

Converting a lead acid battery to an alkaline battery.

1st. and foremost. 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 these deposits that allows the chemical reaction to create a charge.

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. (will explain method to remove later)

3rd. Remove all the electrolyte (store in plastic container be careful you are working with sulfuric acid) Please wear protection. Wash with lots of water if electrolyte splashes on skin or eyes. If you let this sit overnight you can filter any particles out and you will be left with sulfuric acid to use to top up your other lead acid batteries.

4th. Add water to cells and agitate battery (to avoid spills or splashing replace caps) then pour into a different plastic container. Repeat this step until you are sure there is no more acidic water or deposits being poured from the battery into your second plastic container. Be sure to get any deposits that have fallen off the plates during the rinsing phases.

Adding baking soda to this 2nd plastic container will neutralize the liquid. Let the mixture in the 2nd container sit overnight and any deposits will sink to the bottom. Once you are finished you can filter out the deposits and dispose of the water and deposits safely.

5th. Materials required: Distilled water and Alum. There are many types of alum but apparently cooking alum works best. Found in the grocery outlets spice section and used for pickling cucumbers to keep them firm.

6th. Ratio. This is an area where I am unsure of the best ratio. Some people are using a ratio of 1 part alum to 40 parts distilled water others 10 grams of alum to 1 gallon of the water. Better results were obtained with the higher ratio of alum.

7th. Fill the battery to the recommended level for your battery.

8th. Charge the battery for an hour then discharge (hook up a car headlight or any 12v draw (if that's the battery voltage). Record voltage after charge and discharge.

9th. Repeat step 8. Increase your charge times ie. 1st charge 1 hr. 2nd charge for 1½ hrs. 3rd charge for 2hrs etc. Cycle (charge/discharge) about 10 times or until your battery is between 12 to 13 volts. You will have to experiment with the Alum ratio if at first (after

10 cycles) there is no increase in battery voltage. After about 3 charges you should see some bubbles in your electrolyte. Don't forget to take those voltage readings.

10th. Start using the battery after you have given it a good long charge

Those are the steps to take using Alum and water as your electrolyte. It is no longer acidic. Your battery is now an Alkaline battery and is ready to be used as a starting battery or a deep discharge battery.

Although I have called it an Alkaline battery this might be a misnomer so perhaps I should refer to it as a converted alum battery.

As promised in step 2. Here is one method of removing a sulfation short in the cells. This is only recommended for a flooded lead acid battery as in a car. It will either kill the battery or cure the short. If the battery has a short it is dead anyway so why not try it. Hold the battery 10 to 12 inches from a solid surface (like cement) and drop it, with the acid still in it and the tops on, so that it lands squarely on its base 3 or 4 times, then test the battery. Vigorously shake the battery after each drop. Repeat the drop and shake about 3 or 4 more times and test again. If after 9 to 12 drops and shakes the battery is still shorted please drop off at a recycling centre. If the deposits are loosening and falling you can pour out the acid and debris as in step 3 and fill as in step 4 but before rinsing drop and shake and test a few more times. You will be the best judge as to whether or not your old battery can be used in the balance of this process.

You might experience lower voltage at full charge but the proof is in the application be it starting your car or running your e-bicycle/vehicle. Although I stated 10 cycles it will depend on how badly abused your donor battery has been as to the number of cycles it will require to bring it back to a useable Alkaline battery. Unlike a lead acid battery this one can be discharged completely and does not have to be recharged immediately after use, regardless of state of charge. Having said that I would not leave the battery sit uncharged in sub-freezing temperatures too long. There is a gentleman in Chicago that converted his car battery and he parks it outside with no adverse battery problems (battery freezing) He also states the battery cranks the car better than before the conversion. I am unsure of the condition of his battery prior to conversion.

This is still in the early experimental stage so please don't take this as absolute proof the process will work for you. You will also be experimenting with this process so any details, suggestions, and records of your voltages also the ratio of alum to distilled water you use will help every one of us. This process will not work on a new battery unless it has been cycled a number of times and there are deposits on the plates. Apparently this process can be repeated one more time after the initial conversion.

Points to ponder:

The conversion can double the cycle life of a lead acid battery.

The conversion makes your battery act like an alkaline battery.

The converted battery is not subject to sulfation.

The converted battery does not need to be charged after use.

The converted battery has a higher discharge capacity (unproven).

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