How To Start Building A Flashlight From Scrap

In the modern world, flashlights are very common, and therefore some of the most overlooked when it comes to a complete prepping plan.

Let's say you have stored away plenty of flashlights and rechargeable batteries, but what would you do if you won't be able to use it?

Do you know how to build a flashlight from scavenged parts, or develop something new once the most important parts become unavailable?

No matter where you wind up living in the post-crisis world, there will come a time when you can no longer rely on supplies and tools that you were able to stockpile. Even before that time happens, you and others are bound to wind up scavenging for items that can no longer be manufactured or are not available for other reasons. Once these "waste" materials are gone, you will wind up having to improvise.

That's why you need to know a few basic things before building a flashlight from scrap. Read this article to find out!

7 Basics for Your DIY Flashlight Project

There are many light sources that would never qualify as "flashlights" even though they may provide needed lighting. Therefore, before you start storing away parts that might be used to build a DIY flashlight, think about the following elements and how they contribute to the success or failure of a flashlight design:

1. **It must be portable**

Even though you can turn on a lamp, or use some other means to light up an area, flashlights are novel in the sense that they can be easily transported from one place to another.

If you cannot take a DIY flashlight into a basement or other area without wires dragging behind you, or other inconveniences, then your design will not be successful.

2. **Must be lightweight and compact**

Even though there are huge 9 volt lanterns on the market, most people still prefer the smallest design that produces the most light.

For example, even though LED flashlights are still on the expensive side, they are very popular because a tiny USB flashlight takes up less space and weighs less than other flashlights that put out the same amount of light.

3. **Must be energy efficient**

Today, many people are converting to small rechargeable batteries and solar chargers in order to save money on batteries for flashlights and many other devices. That being said, there are still many different flashlight bulbs on the market, and some require much more power than others.

4. **Must be easy to power or recharge**

There is nothing worse than turning on a flashlight, and then find out that the batteries are dead or very weak. While you may not be able to completely overcome this problem in a DIY survival flashlight, you should still be able to either recharge the batteries or find an alternative means of power.

5. **Design must be scalable**

A tiny key chain flashlight may work just fine if you are trying to find the door lock, but it won’t be of much use if

your car breaks down and you have to look deep into the engine compartment.

As you develop your flashlight design, always make sure that you have a way to add more bulbs and more power so that you can always have as much light as you need.

6. **DIY flashlights should have a hands free option**

When you are trying to climb a fence, need to use your hands to hit, shoot a gun, or carry out some other task, trying to hold onto a flashlight can cause a lot of problems. While most modern flashlights do not have a practical means to make them wearable, your design should give the optimal amount of light when the unit is not in your hand.

For example, you can aim the reflector and bulb so that light is where you need it most while wearing a headband, or even on a cord hanging from your neck or around your waist.

7. **Parts, especially bulbs, must be interchangeable**

No matter whether you decide to bug in or bug out, the passing of time after a social crisis will lead to fewer and fewer supplies being available. If your scavenged flashlight only works with incandescent bulbs or even LEDs, you will be at a disadvantage sooner than expected.

Always make sure that you can change the most common parts of the flashlight and still have a working unit regardless of the situation.

The Basic Parts of a Flashlight

Bulb

Of all the parts of a flashlight, the part that actually produces the light will be the hardest to replace. Unlike bulbs in other devices, one sitting in a discarded

incandescent bulb flashlight may still work even if other parts of the system have failed.

Even if you find hundreds of bulbs in a pile of trash or laying around in an abandoned factory, there is a very good chance that the filament inside will be broken, or something else will be wrong with them. By the same token, if you find discarded LEDs, they may have been damaged by an EMP or they may have burned out for some other reason.

I have personally seen LED arrays that were supposed to last for 10 years and up burn out in a matter of days. This technology is quite fascinating, however it is still relatively new and there are a lot of bad (yet cheap) knock offs on the market that can lead to problems.

Battery Case

Aside from holding the battery, the battery case may be integrated with the body of the flashlight. These should be available for some time after a major collapse occurs. They will not always be easy to make from scratch if you have to find substitutes for wire, solder, contacts, or anything that controls the amount of power actually flowing to the bulb.

Reflector

Just about anything that is shiny and can be shaped into a cone can be used as a reflector. You will also find plenty of reflectors in discarded flashlights that may have been thrown away because the prior owner did not have batteries, the bulb burned out, or something else went wrong with the flashlight. This is one of the easiest parts to scavenge and upgrade as needed.

Carrying Handle/Shell

There are literally hundreds of shapes and sizes for

flashlight carry handles and shells. Some may or may not be salvageable based on whether or not you can get to the internal parts without ruining the case.

For example, a sealed key chain flashlight may actually have a good built-in it if the battery died and could not be replaced. There may also be a usable switch and some usable parts inside, but it is likely that the case will be ruined in trying to access them.

On/Off Switch

When it comes to evaluating a material on-site, the switch can be a culprit that causes you to throw away all sorts of good materials, including a rechargeable battery that has been drained. Regardless of the style, on/off switches may even wear out before the bulb. Before you put a salvaged switch on a new flashlight, make sure that it works first.

Power Source

Batteries can also be very difficult to evaluate at first glance. Always look for rechargeable batteries as they can sometimes be rehabilitated with slow charging or partial charge and usage cycles.

I do not recommend trying to recharge disposable batteries, although some people claim they can do so easily enough without causing the battery to explode. Personally, I'd rather use battery alternatives and save my explosion/fire experiment risks for something with a more tangible benefit.

Unusual Parts

In modern flashlights, you might find resistors or small electronic circuits that either step down or increase the power from the battery going into the bulb.

Pay careful attention to the color bands or numbers on

resistors and also any other markings. Aside from their use in flashlights, older basics, usable diodes, resistors, capacitors, crystals, transistors, and coils are worth their weight in gold.

Alternatives to Consider

Even if you do not need to look to alternatives to the basics listed above for many years, it never hurts to know about some options that will enable you to make better use of materials that may already be on-hand.

Aside from the methods listed here, there are also many other alternatives that may produce the same effects, however they may not lend themselves well to a flashlight because of portability or other issues.

Battery Substitutes

When it comes to battery substitutes, your options are limitless in the sense that many materials can be paired together in order to store electrons and then discharge them at a fixed rate.

For example, something as simple as a potato or a copper penny can act as a battery for a single LED, a Christmas tree light bulb, or other small, low wattage bulbs. That being said, liquid batteries made from acids or even earth batteries may not be practical for a flashlight because they are not portable or may cause other problems.

The best and most viable battery alternatives for flashlights may well be some form of DIY capacitor based “battery”. Just remember that these batteries will still have to be charged, and it may take some effort to find a good set of materials for the capacitor.

For example, there are many sites online that claim you can

make a regular capacitor from aluminum foil and wax paper. Even though this may be true, it will take more material than expected. You are better served by looking for other materials that will require less space. You can learn about capacitor "batteries", and then consider how you can overcome the challenges of making as a DIY project.

Nanotechnologies are moving along rapidly. Even though you may not find many devices on the market that can scavenged yet, they may become available in the next 5 years. Keep track of DIY sites and always be on the lookout to see if any consumer based experimenters have taken any kind of nanotechnology based device and found a way to turn it into a battery substitute.

Magnet Fans

This is another fascinating system that can be used in place of a battery, and you might need to read our article about magnets to find out more about using them for different prepper applications. You may also want to experiment with vertical or shell style blade designs.

Also remember not to overlook some battery alternatives that might utilize a twisting rope to store energy, or anything else that can produce rotation. Never forget that once you have motion, you can use a magnet to induce electricity in a coil of wire.

Shake flashlights

May also be of interest. These are especially fascinating and useful because you will never need to replace the batteries.

I would recommend making a coil winder so that the wire wraps in the smallest, and most compact form. Depending on how you construct the coil winder, you can also use it for larger coils that can be used in many devices including wind turbines

and gravity fans. Just remember that a simple coil winder is not going to be of much use if you want to make torroid coils or other shapes that might be more useful for other purposes.

Also a DIY coil winder is still not going to be of use if you want to create complex windings for more powerful motors. Still, you can get the 300 and up windings easily enough for this flashlight and other low power applications. Needless to say, if you can get this device to work, then consider using the coils and shaking as a means to power other devices such as radios or other DC powered devices. When combined with a stationary bike or another source of motion, you may also be able to generate larger amounts of power.

https://www.youtube.com/watch?v=tHg51GOzCXU

Video first seen on Grant Thompson – "The King of Random".

Bulb Substitutes

In most cases, you are not going to find something as compact as a light bulb that will be able to produce as much light.

Here are some options that you can consider:

- Glow stick technologies – even though many of these require complicated chemicals, you may still be able to make them on your own. If at all possible, aim for ones that can be recharged, or be on the lookout for new technologies that make them easier to make or allow them to last longer. instructables.com/id/DIY-Glow-Sticks/
- Phosphorescent materials – even though these "glow in the dark" materials do not provide much light, they can still be of use in time of need. Aside from storing away "glow in the dark" paint and other materials, you should also do some research on how to make urine glow in the dark.
- You can also try to use glowing wires, however they will not last very long and will burn up quickly.

Wiring Substitutes

Just about anything that conducts electricity can be used as a wire substitute, including necklaces or metal chains and aluminum foil. But even if you have a material that conducts electricity, it may not work very well because there is not enough power being provided by the battery to overcome the resistance in the wire replacement.

Since every “wire” and substitute has some degree of resistance, you can try to mitigate the problem in the following ways:

- Use as little connecting material as possible. For example, if you are going to use tin foil, use the shortest length and the least amount of material. Do some research on how much current can be transmitted by specific materials so that you will know best how to shape the wire alternative to meet the power constraints of the system.
- Make sure the material is insulated with a non-conductor.
- Before you begin searching for suitable wire replacements, do some research on wire free systems that use metal tabs. This includes systems where a metal tab is pushed in order to allow current to flow through the circuit. Aside from solving your wire problem, these methods can also make it easy to replace switches that have worn out or otherwise useless.
- Always make sure that bare conductors do not touch and create a short circuit. For example, if you are using metal from a chain, make sure that the positive and negative “wires” do not touch each other at the required contact points on the bulb or the switch. This includes making sure that solder contact points are clean and not so close together that they can generate shorts.
- If you do some research, you might be very tempted to

see if there are ways to utilize liquid batteries or even gels in such a way that you can further limit the use of wires. While I am more than supportive of stationary lights utilizing these power forms, I don't think they will ever be portable enough for a flashlight system. It would be better to remain focused on metals, or even newly emerging nanotechnologies that may make metal wires obsolete.

- A few decades ago, it is believed that Tesla was able to transmit electricity through the air. At the current time, scientists can transmit small amounts of electricity over very short distances. You can try looking through Tesla's patents and other information to see if you can come up with ways to transmit electricity in much the same way that radio signals are sent. Since electricity can actually be pulled from the air, research on these methods may also be of interest.

Parts to Look For on Scavenger Expeditions

When searching for parts on scavenger expeditions, it is your choice in terms of how limited or broad your scope is. For example, if you are looking for batteries, you may decide that you only want rechargeable that perfectly fit the flashlight you have on hand.

In this scenario, you will miss out on a number of short term and long term viable places to search. This includes looking in old radios or other portable devices that may have weak batteries that will still work in a flashlight.

You will also overlook very important alternative sized batteries that can still meet your needs. Before limiting your search to pre-existing flashlights, take a look at some videos and instructables on how to convert from one battery type to another. Chances are you will be very surprised at just how

many different variations you can use in one flashlight with a minimum of modification. HERE is one simple guide to get you started.

If you decide to use a more expanded parts list that includes capacitors, resistors and metal strips, viable materials can be found in just about anything that uses electricity.

When searching for electrical components, however, make sure that you know the difference between high voltage and low voltage circuits. This is especially important if you decide to remove capacitors from a board or if you find them laying around. Even a relatively small capacitor used in a high voltage circuit can deliver quite a jolt.

Never remove parts from a circuit board until you have used a multi-purpose meter to test them out. If you find a charged capacitor on a board, make sure that you know how to discharge it safely before removing the components.

When you read about different ways to scavenge flashlights, most of them will tell you how to interchange bulbs or do simple things that are little more than a matter of common sense. After the initial phases of a social collapse, and even during a short term crisis, these methods may be very useful. When there are no parts to exchange, or no materials that you might recognize as suitable for a flashlight, you must know how to improvise. Never limit your explorations on this topic, as there are new technologies emerging as well as older, simpler ones that can be used to meet your portable lighting needs.

Just take your time and think about each part of the flashlight to see how you can optimize it, and then fit it into a whole system that meets the best features of the flashlights you may be taking for granted right now.

This article has been written by ***Carmela Tyrell*** *for Survivopedia.*

Resources

mpoweruk.com/alternatives.htm

researchgate.net/post/Is_there_any_alternative_method_except_batteries_to_store_solar_energy

web.mit.edu/erc/spotlights/ultracapacitor.html

http://gas2.org/2008/09/26/new-battery-alternative-stores-huge-amounts-of-energy/