Solar Water Distiller

The Solar Still

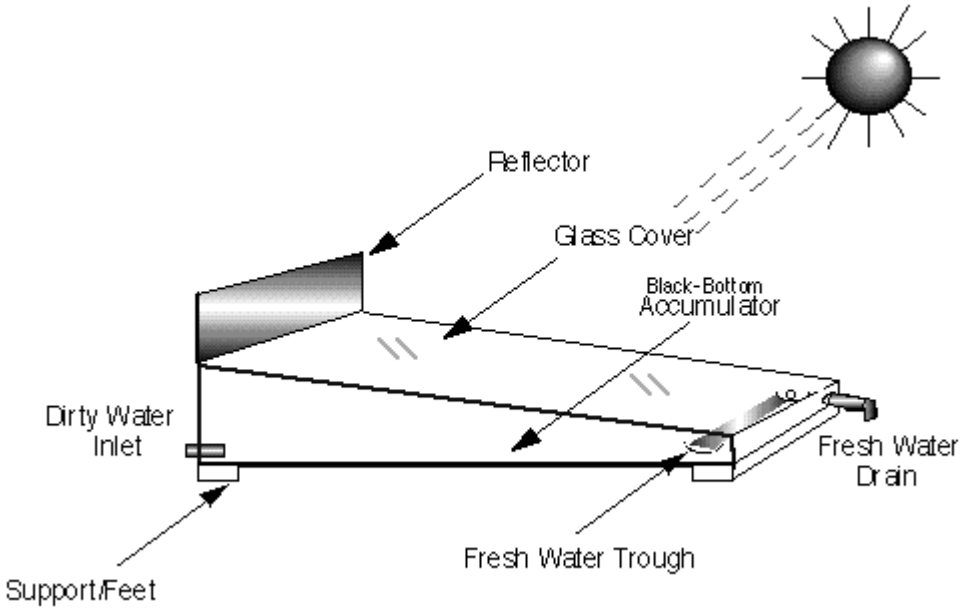
Solar Stills operate on the same principles that produce rainfall. The sun is allowed into and trapped in the Still. The high temperatures produced destroy all pathogens. The water evaporates, and in this process, only pure water vapor rises in the Still, only to condense on the glass. The glass is sloped to the south, and the condensed water runs down the glass and is collected in a trough. The water is allowed out of the collector through silicone tubing, and is collected in 5 gallon glass jugs. There are no moving parts in the solar still, and only the sun's energy is required for operation.

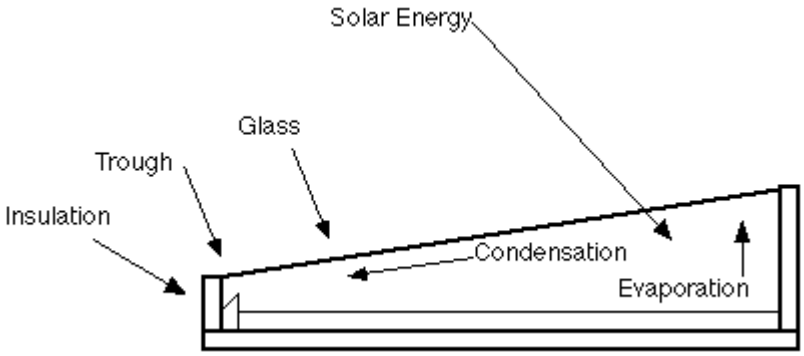
The design of the our Solar Still began with many hours spent researching previous designs, successes and failures. Our goal for the Still project was to design and develop plans for a Still which could be replicated using "off the shelf" materials.

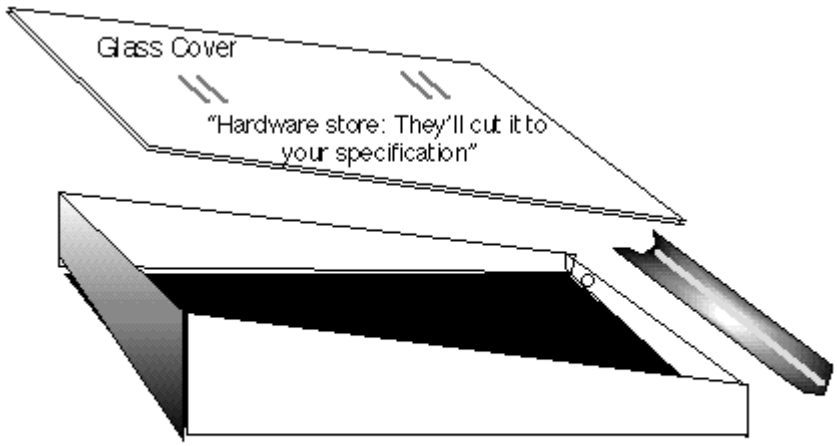
We designed a still which is easy to replicate, using standard building materials, of which 95% are available "off the shelf". The exterior materials were chosen for their ability to withstand our desert climate with minimal maintenance. The still produces an average of 3 gallons per day in the summer months. Winter production is expected to be 1/2 that amount. The Solar Still can utilize a standard size patio glass replacement, 34"X76". The material costs per still are approximately $150.

Brackish water is carefully placed inside Solar Still via an inlet near the base of the Still. As sunlight warms the black silicone bottom and heat is transferred to the water, the top of the water evaporates on to the inside of the glass cover, which is tilted toward the fresh water drain. approximately 8 square feet (of glass cover) will distill around 1 gallon of water per day, over five hours of full sunlight.

The most important elements of the design are the sealing of the base with black, high temperature silicone rubber; (spread it on with a Bondo squeegee) and creating a good seal between the glass cover and the bottom of the box.







Use Black GE High-Temp Silicone to completely coat the inside bottom of the distillation module
GE Silicone is a Hardware store item. Find it with Caulking in Tubes. You'll also need a caulking gun.

The Solar Basin Still

The Still is filled each morning or evening, and the day's production is collected at that time. The Still will continue to produce after sundown as the water is still very hot. The Still is over filled each day to flush out sediment. The over flow water can be used for irrigation. The only maintenance is to clean the glass occasionally.

A Large Solar Distiller Array!