

## TeaLED: Led, Switch, Box and Batteries (not glue nor solder)

by [becava](#) on March 3, 2009

### Table of Contents

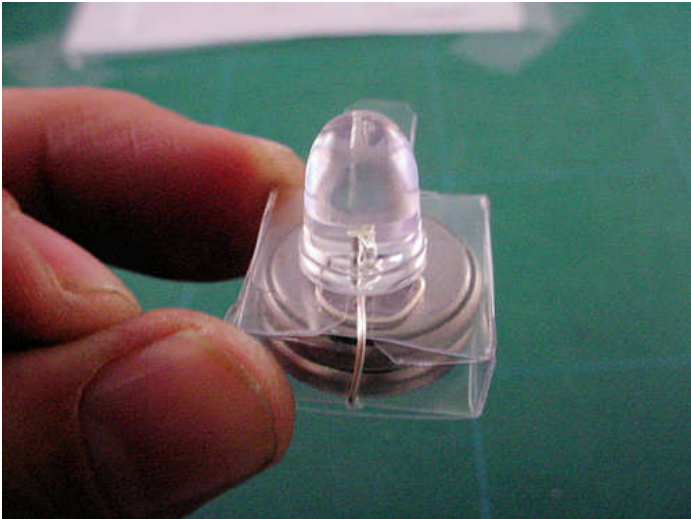
intro: TeaLED: Led, Switch, Box and Batteries (not glue nor solder) .....	2
step 1: Tools and Materials .....	3
File Downloads .....	3
step 2: Cut and Fold .....	3
step 3: Insert Led and Switch Tab .....	5
step 4: Insert the coin batteries and close the box .....	6
step 5: Turn it on and off .....	7
step 6: Add velcro, magnet or double side tape .....	8
step 7: Photos for some uses of the TeaLed .....	9
Related Instructables .....	11
Advertisements .....	11
Make Magazine Special Offer .....	11
Comments .....	11

**intro: TeaLED: Led, Switch, Box and Batteries (not glue nor solder)**

A Tiny Led lamp to use wherever you like, don't need electronics knowledge to make it, just cut an acetate sheet with the template included here... add 2 CR2032 batteries and 1 Led (white, flashing red, ultraviolet, RGB slow or fast, 10mm or 5mm).

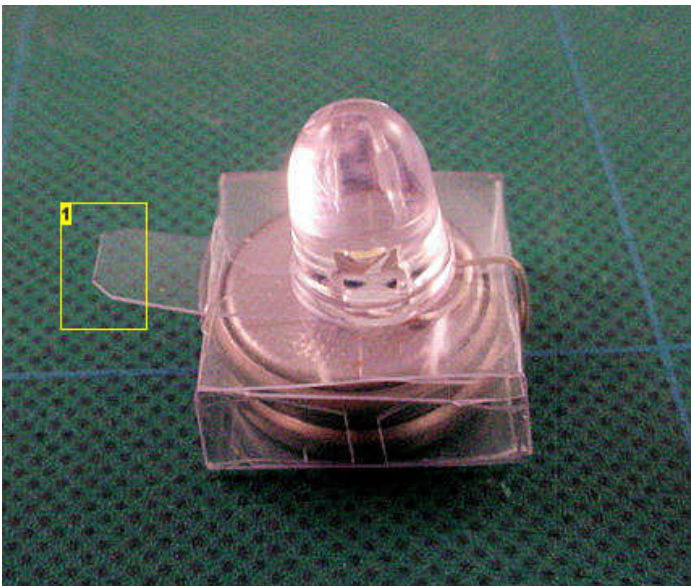
I have always liked LED's and since their existence, I have been using them in a lot of projects, looking for a small box where to put it, using cheap materials to create a nice looking finished project. After a lot of designs with trial and error, now I designed a template to cut a PVC sheet (acetate/mylar) and made a box for the batteries, the switch and the led, without even using glue or solder.

So here is my first Instructable to teach you how to do it, and use it in a lot of ideas (I will give you some of them). I know that it looks like a kind of led throwie but it isn't (we don't have to throw things, it's better to recycle them), because its designed to put it in an exact place to illuminate whatever you want. You can change the batteries and either add to the base a piece of magnet or some velcro or double side tape, so that you can put the box on any place. The box also has a switch tab so that you can turn it on/off, Hope you like my project.



**Image Notes**

1. Pull the flap switch to turn it on.



**Image Notes**

1. Push the flap switch to turn it off.

## step 1: Tools and Materials

### Tools:

Steel Ruler, Cutting Mat, Sharp Cutter, Unsharped Cutter, Scotch Tape, Template, Scissors, Nose Pliers

### Materials:

Led (5mm or 10mm), 2 Coin Batteries (CR2032), Acetate sheet (Mylar or PVC), Velcro, Magnet Sheet, Double Side Tape.

You can use white LEDs, RGB slow or fast LEDs, Flashing LEDs, etc.

Here is a tip, if you need a diffused LED: Melt the wax of a candle and dip the led in the melted wax 2 or 3 times, if you need to make it clear again just apply some heat to the led and wipe the wax with a towel paper.

Don't use a resistor because for me the brighter the led the better it looks. Due to the internal resistance of the batteries, the LED will not burn., You need to use 2 batteries to have 6 volts for the White and the RGB LEDs and also to have the LED on for a longer period of time. If you prefer to use one battery, just change the dimensions of the template.



### Image Notes

1. Download "TeaLed Template.pdf"

## File Downloads



TeaLed Template.pdf ((612x792) 22 KB)

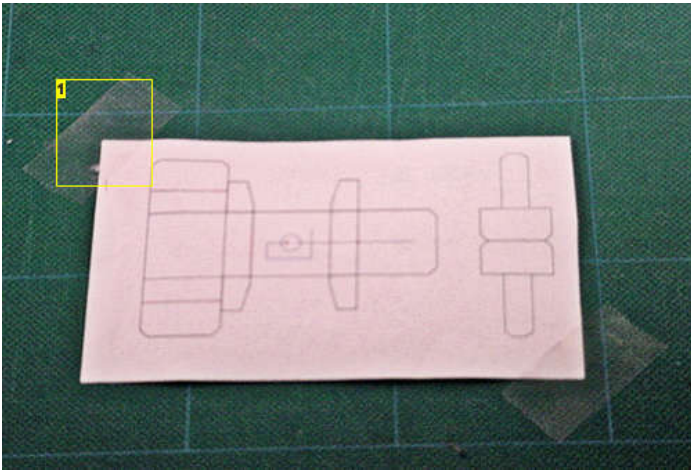
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'TeaLed Template.pdf']

## step 2: Cut and Fold

Cut the template paper and tape it to the cutting mat on the opposite corners, then cut a piece of the Acetate sheet and attached with tape on the other opposite corners.

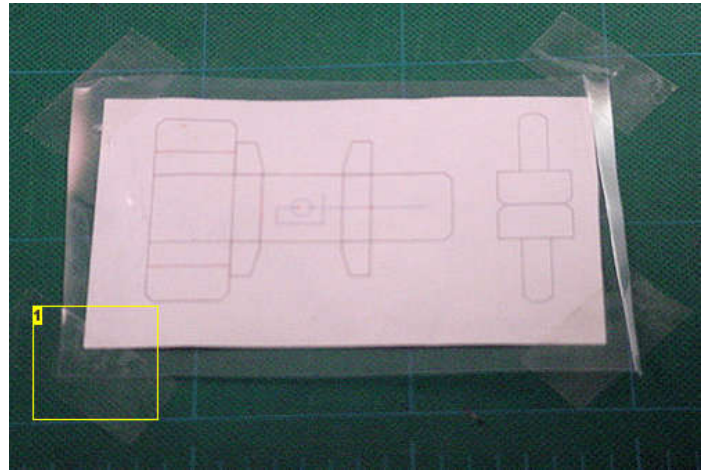
- Mark the folding lines with the unsharpened knife and the ruler.
- Mark the 2 holes for the led's legs. and cut the line for the switch.
- Cut the template with the sharped knife and the ruler.
- Don't forget to cut the piece of plastic for the tab switch.

Start folding the template, but don't fold it completely, because we need to insert the led, the 2 batteries and the plastic tab that functions like the switch.



**Image Notes**

1. First tape the paper template to the cutting mat



**Image Notes**

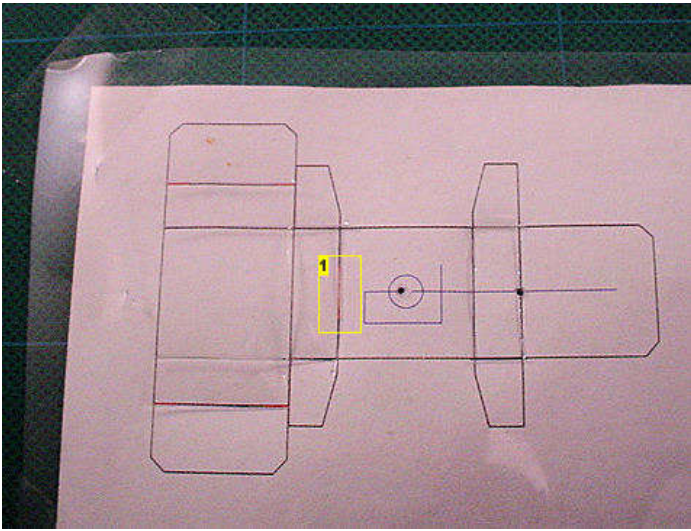
1. Then tape the piece of acetate to the paper and to the cutting mat

**Image Notes**

1. These is my Unsharped knife to mark the folds of the box

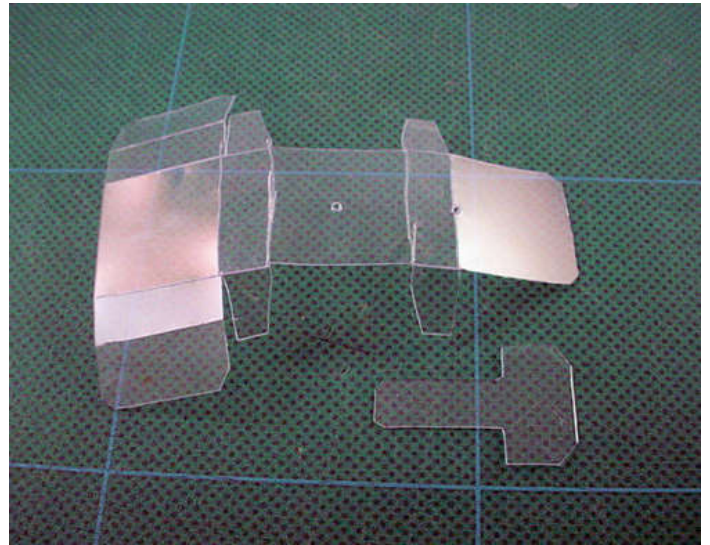
**Image Notes**

1. Thes is my Sharp knife to cut the box and make the holes
2. Don't forget to make the holes where you will insert the legs of the led



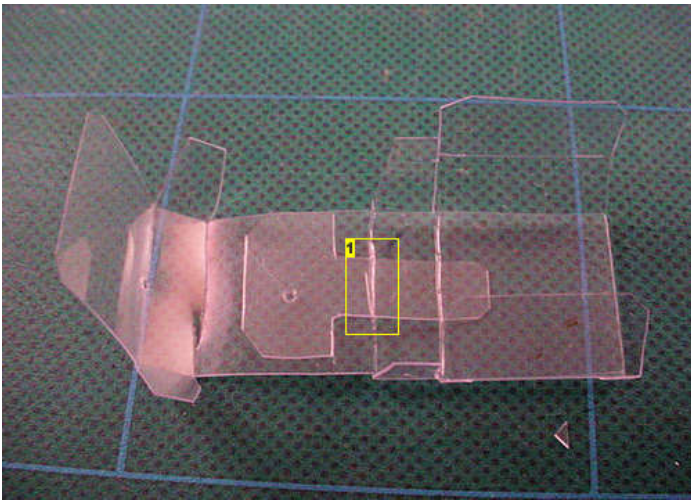
**Image Notes**

- 1. Cut here to insert the switch tab



**step 3: Insert Led and Switch Tab**

- Insert the tab Switch in the cut, in the middle of the box, then start to insert the Led.
- First put the short leg in the middle hole and bend the long leg and insert it in the flap hole.
- Then use the nose plier to bend the short leg in a circular shape as in the picture.
- After that, bend the long leg of the led as you bend the flap of the box.

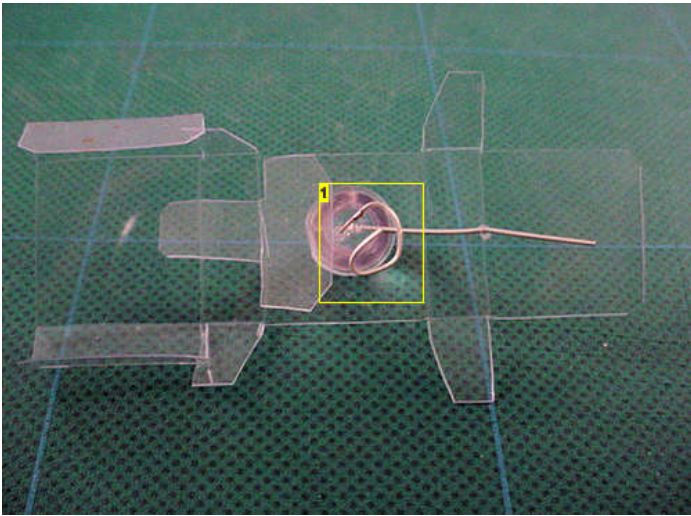


**Image Notes**

- 1. Insert here

**Image Notes**

- 1. Long leg
- 2. Short leg



**Image Notes**

1. Bend the short leg exactly like in the picture, if is not in good position the switch will not work

**Image Notes**

1. Now bend the long leg as you fold the flap of the box.

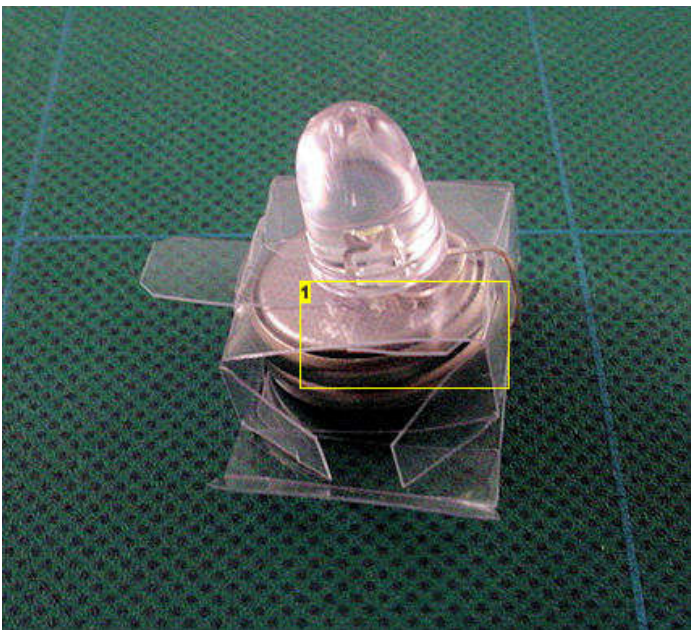
**step 4: Insert the coin batteries and close the box**

Now you are ready to fold the box and insert the batteries.

Be sure that the flaps are between the led's leg and the upper part of the box, and the plastic (that acts like a switch) is between the leg and the batteries.

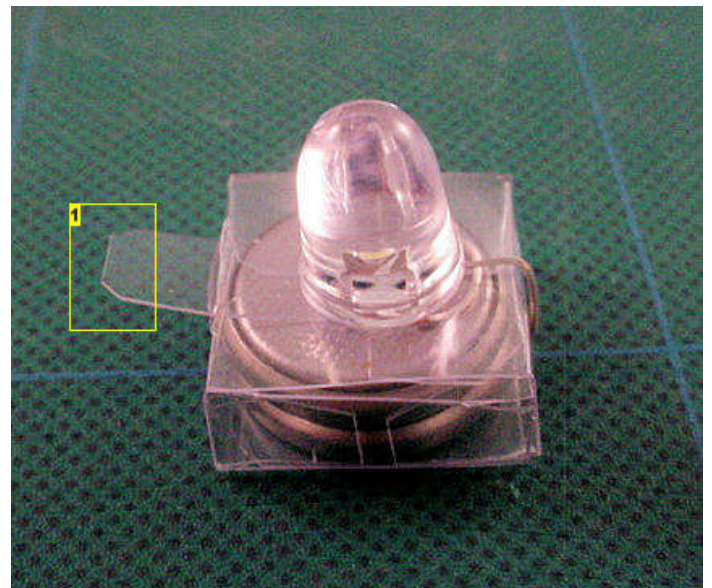
Close the box, and check if something's wrong, compare your box with the images.

Be sure that the batteries are at the same position as the photo (+-)(+-).



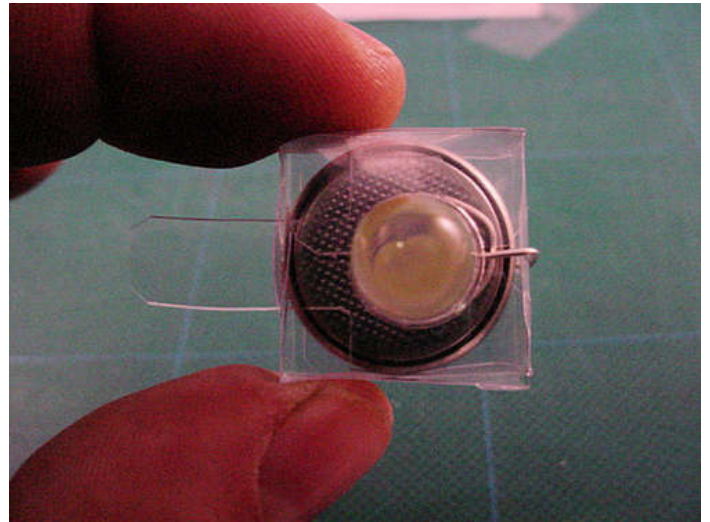
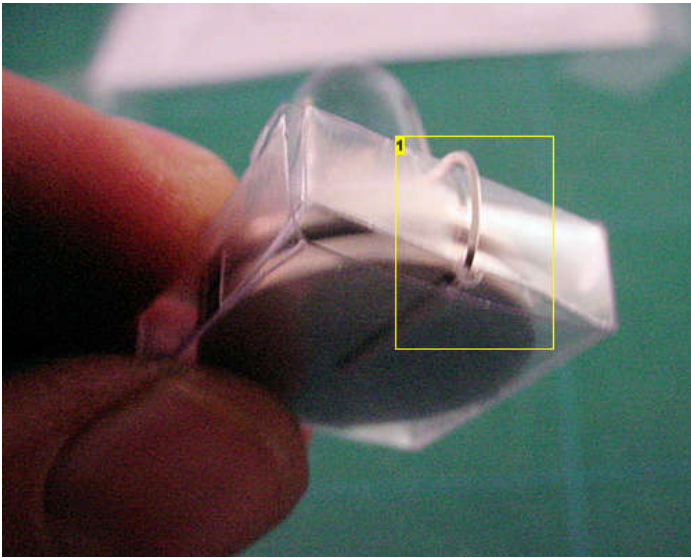
**Image Notes**

1. Be sure the switch is between the led's leg and the batteries, and check their position.



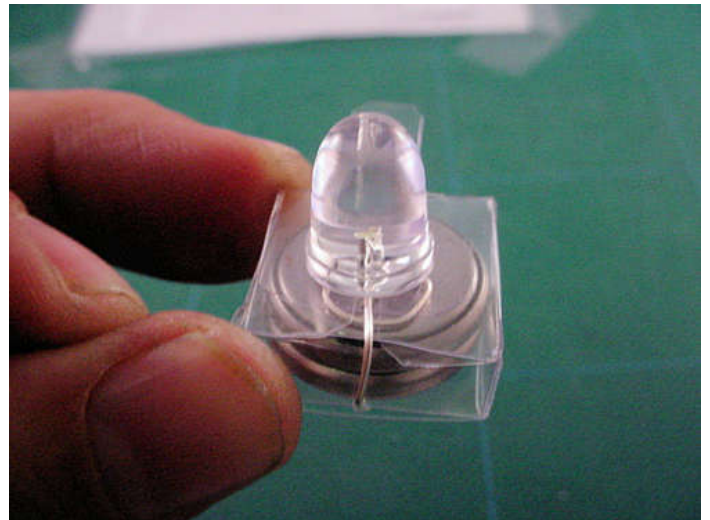
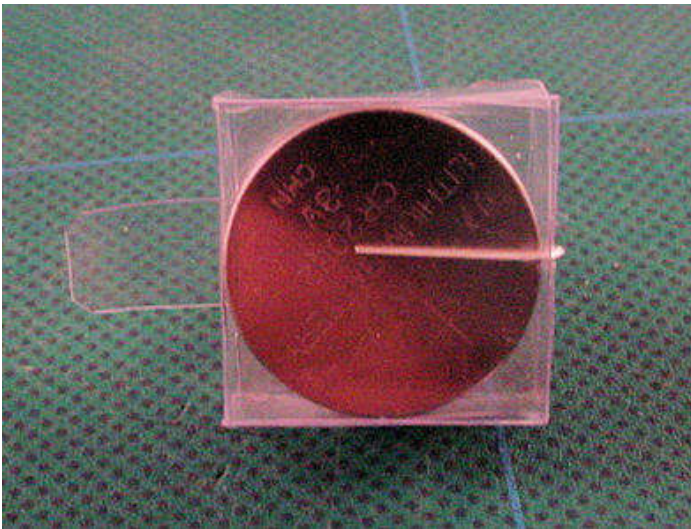
**Image Notes**

1. Push the flap switch to turn it off.



#### Image Notes

1. Observe how the longer led's leg is outside of the box and then enters the hole to make contact with the bottom of the batteries.

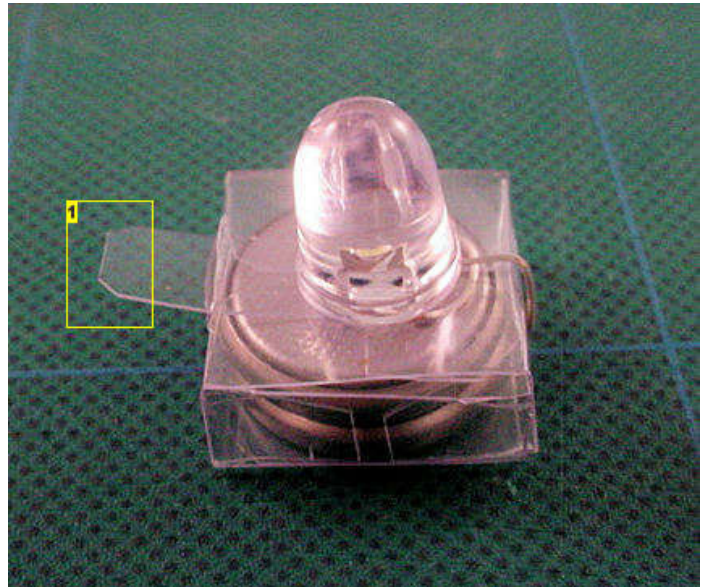


#### step 5: Turn it on and off

Now pull the flap switch, and be sure the led is on.

To turn it off, push again the flap switch inside the box.

*In case the led doesn't illuminate, check if your folds are correct, also that the position of the batteries are as the images below. Be sure the led's legs make contact with the batteries, check if the legs are correctly folded and in the right place.*



**Image Notes**

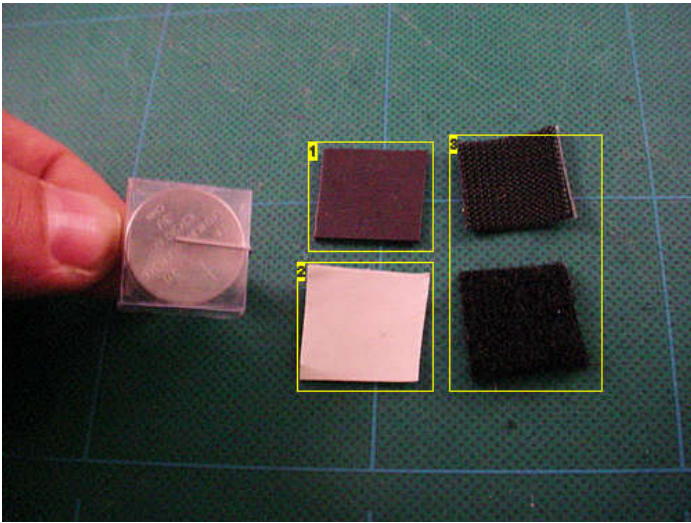
1. Push the flap switch to turn it off.

**Image Notes**

1. Pull the flap switch to turn it on.

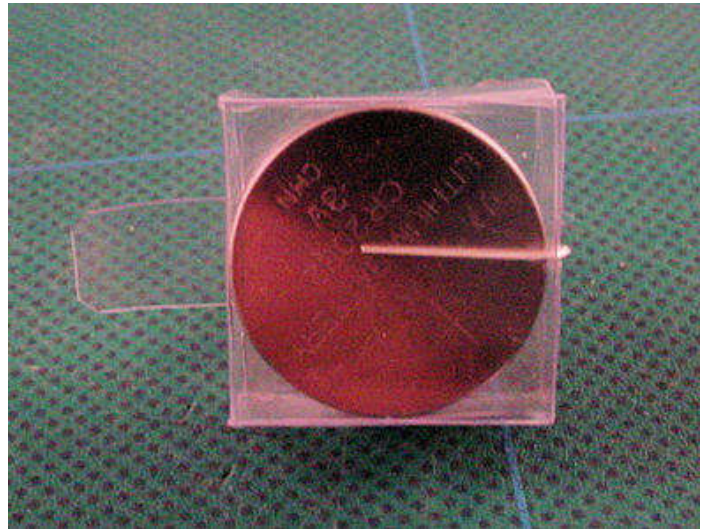
**step 6: Add velcro, magnet or double side tape**

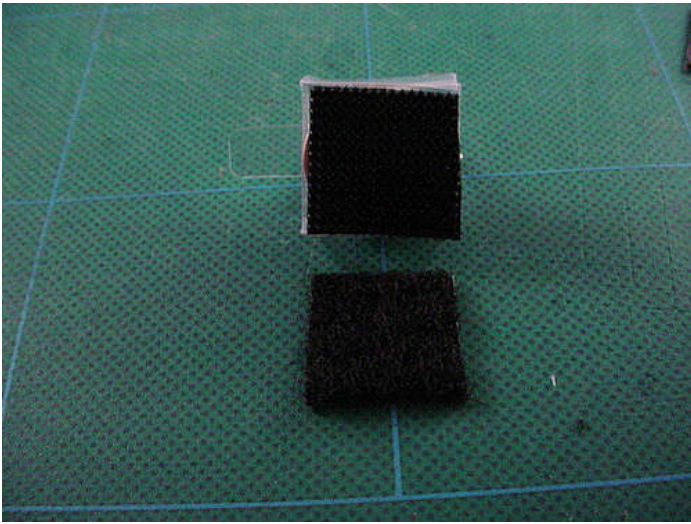
Now is ready to use, you can add to the bottom of the box some velcro, to attach it to a drawer, or inside your car. Also you can add a magnet to use it in your refrigerator, or add double side tape to stick it to a flower base or inside a candle.



**Image Notes**

1. Square of a magnet sheet
2. Double side tape
3. Velcro squares





### step 7: Photos for some uses of the TeaLed

Here are some ideas for the many different uses of my TeaLed Box:

- a) A 10mm white led, with velcro at the bottom, attached to a drawer of the kitchen,
- b) A 5mm blinking red led, with magnet at the bottom, holding a note in the fridge.
- c) A 10mm white led, make a hole at the bottom of the candle, insert the Tealed.

Use your imagination, you can use the Tealed in many projects:  
You can put it in paper bags, in wine cups, in flower vases, in Ice sculptures, etc.  
Some ideas are already posted here in "instructables" look for them.

I hope you like my project, please add some comments and rate it, thanks for reading.







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## Comments

[46 comments](#) [Add Comment](#)



**Edwin Lee** says:

Ummm.... I'm a bit confused, in what way does the switch makes the led light up? I don't really get it.Pls Reply me

May 24, 2009. 4:13 AM [REPLY](#)



**becava** says:

The switch is the piece of plastic you pull or push, is between the batteries and the leg led, when you pull out of the box the the led made contact with the batteries, when you push inside the box again, the plastic slice in between the led and batteries blocking the contact, please check photos and instructions on *Step 3* and *Step 5* ..... (Maybe I need to make a video to show it better)

May 24, 2009. 11:24 AM [REPLY](#)



**Edwin Lee** says:

Thank you so much.

May 25, 2009. 2:16 AM [REPLY](#)



**maurice1993** says:

great job! I'll try to make one!(plastic from pet bottles could be used?)

May 16, 2009. 9:31 AM [REPLY](#)



**becava** says:

Pet bottles plastic is more thick than acetate, so it will be more difficult to cut and fold, but you can try. Please comment here how it's work and post some photos.

May 16, 2009. 10:32 AM [REPLY](#)



**Esque** says:

Absolutely genius idea!!!! Any idea what sort of average battery life you get with this??

Apr 30, 2009. 2:10 PM [REPLY](#)



**becava** says:

That's depend the type of the Led: a blinking red 3 to 4 weeks, white or blue or RGB led 6 to 8 hours , red or yellow or green 10 to 14 hours.

Apr 30, 2009. 3:35 PM [REPLY](#)

All Leds consume different current (mA) each other, the brighter it is the less battery life you get.



**greensteam** says:

Could you provide a pdf with the template so we can print it exactly right?

Apr 20, 2009. 4:22 PM [REPLY](#)



**becava** says:

(removed by author or community request)

Apr 20, 2009. 10:52 PM



**greensteam** says:

Many thanks. That is really clear now.

Apr 21, 2009. 3:55 PM [REPLY](#)



**mman1506** says:

what did she say it was removed

Apr 28, 2009. 7:00 PM [REPLY](#)



**becava** says:

I only delete the comment, the pdf template is on Step 1.  
(and I'm not she, I'm he..... "becava" is only my nickname :)

Apr 28, 2009. 8:53 PM [REPLY](#)



**brizzx32** says:

Hey Becava got a suggestion. This would be a good Idea. To make a version of this to try to fit one of these on a light bulb socket and maybe step it down to make a miniature Light bulb that is hard wired that you can just screw on and would be able to turn on with the light switch instead. Just a thought

Apr 30, 2009. 2:58 PM [REPLY](#)



**mman1506** says:

sorry my mind just linked the nickname to she

Apr 29, 2009. 4:55 AM [REPLY](#)



**threecheersfornick** says:

Yes, please!

Apr 20, 2009. 9:04 PM [REPLY](#)





**brizzx32** says:


Hey Becava good Post, how long does those batteries last from start to end for that little lamp?

Apr 30, 2009. 2:40 PM [REPLY](#)


 **Covo** says: Apr 30, 2009. 5:24 AM [REPLY](#)  
Is there a cheap/easy way to make it flicker?


 **ColorfulNumbers** says: Apr 30, 2009. 12:19 PM [REPLY](#)  
Covo,  
You might consider building something like a Blinkybug. (solder-free Instructable here)  
They blink their LED eyes with wind or movement. Their antennae are elegant, low-tech switches.

 **Covo** says: Apr 30, 2009. 12:49 PM [REPLY](#)  
Ah yes...I remember thoes. Good idea.  
I was looking to keep with the "tea light" idea and thinking of a way to make them look more realistic.

 **becava** says: Apr 30, 2009. 11:59 AM [REPLY](#)  
Yes, with the CDT3460-02 IC, is cheap and easy to connect, but don't know where to buy it, If someone know where can I buy it, please let me know.

 **Jarl** says: Apr 30, 2009. 7:16 AM [REPLY](#)  
Dodgy contact? :P


 **Chip Zempel** says: Apr 30, 2009. 12:05 PM [REPLY](#)  
Kudos! Clever idea, very well documented. Great project, great write-up!

 **mr. natural** says: Apr 30, 2009. 9:43 AM [REPLY](#)  
WHAT A SWEET LITTLE LED LAMP! I will save this to use in some of my assemblage art work as I have a whole box of large white LED's to fiddle with!  
Thank you!

 **bennelson** says: Apr 29, 2009. 5:18 AM [REPLY](#)  
Very nice. A candle for the 21st century, with elements of Origami.


 **sharlston** says: Apr 27, 2009. 12:40 PM [REPLY](#)  
favourite and 5 stars

 **becava** says: Apr 28, 2009. 8:55 PM [REPLY](#)  
Thanks

 **Albino\_Mag** says: Apr 28, 2009. 4:11 PM [REPLY](#)  
Wow, this is perfect for a project I am about to start. Thank you! 5 stars!

 **becava** says: Apr 28, 2009. 8:54 PM [REPLY](#)  
Thanks, please post a photo when you finish the project.

 **jorgeaz** says: Apr 27, 2009. 6:05 PM [REPLY](#)  
Hola Benito  
Buen diseño, felicidades y mucha suerte, Saludos; Jorge Arredondo "La Grulla"

 **chuckr44** says: Apr 27, 2009. 7:58 AM [REPLY](#)  
Your 2 batteries give 6vdc. Is the white LED ok with 6 volts? I always used 4 volts with my white LEDs but maybe there's a range of save voltage I do not remember.



**becava** says:

Yes, I use 2 CR2032 for 6v, normally we use Leds with 2v or 3v, but they can support a maximum voltage of 6v and don't need to use a resistor because these batteries have a great internal resistance, also the voltage in the batteries drop very quickly, they can't maintain 6 volts, so it drops in between 4v to 5v, depending on the quality of the batteries. So with 2 batteries the led gives its maximum light.

Apr 27, 2009. 10:01 AM [REPLY](#)



**FeedTheGrid** says:

Awesome work! I will be making some of these. : - )

Apr 24, 2009. 1:57 PM [REPLY](#)



**becava** says:

If you make some, please post photos of them here, thanks

Apr 26, 2009. 12:07 AM [REPLY](#)



**kelseymh** says:

Very nicely put together! The instructions are clear and complete, and I appreciate the ideas for "further modification" you included.

There are some problems with the English text (grammar, such as matching singular vs. plural, or present vs. past tense). I guess from your profile that English is not your first language, so I am *not* criticizing, just mentioning it.

Apr 20, 2009. 10:25 AM [REPLY](#)



**becava** says:

Thanks for your comment, and yes I'm from Mexico so Spanish is my first language.....I rechecks the grammar errors, hope now is a better writing text.

Apr 26, 2009. 12:02 AM [REPLY](#)



**rreyes65** says:

Excelente uso de la creatividad para resolver un dilema como hacer para no soldar cuando es algo tan pequeño y el soldar involucra más tiempo en el proceso.  
Felicidades.

Apr 24, 2009. 8:50 AM [REPLY](#)



**howdy409** says:

This looks like a very handy idea. Can't wait to try it out. Thank you.

Apr 23, 2009. 11:22 AM [REPLY](#)



**doc\_psiq** says:

As always, with all the new tricks

Apr 23, 2009. 8:55 AM [REPLY](#)



**Phoghat** says:

Pretty cool. Original thought is always a plus!

Apr 23, 2009. 8:30 AM [REPLY](#)



**mefromliny** says:

Nice project. I especially liked the on/off switch. Thanks for posting it. Ken

Apr 22, 2009. 7:15 AM [REPLY](#)



**hjpotes** says:

No sabia que teniamos un compa;ero inventor, que buen detalle, se lo pasare a mi hija para su proyecto de ciencias. Saludos Humberto Potes

Apr 21, 2009. 3:51 PM [REPLY](#)



**stylnpzzalvr** says:

I have 86 coin batteries that I don't need if someone wants to buy them off me. I will be very reasonable. I bought them a while ago for a project, but I had far too many. email me at [stylnpzzalvr@gmail.com](mailto:stylnpzzalvr@gmail.com) if you are interested.

Apr 21, 2009. 9:02 AM [REPLY](#)



**Lftndbt** says:

Way to get a "Late Feature". When I first read this I'ble I thought it was Feature worthy just from the design point of view. It appeared slightly underwhelming, yet your Feature is well deserved, nice work!!

Apr 20, 2009. 9:51 PM [REPLY](#)



**refused** says:

throwie in a box heh

Apr 20, 2009. 1:15 PM [REPLY](#)



**becava** says:

Yes, but in mine you can change the batteries and have a switch to turn it on and off.....also these one is made not for throw, but to put in a special place you need for a useful light. Thanks for your comment

Apr 20, 2009. 2:11 PM [REPLY](#)



**rimar2000** says:

This is genial!

Apr 20, 2009. 6:17 AM [REPLY](#)