

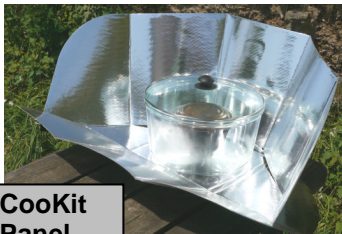
Risks Associated with Solar Cooking

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Burns and scalds

In order to cook, you will need to heat food to temperatures ranging from 65C to 250C. Quite frankly, we have noticed that when people are first introduced to solar cookers, they look on them as toys, and doubt that they can get really hot. Well, here are the sorts of maximum temperatures you can expect to find in various types of solar cooker. Notice that these temperatures cover the same range as you find in a domestic gas cooker:

Up to 120°C

**CookKit
Panel
Cooker**

Up to 180°C

**Box
Oven
Cooker**

Up to 220°C

**Evacuated Tube Cooker
with compound
parabolic reflectors**

Up to 260°C

**Parabolic
Dish
Cooker**

So, treat solar cookers as carefully as you would treat the cooker in your kitchen. Do not allow children near them unsupervised. Use oven gloves and dish stands where appropriate. Finally, if you are heating water, remember that water that is 50°C or above can scald you, so use a thermometer to check how hot it has become.

Broken glass

Be aware that glassware is likely to shatter if it gets hot and is then exposed to rapid cooling. In your own kitchen, you would not risk taking a hot glass dish from the oven and placing it in cold water, so do not do this while solar cooking. Box cookers usually have a glass cover to prevent heat escaping. Commercial models usually use toughened glass that will not produce dangerous shards if you break it, but many home-made cookers are constructed with window glass. Remember that broken glass can be dangerous and take sensible precautions. Evacuated tube cookers are made of borosilicate glass (like Pyrex) and are tough, but will shatter if rapidly cooled. For this reason, DO NOT use them to cook frozen foods, and DO NOT wash them before they have cooled down to room temperature. And obviously, DO NOT drop them or treat them roughly.

Food poisoning

In 2014, the *Food Standards Agency* stated that in the UK¹: 'There are more than 500,000 cases of food poisoning a year from known pathogens. This figure would more than double if it included food poisoning cases from unknown pathogens.' Be aware that with the lower powered solar cookers, panel cookers in particular, the food can heat up slowly, especially if the cooker is left unattended and the sun goes behind clouds for a while. There is a risk that your food will be too long in the danger zone in which various pathogens thrive, usually between 8°C and 63°C. It is wise to get a food thermometer to check the temperature of your food, and to make sure it is cooked for a sufficient time to kill any bacteria. At the very least, ensure that you cook your food so that *its centre* is heated to 63°C for at least an hour, and make sure the temperature does not drop below that before you eat it. Some foods, e.g. chicken meat, are more hazardous. More advice here: https://www.cookipedia.co.uk/recipes_wiki/Safe_minimum_cooking_temperatures

Eye damage

The risks mentioned above – burns, scalds, broken glass, and food poisoning – will be familiar to any cook. But solar cooking involves another risk that few people associate with food preparation. You are at risk of eye-damage. Children are usually warned not to look or stare at the sun, and this is because

¹ <http://www.food.gov.uk/news-updates/news/2014/6097/foodpoisoning>

the retina can sustain permanent damage if exposed to too much light, especially light from the ultra-violet end of the spectrum. Some of the reflectors used in solar cookers reflect over 90% of the sunlight that strikes them, so if you look at those reflections, you are receiving almost as much energy as you would if you looked directly at the sun. With parabolic dish cookers, where all of the sunlight is reflected to a point focus, the cooking pot can get VERY BRIGHT indeed – brighter than the sun. So, assemble your cooker while the reflectors are facing away from the sun, and avoid looking at reflections of the sun, and at the back or underside of cooking pots when you use a parabolic dish cooker. You are advised to wear UV blocking sunglasses anyway if you are outside in bright sunlight, and this is especially important if you are using solar cookers, to avoid stray reflections from damaging your retinae. If you already wear prescription glasses, you can get flip-up clip-on sunglasses². You won't look cool, but you *will* be safe.

² http://www.amazon.co.uk/Polarized-Rimless-Rectangle-Sunglasses-Eyeglass/dp/B00E1GJAVE/ref=sr_1_3?ie=UTF8&qid=1437658823&sr=8-3&keywords=flip+up+sunglasses