

Subject: After a PS what does one need to know about Lead Acid Batteries and charging.

Plan on using some amount of 12 volt DC (direct current flow) for home base power. The best batteries (most economical in the long run) to purchase before a PS are listed in order of preference as:

- 2 VOLT SEALED GEL CELS (rated to last 20 years)
- 6 VOLT golf cart batteries (use two in series)
- 12 volt marine service with open terminals for each cell
- 12 volt for cars batteries (these have thin plates and don't last anywhere near as long as above)

Avoid purchasing used batteries. Reason, the internal leakage is already too high for the amount of recharging power one is likely to have in a survival situation. Used batteries are not cost effective going into a survival situation. Why to avoid used batteries - internal leakage becomes high - power to charge and keep it charged is high.

One simple way to protect your car battery during the Pole shift is to put it in a water proof plastic bag and bury it about a foot or so deep in the ground with a colored floatable rope that is about 3-5 ft long above ground. If you leave it in the car it is likely to blow away with the car or burn up when the meteorite showers hit.

Battery basics: A cell is a collection of plates connected to a single positive and single negative terminal immersed in electrolyte contained in a single Jar. A battery is two or more cell connected together, usually in series so that the total battery voltage is equal to the sum of the cell voltages. Typical cell voltage is about 2.2 volts or for 6 cells making a so called 12 volt battery at a maximum when fully charged of 6 times 2.2 = 13.2 volts. At a voltage below 11.5 volts the amount of stored energy is low so this can be considered when battery is discharged.

Specific Gravity:

Cell chemistry:

If you have a 12 volt battery that loses a cell what can you do? Typically a cell will begin to leak internally from negative plate to positive plate until it will not hold a charge for very long. Look for a bulging case that would indicate sulfation building up enough to cause the budge. If this is the case one can drain the cell and put distilled water in it and charge the cell slowly after sitting for one hour at 4 amps for auto size battery.

Sulphate is converted into sulphuric acid as it charges and the current is adjusted to keep it from going too high. Keep the temperature below 110 degree F by shutting off the processes as needed. Keep a slow charge going as long as the specific gravity keeps rising. After the gravity stops rising empty out the electrolyte and replace with fresh solution. This will not work with all batteries.

If it doesn't work then plan to use the remaining cells and short out the one that bad. The best way is to bypass the cell by shorting it with a jumper. If the terminals do not show above the top then one can open the battery acid add hole and bride the plates by screwing a wood screw between them into the separator. Another way is screw a wood screw through the top plastic or tar into each of the terminal posts and run a jumper wire between.

The remaining battery instead of ranging from the typical 13.2 volt full charge to 11.5 volt discharged becomes an 11 volt charged to 9.6 volt discharged unit. This is plenty for running LED Lighting. Just don't plan on charging this battery in parallel with a good 12 volt battery. It will kill the good one. Set this 10 volt battery aside as a special purpose battery.

Do not leave a battery discharged for a long period of time. The sulfation will turn to hard crystals that will not redissolve when charged. The battery will be called permanently sulfated.

Max charging rate  $\frac{1}{2}$  to  $\frac{1}{5}$  of amp-hour capacity. 100 amp-hour 20 to 50 amps.