave oven; the running cost of a solar oven compared to LPG, kerosene or fire wood is virtually nil and a solar oven is maintenance free.
MOBILITY	A solar oven is transportable and can easily be used during camping, picnics and potentially even on a snow clad mountain.
SAVES TIME	Solar cooking saves time and frees up the homemaker who is normally tied to a stove top or oven whilst preparing a meal.

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