Build an Aluminum Roasting Pan Solar Cooker

(Designed by Solarcookingnut)

Materials, Supplies, and Tools:

- Large, "disposable" aluminum turkey-size roasting pan (no wire handles)
- 1 full-size sheet of poster-board
- White (Elmer's) glue
- Sponge style paintbrush
- Heavy-duty or heavy-strength aluminum foil
- Piece of smooth old rag to fold into a smoothing pad
- Rag or paper towel for cleaning up glue smears
- Recycled jar with lid for glue mixture
- Metal or aluminum tape (optional but nice)

Make a mixture that is 2/3 white glue and 1/3 water in your jar. Mix well. Tear off two pieces of foil that will cover your poster-board with some overlap in the middle and overlap on all sides (you will fold and glue the excess foil at the sides to reinforce the edge). Get your sponge brush wet, then squeeze out extra water in a towel.

If one side of your poster-board is shinier, glue the foil to the less shiny side. Spread glue on about half the poster-board and smooth on foil, **shiny side up**. Always use a cloth pad for smoothing, because the natural oils in your skin can dull the foil. Try to get out air bubbles and wrinkles, but don't worry if you can't get them all out. Repeat to cover remaining poster-board, overlapping the foil by at least an inch (put glue on that inch or so of the underneath foil, as well as on the poster-board itself). When your whole poster-board is covered with foil and as smooth as you can get it, let it dry for several hours.

Rinse out your brush (getting it damp before use makes it easy to clean), wipe the rim of your glue jar, and put on the lid so your glue mixture will stay good for your next solar cooker project.

When the glue is dry, fold the extra foil at the edges over and glue it to the back. This will give your panel a stronger edge. If you have some aluminum or metal tape, you can put that around the edges for a finishing touch. Congratulations, you have just made a solar cooking reflector panel!

Using Your Aluminum Roasting Pan Solar Cooker

You will need:

- 2 spring clamps or bulldog clamps or large binder clips or packing tape
- 1 or more dark pots with dark lids*****
- 1 or more oven cooking bags (large or turkey-size—can be used many times this way)
- 1 rack about 1 inch tall****** or four foiled pebbles about an inch across
- Some food to cook (chunky applesauce or a mixed vegetable dish are good starter foods)
- Sunglasses (even with sunglasses, avoid staring at the shiny foil, and **DO NOT LOOK AT THE SUN!**)

Try to start food by 11:00 am when you are new to solar cooking. Put on sunglasses. Center your reflector panel along one long side of the roasting pan and snug it around the corners as far as it will go, bending up the pan's foil edge if needed. Use clamps or packing tape to hold the reflector on. If it is breezy out, get something to put behind your cooker so it won't try to blow over.

Put your food in the pot, put on the dark lid, and put the covered pot in an oven bag. Blow in a little air and close the bag with a twist-tie or small clip. Set up your cooker facing the sun. Put the rack in the roaster or arrange the pebbles for the bag-covered pot to rest on. Put the pot on the rack (or pebbles).

DO NOT LOOK AT THE SUN to aim your cooker. Instead, go by the shadow of your cooker. If the shadow is straight back, you are pointed straight at the sun, but of course the sun will keep moving, so what you really

want to do is move your cooker ahead of the sun and let the sun catch up. If you are behind your cooker, you want more shadow on the right side than on the left.

You should not have to re-set your cooker more than once every hour. By moving the shadow ahead and observing what happens, you will soon get a feel for how far ahead to move it to leave for an hour (at the end of the hour, you would want the shadow on the left to be about the same size as the shadow on the right was at the beginning of the hour). The hot spot will sweep over the top of the pan during that hour. If you sweep across the top about once every hour, it makes for more even baking. If you are cooking a lot of food and think it isn't cooking evenly, turn the pot front-to-back at the end of an hour when you adjust the cooker. Foods do take longer—2-5 times longer—but need little tending and are unlikely to burn, so the general rule is set them out early and don't worry too much about overcooking.

You can cook almost any food that will steam, stew, pot-roast, simmer, or bake at 350°F or below in your new solar cooker (your solar oven may not reach 350°F, but most foods that can bake at that temperature can also be baked at lower temperatures—they may take longer but often taste better). Practice with fruits or veggies or beans or even just water before you graduate to foods with meat or eggs. When you can confidently get a pot of food to giving off steam after about two hours, you are ready to safely cook meat or foods high in egg or dairy. Solar cooked meats and poultry are delicious and tender, if you put them out early and let them sit and slowly simmer and tenderize once they get hot. Solar cooked breads and cornbreads are wonderful—the slower baking really seems to bring out the flavors of grains. In general, this cooker can cook 3-4 quarts of soup or stew, a chicken, a 2-3 lb. roast or ham, a normal size loaf of bread or meat or bean loaf, or a 8" or 9" pan of brownies or cornbread, etc.

You can cook dry beans in your solar cooker, but you **must** soak them overnight before setting out to cook, and do start them early. Wait to salt them until after the beans are tender.

*****Black pots and pans with well-fitted lids are best. **Dark** blue, green, or grey can all work, but the food will take longer to cook. Black or navy speckled enamelware pots and pans are one good choice. There is a small, inexpensive oval enamelware roaster with a lid, widely available at stores that carry specked enamelware, that is a very good shape and size for cooking many foods in your roasting pan cooker. For baked goods, such as cornbread or brownies, get two matching 8" or 9" square dark baking pans and turn one upside down for a lid, securing with a couple of binder clips. For loaf-shaped bread (you can make an oval loaf in the oval roaster), use two matching dark bread pans the same way.

If you have pans you want to use that are not dark, you can paint the OUTSIDE (inside color doesn't matter) with flat black spray paint that is labeled (in small print on the back) "**non-toxic when dry**". You can get this kind of spray paint at Wal-Mart for just under a dollar per can. Make sure you have adult help and permission if you are new to spray painting. Read the directions on the can, shake very VERY well, and make sure you spread newspapers or cut-flat brown paper bags under the items you are painting to catch the over-spray. Always spray paint outdoors or in a **very well ventilated** area.

******It is best to have a rack that is taller than most cooling racks, because you want more light to get under your pot, especially if you live in the north. Many sporting goods stores carry a round heavy-duty aluminum rack for five or six dollars that is a good, durable solution. Yard sales and thrift shops such as Salvation Army or Goodwill are good places to find taller racks, too. They get a lot of racks that were originally for casseroles or chafing dishes that are great for solar cooking. Another possibility would be a couple of matching clear glass cereal bowls or ashtrays that you can set side by side upside down to rest your pot on. Anything that will keep your pot level while letting some light get underneath it will work.

For more ideas on ways to use poster-board solar cooking panels, as well as many great ideas for making solar cookers out of inexpensive and recycled materials, check out some of Solarcookingnut's videos on You Tube: http://www.youtube.com/profile?user=solarcookingnut&view=videos

For information on solar cooking, the efficient, inexpensive technology that can do more than any other single technology to mitigate climate change and improve lives and the environment, go to:

http://solarcooking.org/
AND
http://solarcooking.wikia.com/wiki/The_Solar_Cooking_Archive_Wiki