THE PRACTICAL HANDBOOK OF BATTERY TIPS & TRICKS

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INTRODUCTION

It is not always easy to get a battery to last for a while. Sometimes a battery for anything in your home can wear out and become harder for you to recharge.

Fortunately, you can get any kind of battery you have in your home to work for a little longer if used right. This guide will help you with understanding how to get the most out of various batteries in your home.

You will learn about how you can work with many types of batteries in your life. These include car batteries, batteries for your phone and even alkaline batteries. Many of these solutions are sensible but you should watch for how you handle these points.

Refer to this guide often when taking care of your batteries. You will be surprised at how well your batteries will work when you use the pointers listed here. By getting the most out of your batteries, you will get them to last for a while as you get a better value from them. You'll also avoid having to dispose of them and spend more money on new ones too often.

I. PROLONGING THE LIVES OF LEAD-ACID OR CAR BATTERIES

A lead-acid battery can last for about 100 to 200 cycles before it starts to lose its overall capacity. You must do what you can to use your battery responsibly so it doesn't lose its power too soon. This is important when you consider how long such a battery can last for.

A car battery is the most common type of lead-acid battery you can use. It can last for about three to five years on average. This is all based heavily on how you use your vehicle in terms of not only how it performs on the road but also how often you drive it.

There are many things that can be done to extend upon the life of such a battery. There's a chance that a battery could last for seven to ten years if you keep it running well.

USE A SATURATED CHARGE REGULARLY

A saturated charge is a full charge where more power is used on the battery at a certain time. This helps you to keep the battery operational as you use enough power to keep it restored and less likely to have its internal compounds solidify. This works

well if it is charged back up again.

You can use a saturated charge every few weeks on your battery. This is to allow the charge to stay functional and easy to handle.

CLEAN IT EVERY MONTH

As you use your lead acid battery, some corrosive materials can come about around the terminals. This occurs as the terminals will have used up far too much power at a given time. The extensive transfer of energy between the terminals can cause pressure and eventually corrosion.

There are a few steps that you can use every month to clean off the corrosion around the battery terminals:

1. Open the cover of your battery if applicable and check on the terminals. See if they have corroded in any way.
2. Mix one part water with about three parts baking soda.
3. Apply the baking soda and water mixture onto your terminals or other spots that have been impacted. The corrosion spots should soften and be easier to brush off.

4. Use a gentle toothbrush to brush off the materials.

5. Use a clean sponge or rag to clean up the moisture and residue that's leftover.

6. Allow the terminals to dry. Add a bit of petroleum jelly onto them so they will not be at risk of corroding again later on. A small amount should be good enough.

Perform this each at some point every month. This is to see that the battery is still healthy. Corrosive materials that stick around for a while and aren't cleaned off can weaken the terminals and keep the battery from lasting long enough.

CHECK THE CABLES

Your lead-acid or car battery will be attached to other features in your car or other large item through a series of wires. Check on how well the wires are built and that they are connected properly.

Your battery could be damaged if it is not connected right. It could bump around inside your vehicle or whatever else you house it in. It can also damage other parts of your vehicle.

AVOID USING ACCESSORIES BEFORE YOU START YOUR CAR

You might think that starting the air conditioner or heater inside your car before starting it up helps to get air out in the vehicle. This might seem beneficial in the winter as it takes a bit for warm air to come out of it.

But the truth is that your car battery will use too much energy if you turn on the heater, radio or other features before you actually start the car. While you use the battery to power up those

things, the alternator will have a harder time taking in energy and getting the battery recharged.

Remember, the battery is designed to actually start your car. Don't use any of these accessories before you start up the car.

It takes a bit of extra time to actually get the accessories started up after you start the car engine but it will be worthwhile as the alternator and battery will not feel a huge drain as you start it up.

WATCH FOR TEMPERATURE EXTREMES

Keep your battery in comfortable spots if possible. If you're out with your car during a really hot summer or chilly and frozen winter, keep your vehicle indoors if possible. Keep it inside a well-insulated garage if you can. While you are out, look for a parking garage where the temperature is a little more relaxed as you park your car.

Your battery will require more energy to actually start up your car if the temperature is too hot or cold. Make sure you keep your battery in a safe space where the conditions won't be too hard to handle.

On a related note, an insulating material like a sturdy battery blanket can be applied over it. You must see that it can fit well and isn't too bulky to where it will get in the way of other items nearby. This should ensure that your battery won't be at risk of overheating. It is not intended to be a replacement to common judgment with regards to keeping the battery from certain extremes though.

WATCH FOR MOISTURE

While a lead acid battery can be made with a sturdy body, you must watch for how moisture can get in the way. Keep your battery covered if possible so it won't be at risk of being harmed by rainfall. This is especially critical in polluted areas where the rain might be harmful. You must especially keep it from being hurt by snowfall, what with the cold conditions causing your battery to take longer to start up or more energy to make it work.

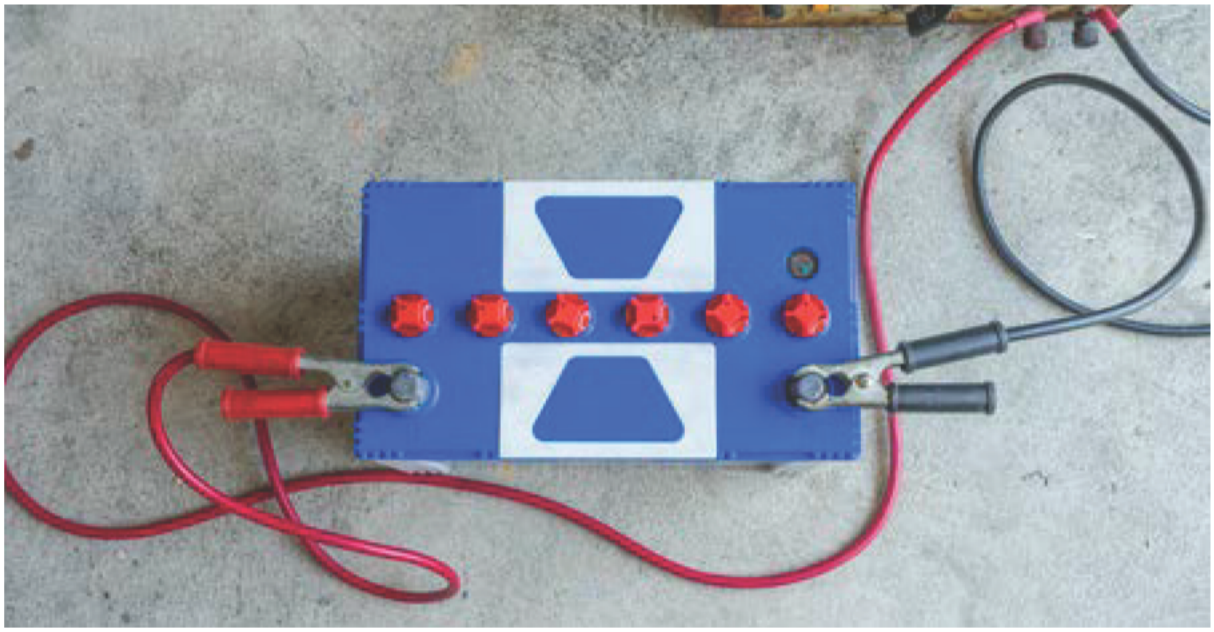
USE DISTILLED WATER TO REFILL YOUR BATTERY

You can use the water level meter on your battery to see how much water is inside it. You should also have access to a port that allows you to add water into it.

Only add distilled water into this part of the engine. This is a type of water that has been boiled while the steam is condensed into a separate container. This keeps any impurities in the water from getting in the way.

Don't reuse distilled water containers either. Only use fresh containers of distilled water when filling up the battery.

Make sure you watch for how well you're going to get your battery to work whether it's a car battery or another kind of lead-acid. Check on how it functions so you can get the proper coverage you demand.



II. EXTENDING THE LIVES OF LITHIUM-ION BATTERIES

Lithium-ion batteries can be useful for laptops, mobile phones and other tech items. These are made to work quickly to generate power and can be recharged as needed. These batteries could still experience problems where they aren't lasting long enough unless you take care of them.

Several things have to be done when keeping a lithium-ion battery working properly no matter what your battery is designed for. You must be careful when getting such batteries to stay functional.

USE SMALLER DISCHARGES

Don't assume that you have to use the entire battery space before you have to recharge it. A discharge to about 50 percent of your battery's power ensures that you will use enough battery power without risking the battery becoming too empty and developing crystal deposits that keep the battery's capacity down.

Small nanocrystals can easily build up in some empty spots around your battery if it is discharged too deeply far too often. This occurs as the electrodes cause the production of crystals

inside the battery that keep it from reading as much energy as you want it to have.

You can fully discharge it once a month though, as you will see a little later in this chapter.

AVOID A FULL CHARGE

Don't charge your battery up all the way either. Keep the battery charged at up to 80 to 90 percent at the most if possible. This improves upon how well the battery can be charged up.

On a related note, don't keep your battery plugged in if it's fully charged. Your battery's lifespan will wear out if it's kept plugged in for too long. This comes as the battery will use more energy than needed.

DISCHARGE ALL THE WAY MONTHLY

You should discharge the battery all the way once a month. When you use smaller discharges the timing for your battery can get out of control. This means that your device might have inaccurate displays on how much power you have left on it.

By fully discharging your battery once a month, you can reset the display timer and also help to keep the battery active. Of course, you should not overdo this as doing this more than

once in a month can make it easier for nano-crystals to develop in the battery.

KEEP THE TEMPERATURE DOWN

Keep your lithium-ion batteries from being exposed to hot conditions. The ability of your battery to restore a full charge will decline when you keep your battery stored in very hot conditions.

Keep the battery in conditions from 60 to 80 degrees Fahrenheit at the most. You could also store the battery in a cooler spot but just make sure the air is comfortable and that the battery doesn't get at risk of overheating.

A related point to watch for is to see that the device your battery is attached to isn't overused. Excess usage of a battery can cause it to overheat. This not only weakens its lifespan but also makes it likely to discharge faster.

III. IMPROVING YOUR NIMH BATTERIES

NiMH batteries are popular rechargeable options that can be used in a variety of applications in lieu of traditional alkaline batteries. These NiMH batteries do not suffer from memory effect problems like NiCd batteries that you'll read about in the next chapter.

However, NiMH batteries can suffer from voltage depression over time. This is a problem where crystals develop on the electrodes. This often comes when a battery is overcharged. This keeps the battery from being able to handle proper chemical reactions, thus reducing its voltage and overall lifespan. This especially comes as the battery thinks it is losing more power than what it is really using.

There are a few critical keys for using NiMH batteries that can work wonders for your needs.

DON'T CHARGE TOO LONG

Always remove your NiMH batteries from a charger when they are fully charged. If left for too long, voltage depression is more likely to develop. The added fatigue can be a real threat to your batteries if not used right.

AVOID COMPLETE DISCHARGES

Do not discharge your batteries all the way. You might think you're getting the most out of them but this will only make it easier for such batteries to wear out. This comes as the batteries will need more power during the recharge process. Try to discharge your batteries to about 20 percent of their power if possible.

AVOID HOT SPOTS

Don't keep your NiMH batteries in hot places. Such spots add pressure onto your batteries so they can discharge faster.

IV. WORKING WITH NICD BATTERIES

Nickel-cadmium or NiCd batteries can suffer from what is known as the memory effect. The memory effect occurs when a battery holds less of a charge over time. This keeps a battery from being able to handle the proper amount of energy over time. Fortunately, you can do a few things to expand upon the life of such a battery while keeping the threat of the memory effect under control.

DISCHARGE SUCH BATTERIES ALL THE WAY

Unlike other batteries you have read about in this guide, it is fine for you to fully discharge a NiCd battery. Failing to do this will cause the memory effect issue to become worse. You must do this soon when you run out of power in a battery.

KEEP THE BATTERY FROM STAYING DISCHARGED

Always charge up your NiCd batteries as soon as they are fully discharged. Crystals can start to grow inside them when they are discharged all the way. This in turn makes it harder for them to get the full charges that you want.

DON'T OVERCHARGE

You should not overcharge your NiCd batteries. Always remove them from a charger when they are fully charged up. This is to keep them from wearing out fast.

KEEP COOL

Always keep your NiCd batteries in a cool space. Don't keep them in spots where they might overheat. Excess heat causes the insides of such batteries to wear out. They may also discharge quickly on their own if they are too hot.

V. EXTENDING THE LIVES OF YOUR ALKALINE BATTERIES

There are often times when you can only work with alkaline batteries. While these are not capable of being charged up like other batteries like the ones you read about earlier, you can still get these batteries to last for a long time if you are careful with them. There are several tips that you can use to get your alkaline batteries to work quite well and for as long as possible.

CHECK INDIVIDUAL BATTERIES AFTER USE

Sometimes you might have a need to throw out all the batteries in an item when it goes dead. However, there are often times when one or more of those alkaline batteries are still functional.

A battery tester will help you to check on how well individual batteries are working in all your devices. You can order a tester and use its wires to connect to the opposite terminals on your battery. By using the proper setting based on the battery, you can get an idea of how much of a charge it is producing. This can help you see which batteries are still good to use versus ones that are dead and have to be disposed of.

Needless to say, you should still check carefully on how well your batteries are paired. Only use batteries with similar test readouts together. Don't try to add a new battery next to an older one or else you might be confused after a while over how well such batteries may work. You don't want to throw out a healthy battery just because it is next to an older one and you aren't certain about which is fresh.

USE THE SAME BRAND TOGETHER

Each alkaline battery is designed with its own individual features. Don't try to mix and match your batteries together. Use batteries from the same brand and format so you will have a consistent amount of energy to work with. This is also to ensure that the charge within your device is consistent all the way through.

LOOK FOR A VOLTAGE BOOSTER

A voltage booster can be used to take in as much energy from your batteries as possible. This is a material that helps you to keep your batteries active. A small booster tool can be plugged into a wall outlet and can read your alkaline batteries. As you use this, you will get the batteries to charge up quickly. This comes as any concentrated electrolyte bits in your alkaline batteries can be stimulated and ready to be used.

This is a helpful solution but it has a limited number of uses for each battery you have. You may want to test your batteries after each such charging.

VI. ADDITIONAL FUN BATTERY EXERCISES

You can do quite a few things right now to make your batteries a little more functional. This chapter displays a few exercises you can use with a variety of items right now.

CREATING A USB CHARGER OUT OF A CORDLESS TOOL BATTERY

A cordless tool battery can be utilized to help you charge up all sorts of devices through a USB port. This can work well for many lithium-powered batteries among others that work with a USB charger in mind.

A sturdy 5V cordless tool battery can be used to create a power bank with a USB port. Let's look at how you can make it work.

ITEMS NEEDED

- ¼ inch plywood
- A UBEC DC/DC step-down converter with a 5V@3A output
- A type A USB shell connector
- 22k, 20k and 6.2k ohm resistors
- A few hanging hooks
- Soldering tool

STEPS TO USE

1. Build a proper enclosure with the plywood. Make sure it is a good box that can fit the cordless tool battery. It should have a small opening for the USB connector.

2. Secure a few small hanging hooks inside the enclosure. This is to get the proper wires secured in a place so they will stay attached to the enclosure and the battery.

3. Solder the UBEC onto the hanging hooks. Watch for the positive and negative wires so they can go to the matching terminals. Get the wires to stay on the proper terminals within the tool battery and keep them secured after they are soldered.

4. Link the proper resistors around the USB pins. Keep the 22k resistor between the first and second pins and the 20 and 6.2k resistors between the third andfourth.

5. Build a voltage divider circuit to move the voltage down from 5V to 3V, an appropriate total for the USB charger. Solder your UBEC converter to the proper wires.

6. Add in a few holes on the sides to allow the battery to cool off. Don’t forget to see that the opening for the USB port is clear and easy to use.

CREATING A LAPTOP BATTERY CHARGER FROM A CORDLESS TOOL BATTERY

You can also repurpose your cordless tool battery to create a laptop battery charger. This can work for nickel or lithium-based batteries depending on what your computer uses.

ITEMS NEEDED

- A power tool battery; any voltage can work
- Separate battery charger
- Compatible laptop charger
- Multimeter

STEPS TO USE

1. Open up the laptop power supply.
2. Check the power supply with a multimeter to see that it uses a voltage compatible with the power tool battery.
3. Open the power tool battery. Remove the charging circuit.
4. Get the rubber grommet on the power cable off.
5. Add your power cable from the charger through the power tool battery.
6. Connect positive and negative wires as needed. A soldering tool may be required.
7. Reassemble all parts and then test it to see that it works properly.

CONCLUSION

It should be very easy for you to get more out of your batteries no matter what types you have. This guide should have hopefully assisted you in figuring out what works the best for any battery no matter what purpose you have for it.

Watch for how you store your batteries as well as how they are charged. Practice appropriate habits based on the particular types of batteries you have as well. This is to keep them from losing their charges.

Batteries can cost plenty of money and can be tough to dispose of. When you use the points you have read about in this guide, you will not have any problems with trying to get such batteries to work to your liking.