How to Converting a lead acid battery to an alkaline battery Part Two.

By the use of Epsom Salt.

1st. This only works on a Lead Acid Battery that has been used. The reason for this is that a used battery has deposits on the plates formed by charging and discharging (called sulfation) and it is this deposit that allows the chemical reaction needed to create a charge. I recommend the use of Epsom Salt on Sealed Lead Acid Batteries primarily because the SLA's usually have a glass matt or gell material between the plates. The electrolyte (sulfuric acid) is suspended within the glass matt or gell material and it is almost impossible to remove the electrolyte or rinse out the cell.

2nd. This will not work on a battery that has a cell or cells shorted out unless the short was caused by sulfation and the short can be removed.

3rd. If you are converting a flooded lead acid battery go to step #7.
If you are converting a sealed lead acid battery go to step #4.

4th. Remove the top plastic plate carefully by inserting a blade under the plate at one of the vent holes and carefully prying it up. (they are very small and hard to see) Be very careful when prying this plate up as it could break.

5th. You will see 6 rubber caps (in a 12v battery) which need to be removed in order to view the cells etc. Store these caps carefully (use a plastic container) as they will be reused. Note also the small groves that run to the sides of the cover plate and between some of the cells. These are venting groves and need to remain intact to expel gasses caused by charging. The size of the 6 holes you uncover is quite small.

6th. You should decide if you can use this hole to add the Epsom Salt solution, or if you are going to drill another hole and where to drill. If you do drill a hole you will have to fill or cover it once the process is finished. Remember not to drill on the vent groves. Rubber plugs would do the job but you will need to match them to the size of hole you drill. Be careful with drilling these holes as the cells are not that large and you don't want to create a short between the cells. An eye dropper will fit into the original opening and can be used to add the solution remember you want to add the solution slowly anyway. A drug store will sell these, my 2 eye droppers cost me only $1.50 for the pair.

7th. Remove a couple of ounces of electrolyte from each cell in a flooded lead acid battery. With the SLA's you will not be able to do this.

8th. The ratio for your Epsom Salt to distilled water will be the same for both types of batteries. The only ratio I can give you is best described by the gentleman who was

successful with the battery on the next page. You will be able to purchase Epsom salts from your drug or grocery store perhaps even Wal-Mart.

Battery: Die Hard deep cycle rv/marine # 96493
starting : surprising when tested I got 7 V. all cells were very low with parts exposed above the electrolyte.
1: topped off cells with distilled water.(noticed what looked like metal flakes floating in the top of each cell.
2: checked voltage still had 7V.
3. charged on 6 amp setting on the charger for 1 Hr (no signs of bubbling in the cell)
4. checked voltage had just under 12V. would not load test with 55w. lamp
5. added 1 tsp of Epsom's salt to each cell and charged 1Hr @ 6A. **First charge**
6. got out my good Fluke meter and checked and found 11.89V. load tested with 55 W. light and found it took 15 minuets to draw down to 10V.
7. added 1 tsp of Epsom salt to each cell and charged 1Hr @ 6A. **Second charge**
8. checked voltage and had 12.1V. Load tested same as before and it took 51 minuets to come down to 10 V.
9. charged 1Hr then checked voltage and it went up to 12.4 **Third charge**
10. load tested same as before and it ran 1Hr 7Min. to 10V.
11. charged 1Hr and load tested 1Hr 10Min. **Fourth charge**
12. charged 1Hr 30Min then load tested 1Hr 27Min. **Fifth charge**
13. charged 2Hr and load tested to 2Hr 7Min. **Sixth charge**
14. ah ha starting to see a pattern. While I watched the clock and the volts I noticed a chart on the end of the battery which had amps related to running hours. at the rate my battery charger charges it will take about the same amount of time to charge as discharge with the 55W. light the battery is rated at about 13 hrs with the 55W. light that means it will take my battery charger from 10 V. to full charge about 13 Hrs.

9th. So as you can see this man used 2 tsp of Epsom Salt per cell in a flooded LA. The amount of distilled water added was about ½ cup which is a very saturated solution. I added 3 tsp to 1 cup of water heated up to 100 degrees F. to aid in dissolving the salt in the water, the ratio was too high in Salt (it would not all dissolve) so added ½ cup of water and all the salt dissolved. Perhaps a higher temperature would have dissolved the salt. I suggest you add the water and salt solution together into each cell to ensure a better saturated electrolyte to start with.

10th. Add the solution:
In your flooded LA pour solution into your battery cells and fill to the proper level.
In the SLA batteries by eye dropper through the existing opening, or if the hole you drilled is large enough use a funnel. Be careful when adding to the SLA not to cover the material too much because any air in the matt or gell has to escape and does so slowly. With the SLA battery you may have to add the solution a number of times because it will take time for the solution to be absorbed into the material between the plates. Wait before

charging your SLA's until the Matt or Gell looks wet but let it sit for a while to be sure, the longer the better.

11th. Charging step:
With both LA's and SLA's the charging process is the same as with an Alum converted battery and similar to the charging and discharging cycles the gentleman did with his deep cycle battery above (It is a flooded battery). As you can see from the steps he described he cycled (charged and discharged) the battery 6 times but did not increase the time on the charger till the last two cycles. The result was a battery that only charged to 11.98v but would not light the lamp before conversion and was up to 12.4v after 3 one hour charge cycles and was delivering 1 hr on the 55w lamp. Had he charged an additional ½ hour each cycle I wonder what his results would have been by the sixth charge?
Please remember a flooded LA has a different charging logarithm than a deep cycle battery and an SLA battery. You will need a car type charger for the LA that charges at full amp rating until the battery approaches full charge then the current (amps) drops to what the battery will accept. When the battery is fully charged the battery charger automatically switches to a trickle charger or should. A car charger will charge up to 13.8v.
SLA's and Deep cycle batteries need a 3 stage charger that charges up to 14.4v, with lower current (amps) than a car charger, in the following manner. Full current till battery is 90% charged. Then it switches to the top up stage where the current (amps) is what the battery will accept. Once the battery is charged to 100% the charger switches to a trickle charger.
All 3 battery types can be charged with your car charger but will not reach full charge if not a car type battery.

Not sure of this but I believe that an Epsom Salt converted battery will yield the same result and characteristics of an Alum converted battery.

Thanks to the people who have converted batteries and contributed the above information.