

Solar Battery Charger for Flashlight Size Batteries (AAA, AA, C, D)

If you are camping, or if the electricity is off while you are at home, then flashlights, or battery powered lanterns, are really nice to have. If you purchase rechargeable batteries, then you can recharge your batteries using the sun if you have a solar battery charger.

This article will discuss the following three topics:

1. My personal experience with three different types of solar battery chargers,
2. What the meter on the recommended solar battery charger actually does, and
3. A few suggestions on how to use a solar battery charger.

If you are interested in some basic information about solar power, then please click on this link:

<http://www.grandpappy.info/wsolar.htm>

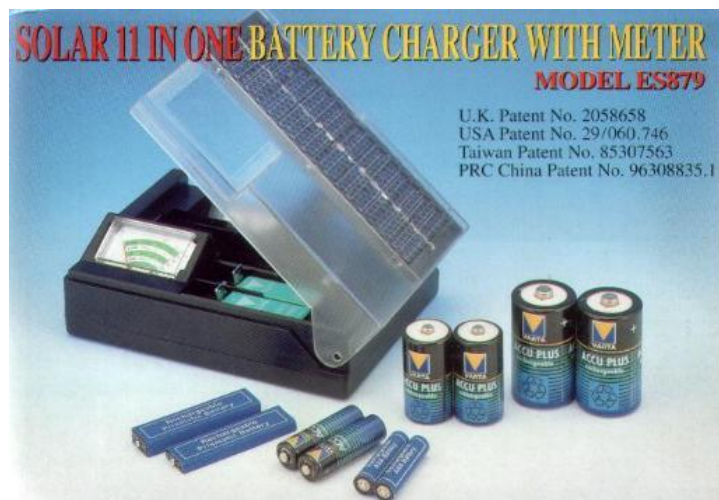
If you are interested in a solar radio with a manual hand crank, then please click on this link:

<http://www.grandpappy.info/wradio.htm>

An Affordable, Flexible, and Well Built Solar Battery Charger

In 1999 I purchased three different Solar Battery chargers. Since then I have used each of them several times in an effort to determine which type of charger and which type of rechargeable batteries work best.

In my opinion, the **Solar Eleven-in-One Battery Charger with Meter** is the BEST of the three solar chargers I experimented with. The Eleven-in-One Battery Charger can be purchased at any one of the following internet stores:



<http://www.cetsolar.com/chargermeter.htm>

<http://discoverpower.com/shop/item.asp?cID=32&PID=159>

The **Solar 11-in-One Battery Charger** has a hinged solar panel. This allows you to adjust the angle of the solar panel to match the position of the sun in the sky. And it has a meter that shows when you have the solar panel at the OPTIMUM angle for recharging your batteries. The meter eliminates the guess work of whether or not you have the solar panel at a good angle. Just keep changing the angle of the solar panel until the meter needle reaches its highest point and then starts going in the opposite direction. (NOTE: If you wish, you can check the meter in about 2 hours when the position of the sun has changed, and reposition the solar panel to continue to use

the sun in the most efficient manner. However, the solar charger will still continue to recharge your batteries even if you don't adjust the angle of the solar panel.)

The **Solar 11-in-One Battery Charger** will recharge the four most common size batteries, including AAA, AA, C, and D. However, it will NOT recharge a 9 Volt battery.

The **Solar 11-in-One Battery Charger** will recharge both Ni-Cad (Nickel-Cadmium) and Ni-Mh (Nickel-Metal Hydride) batteries. My personal experience with both types of batteries is as follows:

AA Rayovac Ni-Mh - First place (highest initial charge and held the charge for the longest time).

AA Energizer Ni-Mh - Second place.

AA Radio Shack Ni-Cad - Third place (lowest initial charge and fastest discharge).

I used a SEPARATE volt meter to measure the initial charge, and to check the charge over time. (The meter on the above solar panel will NOT show you how much power you have in each battery. It will only show you how efficiently you are using the sun to recharge your batteries.)

When I refer to the discharge time, I am referring to how long the battery will keep its charge in an UNUSED condition, waiting for an emergency need. The Ni-Cad batteries do NOT keep a full charge very long.

It takes approximately 5 hours of direct sunlight to recharge two AA 800 mA batteries.
It takes approximately 10 hours of direct sunlight to recharge two AA 1600 mA batteries.

The more power your battery is able to store, the longer it takes to restore the battery to a FULL charge. All AA batteries are not created equal. That is part of the reason for the price difference between batteries.

It takes more time to recharge C and D size batteries, and it takes less time to recharge AAA batteries.

The Meter on the Solar 11-in-One Battery Charger

There is a meter on the solar charger. That meter will show you the MINIMUM amount of time required to recharge TWO fully discharged batteries based on the angle of the solar panel in relation to the sun, and the current intensity of the sun. If your batteries are NOT fully discharged, then it will take less time. And as the position of the sun changes in relation to the angle of the solar panel, it will take more time. And if small clouds occasionally block the sun, it will take more time. Therefore, the meter will only give you an approximate amount of time for fully charging each of the different size batteries (AAA, AA, C, and D).

Therefore, I use a SEPARATE volt meter to periodically check the charge on my batteries so I can remove them from the charger when they are close to a full charge. You can purchase an

inexpensive DC volt meter at almost any store that sells batteries and basic electrical items, such as wiring, extension cords, surge protectors, etc.

Suggestions on How to Use a Solar Battery Charger

Batteries are NOT designed to be left in direct sunlight for an extended period of time. They will overheat and start to leak and you will get some very nasty stuff on the inside of your solar charger. Batteries react to the sun the same way your skin does. If your skin is exposed to direct sunlight for too long, you get a very painful sunburn (or worse). To avoid the sunburn, you could sit in the shade. Therefore, the simple solution is to put a white cloth over the batteries, between the batteries and the solar panel, which is on a hinge. Then elevate one end of the white cloth with a short stick or piece of plastic to allow the batteries to breathe. (Don't use a piece of metal which could fall into your charger and possibly short it out.) You do NOT want to create an oven by completely covering the batteries. You only need to provide shade for the batteries so they do not overheat. This is absolutely necessary in the summer. And it is also necessary, even in the winter, if the sun is exceptionally bright.

The charger will work on any two batteries of exactly the same size, at the same time. You do NOT want to mix two batteries of different brands at exactly the same time, if possible. And it is not a good practice to try to recharge two batteries that are not equally discharged. Therefore, I normally allow my batteries to get very close to a full discharge before I stop using them. Then I can safely place them in the solar charger and they will receive an equal charge on each battery.

Based on my past experience, it would probably be wise to invest in several rechargeable batteries of the same size. That way you would always have spare batteries while your discharged batteries are in the solar charger. And there will probably come the day when some emergency situation demands your complete attention for an extended period of time, and you will cook a set of batteries. Therefore, it is nice to have spares. It is also nice to have a spare solar charger in the event the battery fluids get all over the inside of your charger and it is damaged beyond repair. The solar charger recommended above is probably not outside the budget of most families, and most families could probably afford to buy two, or more, of them. That decision is up to you.

You might also consider purchasing two or more different brands of rechargeable batteries. For example, you might buy 8 Rayovac and 8 Energizer (or whatever). This would be an example of not putting all your eggs in one basket.