

Solar Cooker: An Overview

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EDITORIAL

A solar cooker is a device that heats, cooks, or pasteurises beverages and other foods using the energy of direct sunshine. Many current solar cookers are low-tech and affordable, while some are as powerful or expensive as traditional stoves, and advanced, large-scale solar cookers may cook for hundreds of people. Many charitable organisations are encouraging their use worldwide to help cut gasoline expenses and air pollution, as well as to help slow down deforestation and desertification, because they consume no fuel and cost nothing to operate. Sunlight concentration: A mirrored surface with a high specular reflection is used to direct sunlight into a tiny cooking area. Sunlight might be concentrated by several orders of magnitude depending on the geometry of the surface, resulting in temperatures high enough to melt salt and metal. Such high temperatures aren't necessary for most residential solar cooking applications.

On a sunny day, solar cooking devices are normally designed to achieve temperatures ranging from 65°C (150°F) for baking to 400°C (750°F) for grilling/searing. Solar cookers concentrate sunlight onto a receiver, such as a cooking pan, to convert light energy to heat energy. Conduction is the conversion of light energy to heat as a result of the interaction between the light energy and the receiver material. Materials that conduct and hold heat are used to maximise this conversion. To enhance absorption, solar cooker pots and pans should be matte black in colour. Isolating the

air inside the cooker from the air outside the cooker is critical for reducing convection.

Simply covering your pot with a glass lid increases light absorption from the top and creates a greenhouse effect, which promotes heat retention and reduces convection loss. This "glazing" allows visible light to pass through while blocking out infrared thermal energy. In resource-constrained circumstances, a high-temperature plastic bag can perform a similar role, trapping air inside and allowing for temperatures equivalent to those seen on hot days on cold and windy days. The basic science for solar panel cookers and solar box cookers is outlined here. A parabolic solar cooker is another type of solar cooker. They need to be reoriented to the sun more frequently, but they cook faster at greater temperatures and can fry dishes.

The cooking chamber of evacuated tube solar cookers is made of a double-wall glass tube that is highly insulated and does not require huge reflectors. Different types of solar cookers cook in somewhat different ways, but they all follow the same basic principles. Food is prepared as though it were going to go in the oven or on the stove. Food cooked in a solar cooker is frequently sliced into smaller pieces than it would be normally, because food cooks faster when it is cut into smaller pieces. For example, instead of being roasted whole, potatoes are frequently chopped into bite-sized pieces. A lid may not be required for extremely simple cooking, such as melting butter or cheese, and the meal may be placed on an open tray or in a bowl. If you want to cook multiple meals at the same time, put them in different containers.

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