

Shelter is Number One!

In a survival situation, nearly all survival training books claim that before a survivor does anything, he must provide shelter. A cold wind can initiate hypothermia before a survivor has a chance to worry about food or water. That is why shelter is the number one priority. Shelter is necessary to give shade, to repel wind and rain and to keep in warmth. Sleep and rest are essential, and the time and effort spent making a shelter comfortable will help aid in restful sleep. If a home is not safe or has been destroyed, there may be other undamaged buildings or homes that can be used for shelter. However, in situations like the California earthquake and Hurricane Katrina, public shelters were full and sanitation conditions were down right hazardous, as was security. In the Rocky Mountains in the middle of winter when the ground is covered in snow and the temperatures are in the single digits, sleeping outdoors requires previous, thoughtful planning. A commercial survival kit is probably inadequate.

TYPES OF SHELTERS

TUBE TENT: Small, lightweight three season protection.

Most commercial 72 hour kits have an almost bread-sack thin plastic tube tent neatly folded in a little bag. It would be wise to try and use such an arrangement, before a disaster, on a rainy windy night. Chances are it will not keep a loaf of bread warm, much less an individual. There are some tube tents that are thicker and actually have three grommets for a triangular door on each end. These tube tents will hold up much better. However, with just a little more thought and money, most planners will leave the tube tents in the store.

TARPS: A 9 x 12 tarp made by OUTDOOR takes up about as much space as a paperback book, and it weighs only 16 ounces. Packed with 50' of Para-cord it can be pitched in dozens of different ways. It can even serve as a dining fly for picnicking or regular family outings. It is not the regular plastic tarp, which is noisy, sags under rain, and becomes heavy, big and bulky under a snow load. It is a nylon polyethylene impregnated tarp with double reinforced side seams and 10 grommets. It takes a little practice to properly set up a Tarp. Some good old scout knots, such as a double half hitch, taunt line hitch, and a clove hitch will make it secure. Tent stakes are necessary, but they can be made with a knife that has a saw blade. However, tarps require two trees or poles to be pitched because the ridge line needs to be tight. Cost is about \$50.00.

Black Diamond Mega Mid: This is a pyramid shaped floorless tarp which folds down to the size of a grapefruit and weighs just over a pound. Four people can sleep under this shelter. It can hang from the center of a tree or trekking poles can be used to set it up. Cost is about \$250.

Minimalist/Ultra light shelters: Other very good, lightweight shelters are Integral Designs' Siltarp, Mombase's Outback, Equinox's UL Tarp, REI's Pro Shelter, GoLite's Shangri-la tent, and Kelty's Noah's Tarp. Some of these, including the Mega Mid, have optional bug screens which may or may not be needed. These products can be located on line by using Google. These shelters are very light weight and, if set up correctly, will a complete family. However, they are floorless and are not made to hold up in extreme weather.

Bivy Sacks: This is waterproof barrier that slips around a sleeping bag. Some are basic sacks; others offer pole-supported head space. Bivys save space and weight but may feel confining. They vary in price from \$80 to \$200.

Free-Standing BACKPACKING 3 Season and 4 Season Tents:

Eureka Zeus Classic Single Wall Tent is ideal if an individual is going to spend more than one or two nights outdoors. It has no rain fly which cuts down on weight and bulk. It is very durable and lightweight with aluminum frame shock-corded poles. Clips attach the tent body to the frame, and it sets up in 30 seconds. This tent can sleep two people through a raging rainstorm yet it only weighs 3.6 pounds. It breaks down small enough to fit in a day pack. It is free standing so it can be set up anywhere. Cost is about: \$150.

MSR Hubba Hubba: This is a 3 season tent! The entire packed weight for this two-man tent is only 4.4 pounds. It is light because they replaced the solid fabric with mesh for nice summer nights. The floor material is lighter and keeps one drier. It is very well vented and made of high tech nylon, but the light materials are more expensive. The Hubba Hubba has a full coverage rain fly. It is a Cadillac backpacking tent; there are many others that cost much less but weigh more. This is a serious tent and costs about \$380.

Jack Wolfskin: This is a 4 season tent. All-weather tents are very durable and are designed to hold up in a snow storm. This tent weighs 7.6 pounds but will hold up in just about any weather. It is scientifically designed to vent condensation in cold or high humidity weather. This is a mountaineering tent that has a bath tub floor. REI, Mountain Hardware, The North Face, and Sierra Designs are good brands. This tent ranges from \$300 to over \$600.

BACKPACKING TENT SPECS

A backpacking tent **MUST** have factory sealed seams and a full-coverage rain fly that covers the entire tent. "A bathtub" floor and vented roof with rigid, hardened aluminum shock-corded poles are essential. Most good tents have a rain fly that is also a vestibule—a place to stow wet clothes, boots, and gear.

DON'T PURCHASE cheap tents from the popular box stores. They are fine **UNLESS** the weather becomes windy, wet, or cold. They will fail under those conditions. They are not waterproof tents. As soon as a sleeping bag, coat, or person rubs up against this type of tent's wall, the item becomes wet. Quarter-inch fiberglass poles are not rigid and break. A 30 mph wind will flatten and pull the tips out of the grommets on a fiberglass pole tent. They are not made for survival. (Good tents use rigid Anodized aluminum poles.)

Kirkham's Springbar Tents

Most family camping tents are huge, heavy, and bulky. They are made to be moved in cars, trucks, or 4-wheelers. Some Springbar family tents weigh 30 pounds! If a refugee could drive a vehicle to an emergency shelter area, a good-quality family tent would be the way to go. On week-long camps, this tent holds four comfortable cots with thick foam pads and a camp table with chairs. This is a bombproof tent that holds up in any weather and is very durable. A Springbar Family Camper that sleeps 7 or 8 runs about \$650. A Springbar Outfitter 3 will comfortably hold three cots plus gear and costs about \$340.

Big Dome Tents: This is a good option but one that usually costs more. It is a geodesic type base-camp dome tent. It has at least four if not six poles running through it. Cabella's makes a reasonably priced one in different sizes. Kelty, REI, Marmot, and Mountain Hardware, also make higher end big dome tents but: Get it Cheap. Don't purchase a high-end shelter at full price. Options: There are many tent sales; also, consider internet companies. Stores go out of business and sell their inventory; check out Overstock.com; look at trailspace.com's classifieds. Buy "Last Year's" model, even used. (However, make sure it is in good condition and has no mildew.)

Bottom line: Spend a little more on your shelter and survive comfortably in any weather.

72 HOUR SUPPLIES

FOOD: One Person

3 pkgs. fruit leather (Sunkist)
3 pkgs. Granola bars (Nature Valley)
3 pkgs. Tang **AND** 3 pkgs. Powdered hot choc.
3 Breakfast bars (Carnation)
3 sm. envelopes Lipton Soup (veg.)
3 cans tuna fish or 4 ox. canned chicken (Swanson)
3 pkgs. Lifesavers (quick energy, moral booster)
Salt (sm. packet)
Plastic knife, fork, spoon; paper plates; bowls,
Metal cup(camping style for cooking & drinking)
Can opener
Napkins
Meals Ready to Eat (MRS) or canned meat, juices,
soups, milk, fruits, vegetables, high energy foods
(peanut butter, jelly, crackers, granola bars, trail
mix, store foods high in calories)
Water: 2 gallons per person per day
when calculating include water for pets
purification pills, or alternative method for
sterilizing water

EQUIPMENT

Flashlights, batteries, candles
Cash and Change \$\$
Tape (electrical duct)
Battery powered radio
Shovel (compact)
Emergency space blankets/sleeping bag
Paper & pencil
Rope

CLOTHING

Sturdy shoes or work boots
Blankets and sleeping bags
Hygiene items: tooth brush, tooth
paste, soap, towel, chap stick
One complete change of cloths,
underwear & outerwear
Hat and gloves
Thermal underwear
Sunglasses
Insulated layers of clothing

OTHER

List of telephone numbers and
addresses (family, doctors, etc.)
Special needs of infants, elderly,
or special family situations
Extra set of keys for car & house
Keep gas tank in car above half
full

**IT IS RECOMMENDED THAT
ALL ITEMS ARE PLACED IN
ZIP LOCK BAGS TO PROTECT
FROM MOISTURE OR
ACCIDENTAL PUNCTURE.**

**IN YOUR 72 HOUR SUPPLY, HAVE COPIES OF BIRTH CERTIFICATES, HOME
OWNER'S INSURANCE, AND LEGAL PAPERS. THESE SHOULD BE ENCLOSED
IN WATER PROOF PLASTIC BAGS.**

**TAKE PHOTOS OF THE CONTENTS OF YOUR HOME, ALL YOUR VALUABLE
ITEMS. USE A SEPARATE PHOTO CARD FOR THIS PURPOSE. STORE IN A
VAULT, A BANK DEPOSIT BOX, OR SECURE PLACE. IT CAN BE USED TO VER-
IFY THE VALUE OF POSSESSIONS.**

FIRST AID KIT

Create or purchase a first aid kit that meets your needs. Store in a lightweight container that facilitates carrying or pulling on wheels i.e. fishing tackle box, picnic cooler, suitcase. Should have tightly fitting lids.

Suggested Checklist for First Aid Kit

Antiseptics & Topicals

Soap
Germ killing cleanser (ammonia)
Antiseptic prep pads
Antibiotic ointment (Polysporin or Bactraban)
Calamine lotion
Sunscreen
Minor burn preparation

Gastrointestinal Upset Aids

Antacid
Laxative
Anti-diarrhea agent
Anti-vomiting agent

Dressings

Adhesive bandages, assorted sizes
Rolled gauze
Sterile gauze pads (4" x4" & other)
Hypoallergenic adhesive tapes
Elastic bandage
Triangular bandage
One pair used panty hose (tourniquet)
Cold/Hot compress
Q-tips (10)
Cotton balls (10)
Vaseline

Closure Devices

Butterfly bandages
"Steri-strips"
Sutures

Respiratory Aids

Antihistamine
Decongestant

Poisoning

Emetic (Ipecac)
Activated charcoal

Fuel & Light

Sterno canned heat
Dryer lint (for starting a fire)
Signal flares

Analgesics

Buffered aspirin
Tylenol
Advil
Gargle and/or lozenges
Toothache remedies (Eugenol)

Other

Personal prescription medication
Extra eyeglasses
Extra contact lenses & supplies
Ear/Eye drops
Safety pins
Ziplock bags

ETC.

Consecrated Oil
Scissors
Tweezers
Razor blades
Needle & thread
Matches
Compass
Comb & brush
Metal mirror (reflector/visual use)
Pocket knife
Shaving equipment for men

Sanitation Kit

1 bucket with tightly fitted lid
Plastic bags and ties
Improvised toilet seat
Toilet paper
Paper towels
Disinfectant (i.e. betadine, bleach or lysol)

Clothing

Rain garment
Plastic drop cloth
Rope and clothes pins
One change of underwear and-
Outerwear

EMERGENCY METHODS OF DISINFECTING WATER

If your drinking water is reported to be contaminated or if your well or spring water becomes discolored, or if your well or spring water source is submerged under floodwater, disinfection of drinking water should be accomplished using one of the following methods:

LAUNDRY BLEACH:

Household laundry bleaches such as Clorox or Purex usually contain 5% available chlorine. These bleaches may be used to disinfect water in accordance with the table: Only "regular" bleach should be used, not the scented versions. After the bleach is added, it should be mixed well with the water and held for 30 minutes before being used for drinking, cooking, and other household purposes

DOSAGE OF BLEACH SOLUTION

Quantity of water	Clear Water	Cloudy Water
1 quart	2 drops	4 drops
1/2 gallon	4 drops	8 drops
1 gallon	8 drops	16 drops
2 gallons	16 drops	32 drops
3 gallons	1/4 teaspoon	1/2 teaspoon
5 gallons	1/2 teaspoon	1 teaspoon
50 gallons	1/2 ounce	1 ounce

IODINE: Tincture of Iodine 2 percent obtained from drug stores is an effective germicide. It may be used for disinfecting water in the proportions of five drops per quart of clear water or 10 drops per quart of cloudy or turbid water. Allow the water to stand 30 minutes before using.

BOILING: Heating the water to boiling for a period of ten minutes will destroy disease-producing organisms. If, after cooling, the water has a flat taste, aerating will restore the flavor. This may be accomplished by pouring several times from one container to another. A pinch of salt to each gallon of water will also aid in restoring taste.

FILTERING: Filtration or straining is not effective for complete bacteriological decontamination of water. A fine filter is necessary if river or stream water is to be consumed to remove large organisms such as *Giardia* or *Chytrsporidium* **after disinfection.**

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PURIFICATION DEVICES: Purifiers and distillers are not always able to remove harmful contaminants. Do not rely solely on a water purification device.

CONTAINERS: The proper container is the key to safe home storage of drinking water. Polyethylene plastic containers, designed for food or water storage are best. These come in various sizes from two liter soda bottles to 55 gallon drums. Very small openings for spigots or siphon tubes and tight fitting lids or caps will help prevent contamination. Water should be stored away from direct exposure to sunlight.

WATER SOURCE: Stored water must be clean water. Treated water from an "approved" public drinking water system with a chlorine residual can be used with no additional treatment or chemical disinfection. Water from an untreated source (such as a private well) should be chemically disinfected at the time of storage (refer to information on reverse side of sheet.) At the time of use, additional disinfection would add an additional margin of safety.

FILTRATION: To remove the chemical flavor of treated water (after 30 minutes of contact time with a chemical disinfectant), pour the water through a filter containing activated charcoal. This will remove many chemicals and large contaminants and will enhance the flavor of the treated water. These filters are available commercially, or can be made inexpensively at home. (For more information, contact the Bear River Health Department, Office of Environmental Health.)

LABELING: All containers of water should be labeled as "drinking water." Date of storage and disinfection used at the time of storage should be also be included.

HOW MUCH SHOULD ONE STORE? At least a two-week supply is recommended. Two gallons per day, per person should be sufficient for drinking, teeth brushing, dishwashing, and general sanitation. This would be 28 gallons per person for two weeks. Families with pets must calculate for their needs. Contaminated water (dishwater, bathing) could be used for flushing toilets.

ROTATION: Properly stored water should be need replacement unless it becomes contaminated in some way or the container begins to leak. Water stored for over 20 years has been found safe for drinking when it comes from a safe source and properly stored in food-quality containers.

Fabric -- Clothing

General preparedness ideas:

1. When big emergencies happen, local police, fire and EMTs are overwhelmed. You cannot count on them immediately following. If you have family members with special needs, you must make your own preparation for them.
2. Plan at least two ways (less traveled ways are better) to get out of town.
3. Before an emergency think of three places you could evacuate to. One near, one farther away and a third still farther.
4. After an emergency, the most immediate needs are clothing to protect you from the weather, and water to drink. Store lots of water in lots of places. Do not use milk jugs as they are designed to break down quickly in the environment. Use empty juice or soda bottles. Clean well with bleach water then fill with tap water.

Cold weather layering systems

Some of the following information is taken from our class. The rest is taken from a book called 98.6 Degrees: The Art of Keeping Yourself Alive by Cody Lundin (Gibbs Smith Publisher, Layton, UT ISBN 10: 1-58685-234-5 ISBN 13:978-1-58685-234-4). All information in quotation marks is taken directly from the 98.6 book. My sincere apologies go to those who this sloppy form of annotation offends.

It does not take much cold to impair or kill us. Most deaths from hypothermia occur in the temperature range of 30 to 50 degrees Fahrenheit. "The critical temperature for maintaining manual dexterity is 54 degrees and for touch sensitivity 46 degrees."

The layering system includes three basic layers: A base layer, insulating layers and an environmental layer.

Base layer- This is worn next to the skin. It should be made of a fabric that insulates well but does not irritate or constrict. The fiber should also be good at wicking moisture away from the skin.

Insulating layers- These can be added and subtracted as needed and should also wick moisture away from the body. Each layer should be larger to avoid constricting. Constricted blood flow decreases the body's ability to keep the constricted part warm.

Environment layer- This layer is to protect from environment factors such as wind, sun, rain, snow and scratchy bushes. These layers should be loose-fitting, durable and easy to vent. Some of these layers are water-resistant while others are waterproof. Some attention should be given to this. Waterproof materials are good for times like rain storms but can cause serious problems. They allow moisture to build up inside your clothing. Damp clothing loses much of its insulating properties. Moisture resistant environmental layers are better in most cases. Be aware that they can also cause problems with trapped moisture because they release water more slowly than wicking fibers.

Attention to the handling of moisture is imperative. Water travels naturally from warm to cold temperatures. If clothing allows passage of the water, it will move out to the environment. If not, it travels as far as it can, reaches the cold and freezes. Trapped sweat or insensible perspira-

tion (the moisture our skin loses continually) causes clothing to lose its insulating abilities. Layers must be added, subtracted and vented to keep temperature regulated. One strategy to keep from sweating in your clothes is to run slightly on the cold side. "The ideal scenario in the cold is to regulate clothing layers and activities to allow you to operate at peak performances without wasting water and energy to sweating or shivering."

"Winter wear acronym:

C- Clean- keep yourself and clothes clean

O- Overheating- avoid it

L-Loose Layers of clothing

D- Dry- stay that way"

Properties of Different Fabrics

Cotton: Cotton is hydrophilic or water-loving. It soaks up and holds on to water. Once it becomes wet, it loses 90% of its insulating properties. This will carry heat away from you 25 times faster than if it were dry. Cotton makes a wonderful summer fabric, but a terrible winter fabric.

Wool: Of the natural fibers, wool is the best for water handling, but does not wick water as well as synthetics. It readily soaks up water, but its insulating properties do not diminish as much when wet. "Wool can soak up 35 to 55% of its weight before it feels cold and damp." It also loses less heat as it dries than synthetic fibers. One advantage for wool in outside layers is that it is flame resistant. Synthetics can be a melting hazard near fire. Emergency situations often involve the use of fire for warmth and cooking.

Polypropylene: This fiber is hydrophobic. It does not absorb water well. It transfers moisture from the skin to other fabric or the environment very well. It is soft and easy to care for. One problem is that smells can build up in it.

Polyester: This fabric is the most widely used in outdoor clothing. It is cheap and easy to care for. It is lightweight and can absorb a fair amount of water before it feels damp and cold. It is also hydrophobic and therefore slow to absorb water.

Nylon: Nylon is a light weight fabric that does not soak up much water. It is usually used in environmental layers as it is strong and wind resistant. Some nylons are coated to become waterproof. "A wind of 9 miles per hour can reduce the effectiveness of clothing insulation by 30%."

CLOTHING Inventory – One Year’s Minimal Supply of Essentials

One year’s supply/person. Some items for 72 Hr kit (3-7 days). Need several changes for keeping dry and warm. These suggestions are for areas with four distinct seasons; adjust as necessary for your area. You already have a lot of these items, so a) INVENTORY what you have, b) decide what you still need, and then c) work on acquiring the wanted items.

CLOTHING		Amount	Person 1	Person 2	Person 3	Person 4
Winter-Warm	<i>Winter clothing keeps you warm by trapping air next to your body (insulation). Clothing also needs to wick moisture away from your body. Cotton & cotton blends retain moisture and put you at risk for serious heat loss as they conduct your body heat to the atmosphere. The key is to wear layers made of synthetic, quick-drying materials that help evaporate your perspiration. When you work hard and start to overheat, simply remove an insulating layer.</i>					
1. Base Layer	Fit snug to body so it can quickly WICK moisture to outer layers, keeping you warm and dry. Polypropylene, polyester, silk or mixture of these with wool. When synthetics are wet they still keep you warm. Match weight to temperature, your activity level & your metabolism: Light weight, mid-weight, or heavy weight.					
	Light weight under garments, reg. or thermal (thermal good for 30-45° F)	3-5 sets				
	Add mid weight Thermals, top and bottom, (synthetics such as polypropylene, silk or wool) then good for 0° F	2 sets				
	Or add heavy weight Thermals, top and bottom, (synthetic: polypropylene or foam) for -30° F	2 sets				
	Underpants, synthetic					
	Sock Liners (thin, quick drying)	2 pr				
	Glove liners (thin, quick drying)	2 pr				
2. Insulate Layer #1	Looser fit than base layer but not baggy—needs to maintain contact with the base layer to function properly by trapping body heat and wicking moisture to outerwear. (Polyester and polypropylene synthetics, or silk or wool)					
	Turtlenecks/Shirts, synthetic	2 ea				
	Pants, synthetic	2 ea				
	Socks, insulating (wick moisture away, cushioned, perhaps wool blend) dry feet essential to prevent frostbite; change each day. Store each pair in separate plastic bags. Come in light, medium or heavy cushion.	7 pair				
	Belt (can attach items to it— i.e., flashlight)					
3. Insulate Layer #2	Add this layer for colder temps or times when you are less active.					
	Fleece Tops (zip ups good, keeps neck warm)	2 ea				
	Fleece Pants	2 ea				
	Fleece or Down Vests	2 ea				
	Gloves, heavy finger gloves or mittens (mittens warmer) need extra pair in case one glove is lost	2 pr ea				
4. Outer Layer	Needs to block wind and water while still allowing internal moisture to escape. If wind and water can get through, these are just a mid-layer. Zippers underarm help you air out; ankle zippers aid in pulling pants over footwear. Outer layer needs to be RUGGED and able to stand up to abuse.					
	Shell Jacket with hood (waterproof, breathable) for rain, sleet, snow, wind; GoreTex good	1 ea				
	Shell Pants (waterproof, breathable) for rain, sleet, snow, wind	1 ea				
	Down Jacket (with waterproof, breathable outer material) for resting times in camp to maintain body temp; compresses easily for stuffing into a pack. Don't work in down as it dries poorly so won't keep you warm when you perspire.	1 ea				

CLOTHING		Amount	Person 1	Person 2	Person 3	Person 4
4. Outer Layer (cont.)	Neck gaiter or scarf	1 ea				
	Shell mittens (waterproof, breathable)	2 pr				
	Hat (fleece or wool)	1 ea				
	Brimmed cap (for warmer, sunny days)					
	Face Protector or warm scarf	1 ea				
	Ear Muffs or Ear Band	1 ea				
	Shoes: warm for inside tent	1 pr				
	Shoes: Snow Boots 0° to 40° F (waterproof & roomy enough for thick socks & toe-wiggling to prevent frostbite)	1 pr				
	Shoes: Snow Boots -40° to 0° F (waterproof & roomy enough for thick socks & toe-wiggling to prevent frostbite)	1 pr				
	Gaiters (to keep snow out of boots)	1 pr				
	Hood (windproof, to protect head from cold)	1 ea				
	Goggles (for wind and snow)	1 ea				
	Sun Glasses, sunscreen and lip balm with sunblock	1 ea				
Winter-Sleep	PJs, warm, synthetic (wick moisture, long sleeves)	1-3 pr ea				
	or Nighties, warm, synthetic (wick moisture, long sleeves)					
	Booties, polypropylene (sleep in to keep feet warm)	1-2 pr ea				
	Bathrobe, warm, (long, long-sleeved)	1 ea				
	Slippers, warm, (perhaps hard sole)	1 ea				
	Bedtime cap (to keep head warm)	1				
	Glove liners, (sleep in to keep hands warm, one pr for sleep)	1 pr				
Winter-Best	Dress Outfit	2 ea				
	Dress Socks	3 ea				
	Dress Coat	1 ea				
	Dress Gloves	1 ea				
	Dress Hat	1 ea				
Winter-Work	Same as layering above, but add:					
	Work Pants, tough or insulated coveralls	1 set/adult				
	Work Boots, insulated -40° F					
	Work Gloves, very tough, insulated	1 pr ea				
	Work Hat, with brim, perhaps a hard hat					
	Work Eye Protection					

CLOTHING		Amount	Person 1	Person 2	Person 3	Person 4
Summer -Cool	<i>Need changes to keep dry and cool; need fabrics that wick moisture away from skin to prevent chaffing. Nylon doesn't breath. Cotton good for cooling.</i>					
	Garments, for 55-90° F, wick moisture	4 sets				
	Garments, for 90-120° F, very hot weather, wick moisture	3 sets				
	Ladies' bras, underpants, slips	2 ea				
	Shirts, for 55-90° F	2 ea				
	Shirts, short sleeve for very hot weather, cotton 90-120° F (cotton holds moisture & its evaporative action cools body)	2 ea				

CLOTHING		Amount	Person 1	Person 2	Person 3	Person 4
	Shirts, long sleeve, for insect protection	2 ea				
	Pants	2 ea				
	Peddle Pushers for 90-120° F	2 ea				
	Shorts (for children)	3 pr				
	Jacket or sweater, breathable	1 ea				
	Jacket, windbreaker	1 ea				
	Socks, wick moisture away, light cushion, and/or sports socks	7 pr ea				
	Shoes: Athletic	1 pair				
	Shoes: Sandals	1 pair				
	Hiking Boots	1 pair				
	Belt (can attach items to it— i.e., flashlight)	2 ea				
	Hat (with brim for sun protection)	1 ea				
	Hat (with mosquito netting, esp. if in mountains)	1 ea				
	Scarf (for wind protection)	1 ea				
	Sun Glasses (for sun and wind protection)	1 ea				
Summer-Rain	*Rain Suit or poncho, good one (or garbage bag with hole cut for head) Could use winter outer-layer shell jacket and pants	1 ea				
	Umbrella	1 ea				
	Rain Boots	1 pair				
	Driving Gloves (spring and fall)	1 pair				
Summer-Sleep	PJs (wick moisture & allow evaporation, modest)	1-3 pr ea				
	or Night Gown (wick moisture & allow evaporation, modest)					
	Bathrobe or House Coat (light weight, modest)	1 ea				
	Slippers (perhaps hard sole)	1 ea				
	Mosquito Netting for bed	1 ea				
Summer-Best	Dress Outfit	2 ea				
	Dress Socks	2 pr				
	Dress Shoes	1 pr				
	Dress Jacket/Sweater (for cooler evenings)	1 ea				
Summer-Work	Same as above, but add:					
	Work Pants, tough but breathable	2				
	Work Peddle Pushers	2				
	Work Socks (can use layering socks w light padding)	4 pair				
	Work Boots or good hiking shoes	1 pr				
	Work Gloves, very tough	1 pr				
	Work Hat (with brim for sun protection, but breathable)					
	Work Eye Protection					
Summer-Play	Swim Suit	1				
	Swim Suit Coverup	1				
	Swim Cap	1				
	Swim Towel	1				
	Sports outfits (running, biking, tennis, baseball, etc.)					

Learning to Layer Clothing

Written by Tim Allard

Proper layering is one of the most fundamental concepts in outdoor recreation. Learn how to layer and you'll be more comfortable outdoors.

For many outdoor enthusiasts the importance of dressing in layers is well known. This method of dressing allows you to regulate your temperature by peeling-off or putting-on clothing layers - clothes that together wick moisture, insulate, and protect from wind and rain. Each year, outdoor clothing becomes more specialized and better designed to support a layered system. Let's review the art of layering for outdoor activities.

What is Layering?

Layering is wearing a combination of clothes to regulate your body temperature, so you don't overheat or get cold. The system must match the climate conditions you are in, your activity level and your individual thermostat. Layers are broken into three categories: Inner, mid, and outer. These three layers act in unison (to trap heat, wick moisture, breathe, block wind, and repel water) but individually each layer performs specific functions.

Inner Layer: The inner layer, also called a base layer, is the first layer of clothing you wear, directly contacting your skin. Long or short sleeve tops, full-length bottoms or briefs, and sock liners are examples of inner layers. A base layer should fit snug. This fit lets the material quickly wick away moisture from your skin keeping you dry and warm. Inner layer materials are often made of polyester, polypropylene, silk, or a mix of synthetic and natural insulating and wicking fibers, like polyester and wool. Inner layers are classified in three weight types.

Lightweights are designed for intense aerobic activity (where moisture wicking is crucial to comfort) but provide little insulation. Midweight underwear provides moisture wicking properties as well as insulation for low intensity aerobic activities. A heavyweight layer will wick moisture but is intended to insulate in cold conditions. It's important to anticipate the temperatures you'll be in and pick the appropriate weight for an inner layer.

Mid Layer: The mid layer should be a looser fit than the inner layer, but not baggy. It needs to maintain contact with the inner layer to function properly. These materials are designed to trap and hold your body heat in small air spaces in the material; hence, why mid layers can feel lofty. Mid layers are also designed to carry moisture away from the inner layer, moving it from the body and pushing it to the outer layer. Mid layer materials range significantly, but some common ones are fleece, polyester, down, and wool. Many manufactures produce patented synthetic and natural blended materials for mid weight layers as well.

Mid layers are not universally categorized in lights, mids, or heavyweights, but you may see these terms occasionally used by some companies to describe the degrees of insulation their clothes provide. Depending on the temperatures you are in, you may need to wear more than one mid layer. For example, in cold conditions you may have a wool top and then a fleece jacket as well. That's the benefit of dressing in layers; you can add or remove clothing as you need to keep comfortable.

When buying mid layers, some extra features will increase your comfort. Under arm zippers allow for ventilation options to help regulate your temperature. Zip-up collars allow you to trap heat in cool conditions, providing warmth to your neck, but can be opened for releasing heat if you're too hot. Also, some heavy-fleece, mid layers will zip into an outer layer forming a two-layer jacket. Note: you'll still want a snug fitting mid layer if you use a zip-in liner with a jacket. The liner won't fit snug enough against the inner layer to properly trap heat or wick moisture.

Outer Layer: Manufacturers do not define outer layers consistently. Some describe outer layers as a shell (i.e., wind and rain type jackets) to protect you from the elements, while being breathable so your internal moisture can escape. For this discussion, I'll use the definition just presented. In addition to the above description, some describe an outer layer as jackets and pants that provide insulation. As long as the units block wind or water they classify as an outer layer. If wind or rain can get through them, they are mid-layer clothes. These differences, although subtle, are important to know as a buyer.

When looking for a waterproof and windproof shell, you can't beat a Gore-Tex outer layer. If you don't anticipate wet conditions, a lighter outer layer may suit you fine. Clothing design can also aid in breathability. Zippers under arms help you air out when engaged in aerobic activities or when you're caught in the high humidity of a summer thunderstorm. Ankle zippers aid in putting-on or taking-off pants while wearing footwear, and also allow for a snug fit over boots.

The outer layer should also be rugged and able to stand up to abuse. If its material tears on a tree branch, you've just ruined not only a jacket, but also your layering system if it starts to rain! That said if you're just out on a walk on an autumn day, a nylon windbreaker-type shell might suffice.

Do I Always Need Three Layers?

No. You'll always want to start with a non-cotton inner layer, though. Sometimes this layer and shorts may be all you need in hot temperatures or high aerobic activities. Mid layers provide the most flexibility, letting you adapt to most temperatures and activity levels. If there's no wind or rain, you might not need an outer layer - at that particular moment. Yet, the weather constantly changes, so it's better to have an outer shell you can store and retrieve it when needed. This is especially true on multi-day treks.

Say Goodbye to Cotton

Don't wear cotton clothing as part of a layering system. You might get by wearing a cotton T-shirt fishing in a boat on a mild summer day, or wearing cotton socks for some minor yard work, but once you get active cotton works against you. Cotton's inherent properties cause it to trap moisture, as oppose to releasing it. When damp cotton is against your body it draws heat from you. Also, if you're wearing damp cotton socks or underwear it can cause discomfort and chafing. Do yourself a favor and replace the cotton clothes you have for sport activities with new synthetic ones.

Keep Them Clean

It's important to read the washing and care instructions on your outdoor clothing. Synthetic materials often need to be clean to properly wick moisture, insulate and repel rain. Many products discourage the use of dry cleaning or fabric softeners, but some synthetic fabrics need the heat of a dryer to reinstate their moisture wicking and insulating properties. Cleaning solutions are also available to help restore these two properties as well.

For outerwear, a good rule of thumb is that if water isn't beading on the fabric, you need to wash your gear. Check the washing instructions. Most encourage hand washing, hanging products to dry or using a low heat drier setting, and some suggest ironing to renew water repellency. If

required you may occasionally need to treat your outer shell with a spray-on solution to restore its repellency.

Head, Hands and Feet

You could have the best layering system in the world, but if you don't keep your extremities protected, you'll be uncomfortable. It's important to match hats, mitts, socks and footwear to the climate and your activity level, but also to your own personal nuances. For example, when fishing in cold temperatures my feet are always the first to get cold, so I make sure I keep them dry and wear proper socks. Blocking the wind is also important for hats and mitts. Fleece models can be extremely warm on cool days, but a wind can easily blow through them carrying away your body heat. In this case wear an outer liner, or invest in ones with a wind-blocking layer that's laminated on the inside.

Layering Tips:

- Don't let yourself overheat when outdoors. Peel off layers as needed to regulate your temperature when active, and add layers when not generating enough heat.
- Err on having too many layers. It's better to be prepared and flexible, than to be underdressed and exposed to cold-related risks.
- If you're active and then plan to be stationary for a long time (such as walking to an ice fishing spot), consider bringing an extra inner layer and changing into this new one after the activity. It's tough to change in cold temperatures but the dry clothes will do wonders for your comfort.
- Don't forget to stay hydrated when outdoors. The effects of dehydration will counter act the effectiveness of your layering system and your body's ability to keep you warm.

Proper layering is one of the most fundamental concepts in outdoor recreation. Learn how to layer and you'll be more comfortable outdoors. Stay away from cotton, focus on using the three layers where appropriate, and remove layers to prevent overheating or add them to stay warm. Follow these basic rules, and you'll get a lot more enjoyment from your time outdoors.

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- Solar panel expert.....Carl Haupt chaupt55@yahoo.com
- Solar panel carpenter.....Jacob Wiberg 764-6197
- EverbrightSolar (solar panel kits).....www.EverbrightSolar.com (510)-498-8221
- AltE (ground kit, key, 6' MC2 connector).....www.altestore.com (877)-878-4060
- Radio Shack (4-Position Dual-Row Barrier Strips and Junction Box).....753-2881
- Lowes (lumber, plexiglass, silver solder, silicon glue etc.).....787-2266
- Solar Panel Instructions (A).....www.mdpub.com/SolarPanel/
- Solar Panel Instructions (B).....www.virtualecrets.com/build-a-solar-panel.html

Solar Ovens and other non-electric items

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Make a Pizza Box Solar Oven

PRINT VERSION

This solar oven has been adapted from many designs. Please feel free to improvise! You may want to try making s'mores (graham crackers with melted marshmallow and chocolate) or English muffin pizzas.

The pizza box solar oven can reach temperatures of 275 degrees, hot enough to cook food and to kill germs in water. A general rule for cooking in a solar oven is to get the food in early and don't worry about overcooking. Solar cookers can be used for six months of the year in northern climates and year-round in tropical locations. Expect the cooking time to take about twice as long as conventional methods, and allow about one half hour to preheat.

Information for Students

Suggested Links for further Exploration

Glossary of Energy Terms

Solar Now Homepage

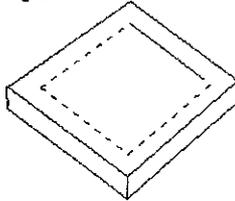
What You'll Need

- Recycled pizza box
- Black construction paper
- Aluminum foil
- Clear plastic (heavy plastic laminate works best)
- Non-toxic glue, tape, scissors, ruler, magic marker
- Wooden dowel or straw

How to Make Your Pizza Box Oven

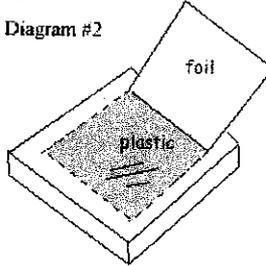
Draw a one inch border on all four sides of the top of the pizza box. Cut along three sides leaving the line along the back of the box uncut. (Diagram #1)

Diagram #1



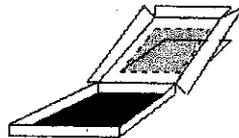
Form a flap by gently folding back along the uncut line to form a crease. (Diagram #2) Cut a piece of aluminum foil to fit on the inside of the flap. Smooth out any wrinkles and glue into place. Measure a piece of plastic to fit over the opening you created by forming the flap in your pizza box. The plastic should be cut larger than the opening so that it can be taped to the underside of the box top. Be sure the plastic becomes a tightly sealed window so that the air cannot escape from the oven interior.

Diagram #2



Cut another piece of aluminum foil to line the bottom of the pizza box and carefully glue into place. Cover the aluminum foil with a piece of black construction paper and tape into place. (Diagram #3)

Diagram #3



Close the pizza box top (window), and prop open the flap of the box with a wooden dowel, straw, or other device and face towards the sun. (Diagram #4) Adjust until the aluminum reflects the maximum sunlight through the window into the oven interior.

Your oven is ready! You can try heating s'mores, English muffin pizzas, or hot dogs, or even try baking cookies or biscuits. Test how hot your oven can get using a simple oven thermometer!

Diagram #4



▲1



up the solar oven



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DIY Pretabbed Solar Panel Kits

Make your own solar panels! Do It Yourself solar panel kits include the solar product components that will allow the buyer to assemble components together towards making a solar panel, and might save money compared to buying finished products. It can be a great money saving measure and very educational at the same time. Each kit contains the essential DIY components you need to connect solar cells: solar cells, tabbing wires, bus wire, a flux pen, and solder. Just encapsulate your connected solar cells to make solar power right away! These kits come in pre-packaged group of cells in the number of 36, 50, 108, 150, 200 cells. Please note that we recommend that the panels that you use be used in off grid battery charging application. For higher voltage grid tied projects, it's best to buy the professionally made UL certified panels and consult a solar professional.

The solar cells used in our DIY solar panels kits consist of two slightly different kinds of Everbright solar cells, Devens cells and German cells. Typically marked with .5v3.6a in the title of listings, Devens cells are characterized by its pronounced multi crystalline look with a more visible mosaic look front side. The front side smoother, showing the base wafer's multi crystalline grain boundaries more pronouncedly. It resembles traditional multi crystalline solar cells more. German cells have a slid blue front side, with a more shiny finish, and can show some surface wrinkles from the natural wafer growth method from the base materials. Both are excellent cells, and German cells are sometimes sold in pretabbed format, whereas Devens cells are often sold in untabbed format. Even the tabbed cells are only tabbed on the front side. Devens cells have slightly higher efficiency, and the cells that we sell here have fairly consistent power.



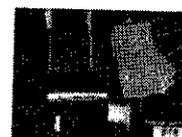
36 3x6 Everbright solar cells Pretabbed DIY panel kit /wires flux

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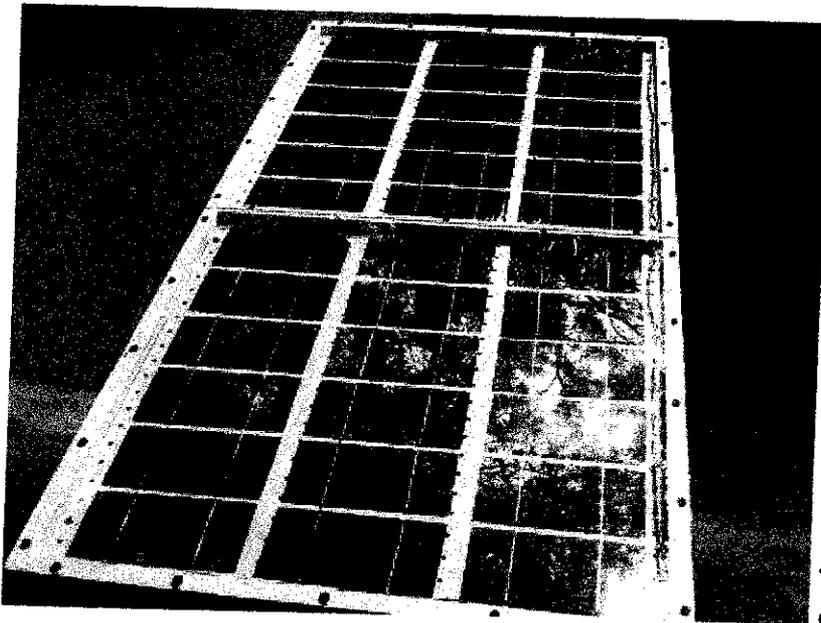
200 3x6 Everbright solar cells Pretabbed DIY panel kit /wires flux

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How I built an electricity producing Solar Panel

It was easy. You can do it too.

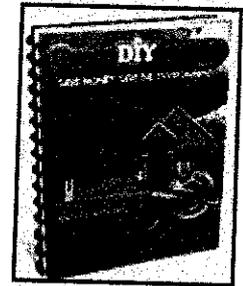


Several years ago I bought some remote property in Arizona. I am an astronomer and wanted a place to practice my hobby far away from the sky-wrecking light pollution found near cities of any

real size. I found a great piece of property. The problem is, it's so remote that there is no electric service available. That's not really a problem. No electricity equals no light pollution. However, it would be nice to have at least a little electricity, since so much of life in the 21st century is dependant on it.

I built a wind turbine to provide some power on the remote property. It works great, when the wind blows. However, I wanted more power, and more dependable power. The wind seems to blow all the time on my property, except when I really need it too. I do get well over 300 sunny days a year on the property though, so solar power seems like the obvious choice to supplement the wind turbine. Solar panels are very expensive though. So I decided to try my hand at building my own. I used common tools and inexpensive and easy to acquire materials to produce a solar panel that rivals commercial panels in power production, but completely blows them away in price. Read on for step by step instructions on how I did it.

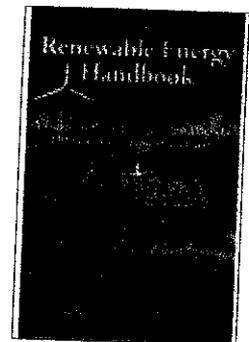
Let me state up front that I probably won't be able to help you out much if you decide to build your own solar panel(s). This web site has become insanely popular, often taxing the bandwidth limits of the server. I get dozens of requests for help each day. I simply don't have time to answer the majority of them. Most of the questions and requests I get are the same ones over and over again. I have crated a FAQ to handle these repetitive questions. Please read it before emailing me. Simple questions, not covered by the FAQ, which only require a quick and simple answer may get replies if time permits.



Complete Step-by-Step Solar Panel Guide



Video Series Building Homemade Solar Panels



The Renewable Energy Handbook



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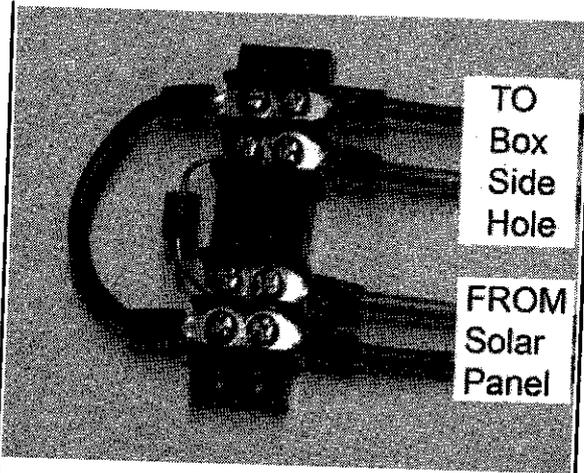
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Junction Box



Visual Diagram

STEP 3

1. Finally, apply enough of the Silicone sealant/adhesive to fill in the hole in the bottom and side of the enclosure box. Allow the sealant/adhesive to dry.

References

Abramowitz, M., Davidson, M., Neaves, S. (2003). *The Frequency and Wavelength of Light*. Retrieved from <http://micro.magnet.fsu.edu/optics/lightandcolor/frequency.html>.
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Aldous, S. (2007). *How Solar Cells Work*. Retrieved from <http://science.howstuffworks.com/solar-cell2.htm>.
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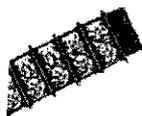
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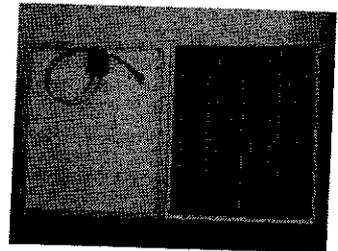
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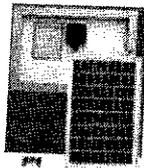


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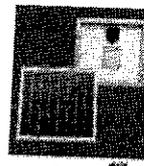


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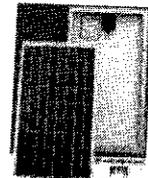
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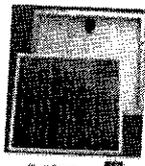
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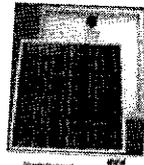
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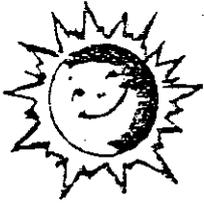


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SOLAR COOKING

by Priscilla J. Mays and Dianna Nurczyk
Maricopa County Extension Agents, Home Economics

The southwest is a natural place to use solar cooking. Food that can be cooked in a conventional oven can also be cooked in a solar oven at the same temperatures.

A concern with solar cookery is food safety. The solar cooker must be preheated prior to each use. It is important to maintain adequate temperatures during the cooking process.

There are a variety of solar cookers in use today. These hints relate to all solar cookers.

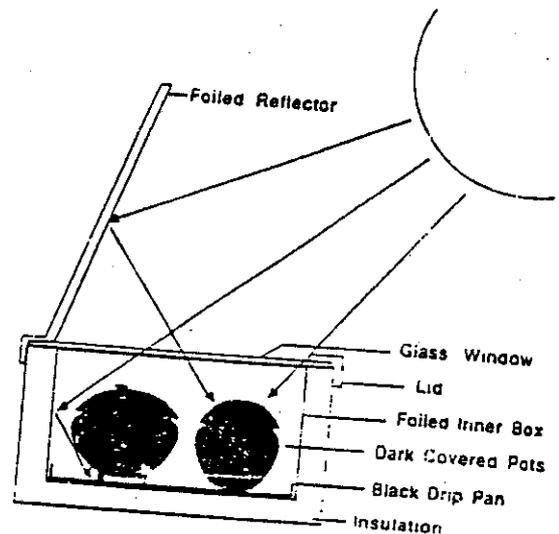
- 1) Use a solar oven that will reach and maintain average oven temperature of at least 250 degrees F. The amount of insulation or reflective ability influence the temperature reached in the oven.
- 2) Preheat the oven to the temperature needed to cook the food. The temperature will probably drop 25-50° when you put the food in the oven and will rise again slowly.
- 3) Turn the oven and adjust reflectors to concentrate maximum solar radiation; preferably, you should refocus at least once every hour during the cooking process.
- 4) Consider weather conditions when cooking with solar ovens.
- 5) Be sure food is properly protected from insects, soil, and wind.
- 6) Any kind of cookware can be used. However, dark, light-weight cookware heats up faster.
- 7) Always preheat the solar oven before cooking.
- 8) Use a thermometer in the oven to be sure it maintains the correct temperature.
- 9) Use all the sanitary principles recommended for any food preparation.
- 10) Most recipes used in conventional ovens can be used in the solar oven. However it may take longer to cook.

HOW TO BUILD AND USE A SOLAR BOX COOKER

- I. OVERVIEW
- II. MATERIALS NEEDED TO BUILD
- III. HOW TO BUILD
- IV. TIPS FOR COOKING AND BAKING
- V. HOW TO JOIN THE SOLAR BOX COOKERS INTERNATIONAL NETWORK

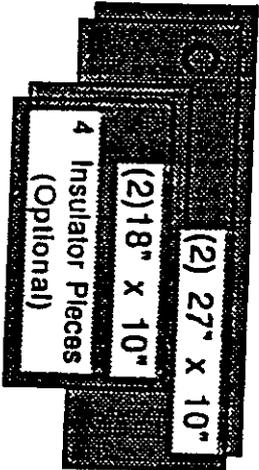
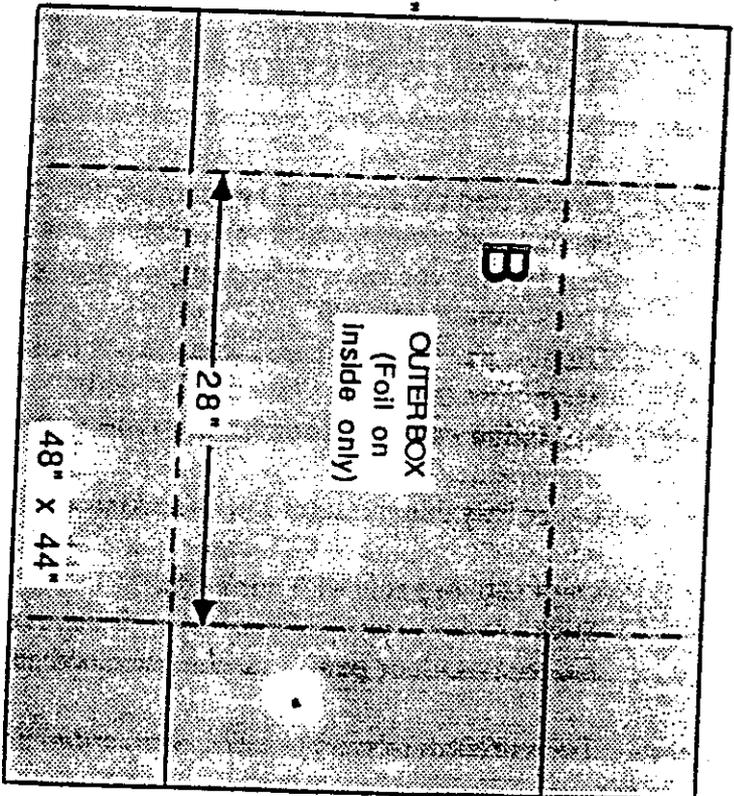
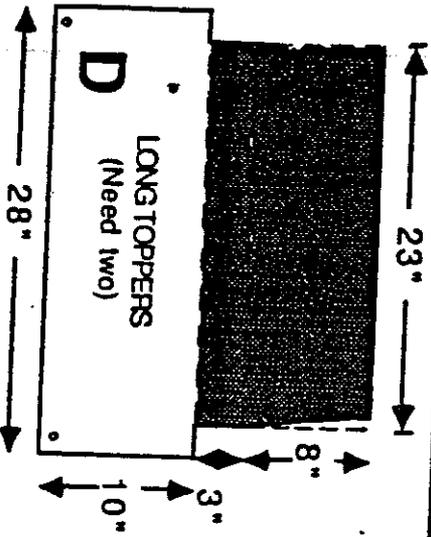
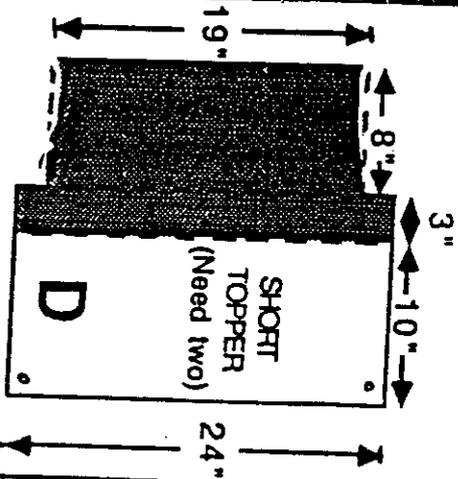
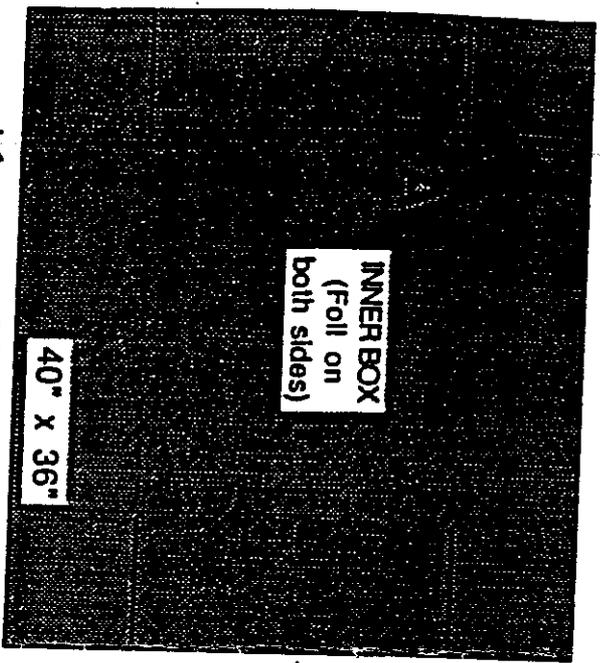
I. **OVERVIEW:** These instructions will make a solar box which cooks 10-15 lbs. of food on sunny days. Larger, deeper cookers will cook more food and hold larger pots. A solar box cooker is

- A. a large inner box covered with aluminum foil on both sides
- B. a larger outer box foiled one side only
- C. insulation between boxes
- D. toppers to seal space between boxes.
- E. A tight-fitting lid with a glass window to let in sunlight and hold heat inside. As part of the lid a shiny flap, a reflector is propped up to bounce more sunlight into the box. When not in use it closes to cover and protect the glass.
- F. a prop to hold up reflector.
- G. Inside the box, heat from sunlight is absorbed by a black metal tray at the bottom and by
- H. dark covered pots which heat and cook the food.



II. **MATERIALS NEEDED:** Those used for the inner box and insulation must withstand high temperatures, be non-toxic, and not conduct heat readily (as metal does).

- Corrugated cardboard: 2 large boxes, 19" x 23" x 8 1/2" and 24" x 28" x 10". (or cardboard to make them) and several extra pieces. (see p.2) If you don't have enough big cardboard pieces you can overlap and glue together smaller pieces.
- Glass pane at least (20" x 24") and slightly larger than inner box.
- Glue - a pint of water-based whiteglue or carpenter's glue.
- Aluminum foil - about 75 feet x 12" wide
- Insulation - crumpled newspaper or clean, dry straw, rice hulls, etc. Must withstand high temperatures.
- Large tray thin metal (or foil covered piece of cardboard) for inside bottom. Paint top side with black tempura or high-temperature black paint.
- Dark cooking pots with dark lids.
- Stick or wire to prop reflector; also string or cord.
- Silicone caulk or papier mache (shredded paper soaked in water, mixed with glue).
- Tools needed: scissors or knife; bowl or flat pan to mix glue, brush or roller to spread glue.

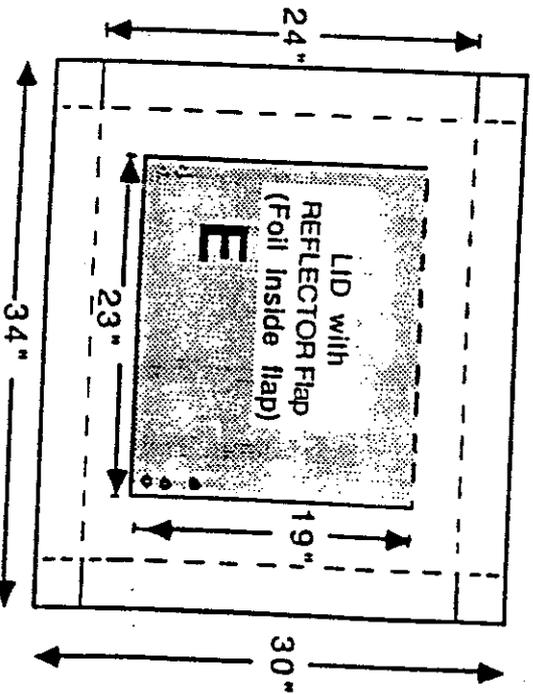


Cardboard Pieces for Solar Box

— Cull - - - - - Fold

▨ Foil one side ▩ Foil both sides

SCALE = 1/12



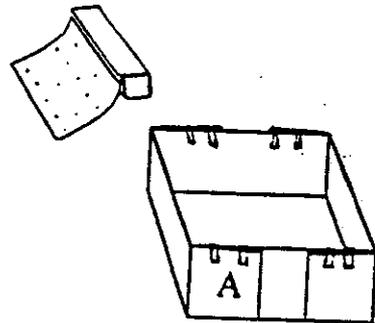
III. HOW TO BUILD YOUR SOLAR BOX COOKER

Glue foil thoroughly to toppers and reflector flap, to withstand wear and tear, using a mix of half glue and half water. On other pieces, foil can be just wrapped, taped, or spot-glued. Put shiny side out, and overlap foil edges slightly.

A. THE INNER BOX - Foiled both sides. Size is important; boxes smaller than those described will only cook small amounts of food, because they won't get enough solar energy.

Start with a box that is 19" x 23" x 8 1/2" or proportionally bigger. Cover any holes with cardboard patches, then cover BOTH sides with foil.

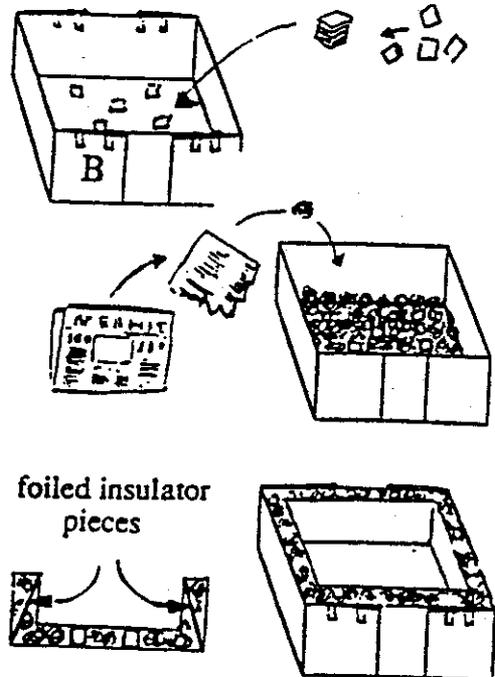
To make a box from flat cardboard box, see p.2 "inner box". It is easier to glue aluminum foil onto both sides after making creases for the folds but before shaping into a box. For straight folds, bend against some sharp, straight edge. Then, form the box using masking tape or full-strength glue, using clothes pins or weights to hold until glue is dry.



B. THE OUTER BOX - Foiled inside only. 24" x 28" x 10" or larger. It needs to be bigger than the inside box so that there is about 2 1/2" space between all four sides of the two boxes, and 1" + between bottoms. The outer box can be of material other than cardboard (such as wood). To build a box see "outer box", p.2.

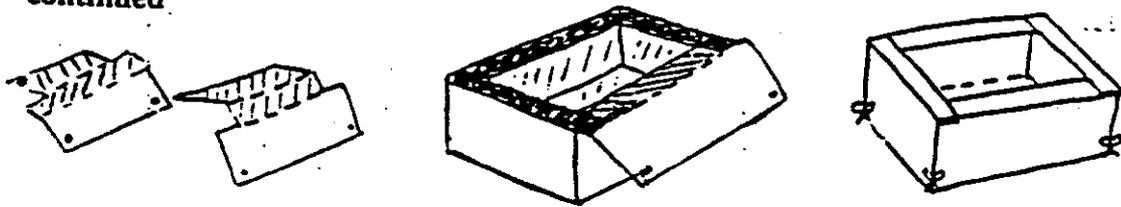
C. SUPPORTS AND INSULATION
First glue or tape small stacks of 2" cardboard squares to make 8 supports in bottom of outer box. Fill rest of bottom with small balls of newspaper or other insulation material. Then, place inner box so that there is 2 1/2" space between the two boxes, on each side.

There are many ways to insulate the sides. Crumpling newspaper is one way; a little crumpled newspaper with four foiled insulator pieces (see p.2) is even better. The bottom of each insulator piece is against outside box, and the top is against inner box, with crumpled newspaper in the spaces. Other clean, dry materials may be used, such as wool, straw, rice hulls. For hotter box add foiled layers. While cooking, a well-insulated cooker should not feel hot on the outside, except the glass.



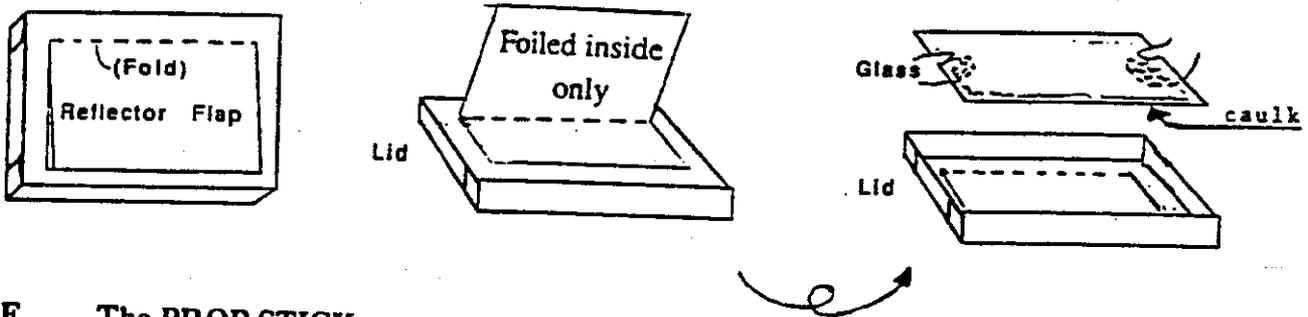
D. SEALING THE SPACE BETWEEN THE BOXES WITH TOPPERS: When all insulation is in you must thoroughly seal the top space between the two boxes with 4 cardboard toppers (see p.2). The two short and two long toppers are foiled on both sides just to outside fold.

D. continued



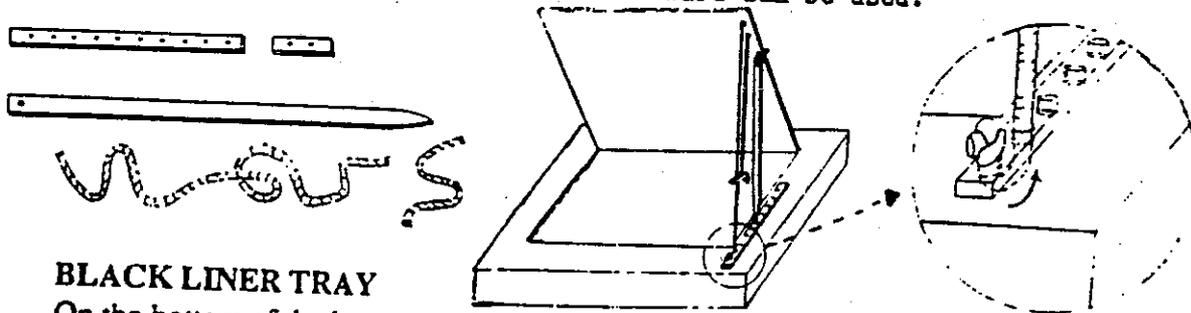
The four toppers fold to cover both the inside of the inner box and the outer side of the outer box. If you tie the toppers at the 4 outside corners of the cooker you will be able to take your cooker apart again for teaching or demonstrating to others. If you plan to use your cooker only for cooking, toppers can be glued in permanently.

E. The LID with REFLECTOR FLAP can be made several ways, but must provide a snug-fitting seal. After a basic lid is made, cut three sides of an opening that will frame the glass "window". Fold back the flap created from the 3 cuts and foil its inside surface to make the reflector. Put silicone caulk or papier mache around edge of glass on one side. Then press glass onto inside of lid so that there is a complete seal all around.



F. The PROP STICK

This shows just one way to prop up the reflector flap to reflect sunlight into the box. The pointed stick is tied to the flap and its free end is set in one of the holes in a stick glued to the lid. The string, which is anchored to the lid, then looped through the corner of the flap and back to the little stick, is tightened to hold the flap. A simpler prop can be made by notching a stick at both ends and tying with strings, or stiff wire can be used.



G. BLACK LINER TRAY

On the bottom of the inner box place a black thin metal tray. It catches spills and also draws heat to the cooking pots. A cardboard piece covered with aluminum foil painted black will work.

H. DARK COOKING POTS WITH LIDS

It is important to use dark pots with dark, tight-fitting lids. Metal, black enamelware, ceramic, or brown glassware work well.

The final step before cooking food for the first time in your new solar box cooker is to let it heat empty in the sun for several hours to be sure all paint and glue is dry and won't give off fumes.

IV. TIPS FOR COOKING AND BAKING WITH A SOLAR BOX COOKER

1. **GET IT ON EARLY, DON'T WORRY ABOUT STIRRING, BURNING OR OVERCOOKING.** The cooker works best when the sun is high in the sky.* It is hard to overcook foods; you don't have to be around when they are ready to eat. Several hours more in the cooker won't hurt most foods; meats just get more tender. Foods won't burn, so there is no need to stir or check on them until you are ready to eat. Also you can close the reflector flap on the glass and put a blanket over the cooker to keep food hot longer. Foods will cook if there is at least 15 minutes of sunshine each hour.

* Daily all year in tropics; 6 warmest months in temperate zones

2. HOW MUCH WATER TO ADD?

The normal amount of water is added to dried foods such as beans, rice, maize, quinoa, millet. No water is added to fresh meat, fish, chicken or fresh fruits and vegetables such as potatoes, beets, carrots, squash, yams, apples. They cook in their own juices, making them even more flavorful.

3. HOW MUCH TIME WILL IT TAKE TO COOK?

This will vary with the total amount of food (more food will take longer to cook), types of pots used, the amount of sunshine available (whether it is partly cloudy), and the types of food.

EASY-TO-COOK FOODS

In good sun - 2 hours

white rice
chicken
fish
most fresh vegetables
millet
quinoa
barley
cakes

MEDIUM-TO-COOK FOODS

3 hours

maize
brown rice
potatoes
lentils
beans (blackeyed)
apples
baking bread

HARD-TO-COOK FOODS

4-5 hours

dried beans
(red, pinto,
kidney, black)

dried split peas
large meat roasts

4. NEED TO MOVE THE BOX TO FOLLOW THE SUN? No, unless:

- the day is more than half cloudy or
- the sun is at a lower angle (higher latitudes, winter months) or
- you want hotter temperature - for baking, for example or
- for cooking a larger quantity of food.

Usually you just face the cooker so that halfway through the cooking time the cooker will be facing the sun most directly.

5. REMEMBER - POTS INSIDE THE COOKER GET HOT. USE POTHOLDERS. And when lifting lid, be careful of hot steam.

6. **DON'T LEAVE COOKER OUT IN THE RAIN. COVER IT WITH A TARP OR MOVE IT INSIDE.** If your cooker gets wet inside or out let it dry ... with the lid off. After cooking, wipe moisture off inside of glass and/or leave lid off so inside of box dries out.

Some people paint the outside box if it is cardboard, or cover it with contact paper to protect it. Cardboard solar box cookers have been known to last ten years and more. As long as any holes are sealed and you from time to time patch torn places in the aluminum foil your cooker should serve you for many years.

V. JOIN THE SOLAR BOX COOKERS INTERNATIONAL NETWORK

Solar box cooking has been used regularly for over ten years in several parts of the world, and new uses are still being discovered. Try everything, and let us know what you learn so that we can share new discoveries with others around the world. Please tell us problems you encounter and how you solved them if you did, so we can share that knowledge.

You can also help us spread information about solar box cooking to millions of people in sunrich parts of the world who now spend countless hours gathering scarce wood for cooking fuel. Please join SOLAR BOX COOKERS INTERNATIONAL with a tax deductible donation.
THANKS!

5/89

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Recipes Used at
Town & Country '86
Open House

ESCALLOPED CARROTS
(Serves 6)

10 medium size carrots pared & sliced	2 tablespoons margarine	1/8 teaspoon celery salt
1 medium onion, chopped	1/2 teaspoon salt	1 cup milk
3 tablespoons flour	1/4 teaspoon dry mustard	6 oz. sliced cheddar cheese
	1/8 teaspoon pepper	3 tablespoons bread crumbs

Cook carrots until slightly tender and drain off any excess liquid. Saute' onion in margarine 2 or 3 minutes. Stir in flour, salt, dry mustard, pepper, and celery salt; then blend in milk and cook, stirring until smooth. (1/4 cup of the excess liquid can be added to this sauce for extra flavor and nutrients.) In a one quart casserole, arrange layers of carrots and layers of cheese. Repeat until it is all used up. Pour sauce over all. Sprinkle with crumbs and bake at 350°F for 25 minutes. This casserole provides Vitamin A and calcium.

Zucchini Bread
(Makes 2 loaves)

1 cup sugar	1 cup salad oil	1 tablespoon cinnamon
1 cup brown sugar	1 tablespoon vanilla	1 teaspoon salt
3 eggs	3 cups flour	1/4 teaspoon baking powder
2 cups zucchini, grated	1 teaspoon baking soda	1/2 cup chopped nuts

Combine the first six ingredients and mix well. Combine the dry ingredients and add to the first mixture. Stir just until flour is blended. Bake in two greased bread pans at 350°F for 50 to 60 minutes. Cool 10 minutes before removing from pans. This bread will provide some protein, Vitamin C and Vitamin A.

Caramel-Nut Crispies
(Makes 4 1/2 dozen)

1 3/4 cups sifted all-purpose flour	1/2 teaspoon salt
1/4 teaspoon baking soda	3/4 cup margarine
1 cup brown sugar, packed	1/2 cup nuts, chopped
1 teaspoon vanilla	

Preheat oven to 400°F. Sift together flour, salt and baking soda. Melt margarine in saucepan over low heat, cool to lukewarm, stir in brown sugar, nuts and vanilla. Add the dry ingredients and mix thoroughly.

Divide the dough in half, shape into two rolls 8 inches long. Wrap in waxed paper or aluminum foil, chill at least one hour. Cut into 1/8 inch slices; place on ungreased baking sheets. Bake about 5-8 minutes until delicately browned. Cool for one minute, and remove from baking sheet. This dessert cookie is high in fat and carbohydrate with a small amount of protein.

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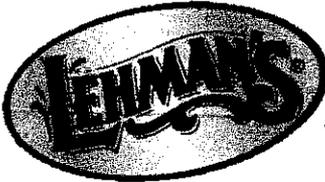
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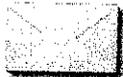
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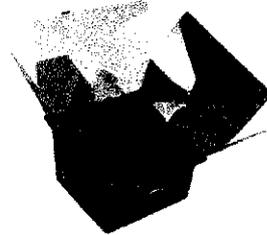


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In fact, Lehman's is so well-known for their extensive collection of practical, historically accurate hand tools, toys, non-electric appliances, kitchenware, oil lamps, and water pumps, that they are often called upon by Hollywood set designers to provide authentic products for period pieces. Big pictures such as "Cold Mountain" with Nicole Kidman; "The Debators" with Denzel Washington; "Open Range" with Kevin Costner; and "Pirates of the Caribbean" with Johnny Depp all turned to Lehman's for the perfect set dressing.

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