

## **How To: Build A**

### **6 Gallon Plastic pail 12/24 volt water heater**

**Wow - HOT WATER FOR FREE - how to build a 12/24 volt hot water heater from a plastic pail for cheap, cheap, cheap.**

**We show you how to run direct from solar panels to the heating elements or how to run your Charge Controllers dump cycle directly into your hot water tank, so this way no energy is ever wasted.**

**Best of all, the heating element is only \$49.00 and the price of your hot water tank complete only cost about \$60.00 total. And once it's installed you will have tons of FREE HOT WATER when ever you have sun shine. And best of all you never have to pay another dime to the Local Power Company for HOT WATER.**

**FREE HOT WATER for bathing, dishes, cleaning what ever you need HOT WATER, you will have it on demand stored in your Plastic Pail Hot Water tank ready for you to use.**

**You can use a 6 gallon (food grade) plastic pail to build your water heater, just be sure to have your 12 volt (or 24 volt) heating element enter the side of the pail near the bottom,**

**below your water spigot so that way no matter how much water you drain out of it, your heating element will never be out of the water. So that way your heating element will not run dry and burn out.**

**Also, if you like you can take 1” wide strips of Styrofoam and glue them to the sides of the plastic pail to help insulate the “water heater”. You also can sit the plastic pail on a sheet of Styrofoam and cut a circle around the bottom to insulate the bottom, just glue it onto the bottom and your done.**

**You may also want to spray paint your new water heater tank flat black to cut down any growth that may result from too much light in the tank.**



Note the spigot already installed on the side above the heater element, you drill a  $\frac{3}{4}$ " hole and install the spigot with a washer on the inside and the outside of the pail.

And also note the Aquarium sealer is used to seal the threads, gasket and nut as the nut is not stainless steel and will corrode if water gets to it as Aquarium is non-toxic when it cures.

See the 12 volt heating element plus the rubber gasket and the 1" conduit nut to hold the heating element in place inside the plastic pail. Also note the 1" hole drilled down low and to the side of the spigot, you install the heating element hole in the plastic pail on what ever side your charge controller is located on and you need to keep your wire run under 3 feet and to use heavy cable to run to the heater element and back. The 12/24 volt water heater element has no marked + or – so which ever terminal you use for + is ok to use.

Also note the nut that holds the heater in place in the water tank is a 1" NPT Conduit nut that was bought at Lowe's



Note: here is a look inside the pail with the 12 volt heating element installed, with the rubber washer and then the 1" conduit nut holding it all in place and then you apply aquarium sealer make sure it is amply applied inside and outside. The 1" conduit nut is NOT stainless steel and will rust, so you will want to apply liberal amounts of Aquarium sealer to seal this nut from any moisture that can get to it. You may need to use sand paper to rough up the plastic pail inside and outside around the 1" hole so that way the sealer will stick to the plastic pail. (When using a 12 or 24 volt water heater element you will not need to ground the heater element).

### **WARNING/DANGER**

(DO NOT attempt to install a 120 volt heating element in a plastic pail as there is no thermostat to shut the power off when the water

gets hot and injury, fire, explosion and even death may result, DO NOT DO IT)



Be careful when attaching wires to the heating element as you do not want to break the seal formed by the Aquarium sealer. Also note how we goop on the aquarium sealer. The reason you use Aquarium sealer is regular silicone has chemicals in it that can leach into your water, so don't be cheap, USE Aquarium sealer. After the Aquarium sealer dries thoroughly you disconnect your solar panels and disconnect your wind turbine, so you can hook up

your dump wires from your resistors and have them go into your new 12 volt water heater.

You can find 6 gallon food grade plastic pails on Ebay

**WARNING/DANGER** Be sure to use **ONLY** a 12 volt or 24 volt heating element as per your system. (NOTE: These plans are **NOT** to be used with a 120 volt heating element as death, injury and/or fire can result from not being installed or grounded properly.) **IF** you try these plans with a 120 volt heating element we will **NOT** be held responsible for any damages to property or person or death (**you were warned**). Also be sure to keep water in your water heater at least enough to cover the heating element so that way it will not burn out if the water level gets to low.

(NOTE: We use a Missouri Wind & Solar charge controller that has 600 watt resistors to dump into when the batteries are full) What you are doing is by-passing the resistors and having the dump cycle dump into your new 12 volt 600 watt water heater instead.

**Here's where you can buy a Missouri Wind & Solar Charge Controller and 12 volt water heater elements:**

**Missouri Wind and Solar**

**332 Cobble Stone Dr.**

**Seymour, MO 65746**

**Ph. 417-935-2260**

**Or 417-935-2145**

**On the web at:**

**<http://mwands.com>**



**If you want to run your solar panels directly into your Water Heater element that is easy, but remember you buy the elements by how many watts you are running into them. (If you have a 400 watt water heater element you will need 4 – 100 watt solar panels) These panels need to be wired so that the voltage coming down to the heater element is still 12 to 17 volts (NOT 48 volts or 68 + volts) The way to do this is run two cables and red and a black cable to your solar panels. Attach each solar panels Positive cable to the RED cable and each Negative cable to the Black cable. This way the power at the other end of the cable will still be only 12 to 17 volts (NOT 48 volts) but when you do this you increase the wattage to 400 watts. You can buy the water heater elements according to the wattage you need, 100 watts, 200 watts, 400 watts etc. Just be sure to run the correct wattage into your heating element. You also would not want to run 600 watts into a 100 watt heating**

**element, see what I mean? Also it should be obvious that using a 100 watt heater would make a little hot water but a 400 watt hot water heater element would make a lot more hot water and faster. I use 600 watts of solar panel power to heat 2- 400 watt water heater elements and I make such hot water you can not stand to put your hands in it and that's only after about 4 hours of sunlight. And that is ONLY made with diverted power that is diverted away from the batteries during charging of the batteries.**

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### **How to Insulate the Plastic Pail Hot Water Heater**

**Buy a sheet of Styrofoam insulation from Lowes and cut it into 1" wide strips that will run from the top of your plastic pail (with the lid off) and use silicone to glue the 1" strips of Styrofoam to your pail where you run into the spigot or heating element you will work around these. St make sure the glue sticks to your plastic pail you may want to take sand paper and rough up the sides of the pail so the silicone will stick. When you are finished you will have an Insulated Hot water plastic pail tank. As for the lid and bottom, just place the lid upside down on the sheet of Styrofoam and draw a circle with a marker and then cut it out and glue it to the top and do the same for the bottom of your heater.**

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### **Other 12 volt DC Water Heater info**

**A 12 volt water heater, heats water with your waste electricity from your solar panels diverted by your (Missouri Wind & Solar) charge controller to the 12 volt electric water heater element for free hot water. With these plans you would just swap the 120 volt AC heating element for a 12 volt DC heating element and your ready to go with hot water. (One note with**

**the 120 volt AC water heating element they have photos of about 5 steps on how to build a grounding ring out of copper, with the 12 volt heating element you will NOT need the grounding ring, so that takes half your work out of this project to make it 12 volt DC verses 120 volt AC).**

**<http://www.wortomatic.com/articles/The-Electric-HLT->**

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