Dry Film Photopolymer for making circuit boards

by **cpeniche** on August 11, 2012

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Intro: Dry Film Photopolymer for making circuit boards

I was reading on different web pages what could be the better way on doing a printed circuit.
I tried presensitize board with great success, The first time I used one the circuit came out pretty good, the second time I tried to
use a double sided presensitze board but it never worked. I was wondering what I did different from the first time but after a few tries I realized that the board was simply bad. A useless board that maybe later I will use it with the toner transfer method.
The resolution is good and is fast. But what happen if you detect a failure on your circuit after you develop it? Well, the clad is useless, you have to remove the green stuff and use the toner transfer method.

I tried the toner transfer method later with some limited results. Nobody knows which one is the magic paper that works 100% all the time and you have to have a laser printer. I even tried one magic paper from one web page that I found, I bought the paper with some other stuff they recommended and it didn't work the way I was expecting, I have always have to retouch the traces. I like to have a big ground path around the traces. I do it this way because the routing tool easily connect the ground lines and the etching is fast because the solution doesn't have to eat too much copper.

The problem with the toner transfer method is that it never covers completely the big ground path and It always came out with a porous ground line after etching the board and then later you have to remove the toner that is nothing easy leaving my copper with a dirty rusted aspect. I also bought the laminator they suggested and it was kind of expensive (86 bucks).

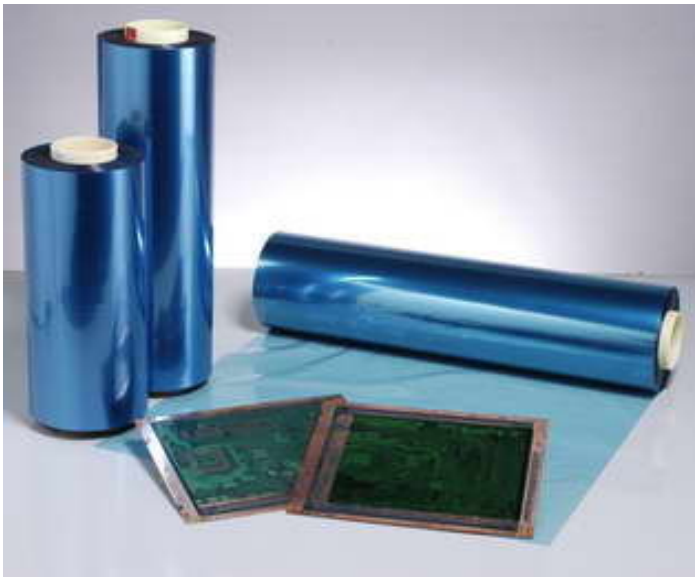
So after the success with the dry film solder mask I decided to try the dry film photopolymer to do my circuits. It worked fantastic. you don't even need a UV light and by the way I don't recommend using one, is too strong!!!. A conventional 15 watt florescent light is better because it doesn't burn the paper and you will attain near 40 micrometers of resolution.

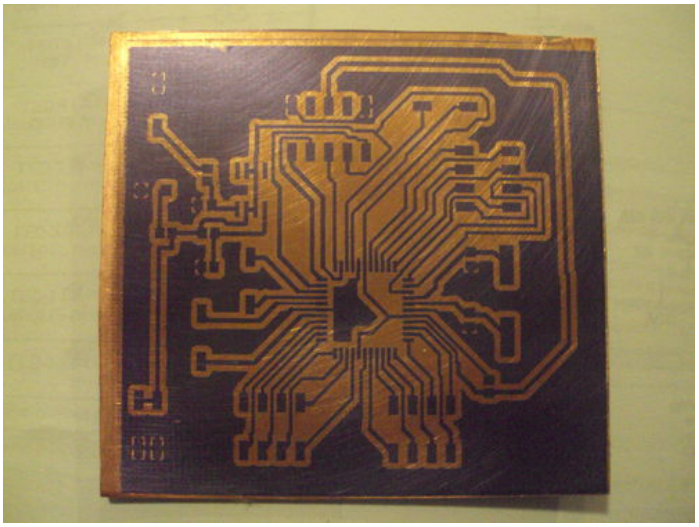
You can get the paper on ebay at this address

http://www.ebay.com/itm/laminar-dry-film-photopolymer-10-sheets-of-9-75-x-8-inches-/271035638941?pt=LH_DefaultDomain_0&hash=item3f1afba49d

The materials are:

Dry film photo polymer
Laminator or Iron.
Sodium Carbonate better know as soda ash
Sodium Hydroxide better know as caustic soda or Lye.
Your preferred etching solution.
And the negative of your art work printed on a transparency.





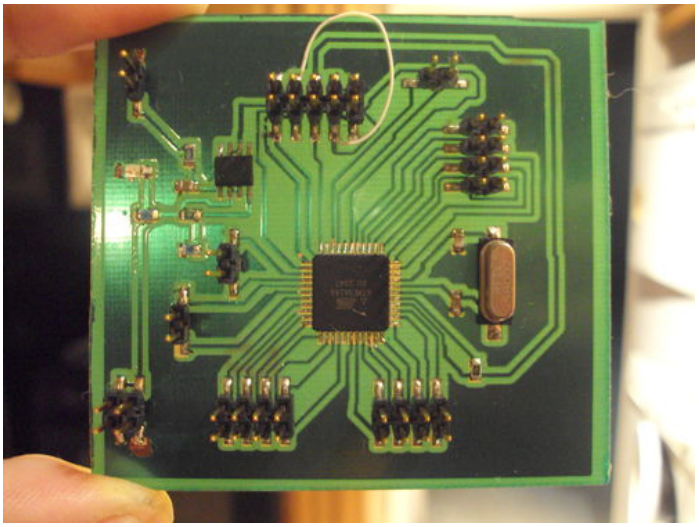


Image Notes
1. materials

Step 1: Procedure

1.- First you need to cut your board the size of your art work.
The film has two protective film layers, remove one layer with the help of two tapes. Then put the tacky suface over the copper clad and pass it through the laminator. Avoid wrinkles and bubbles between the paper and the copper clad.

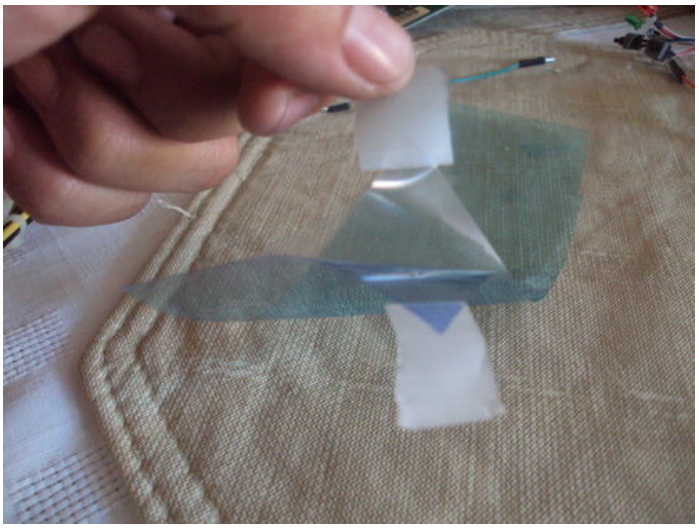
2.- Expose the film to the light. I use a conventional florescent light 15 watt during 15 minutes. Remember that you have to use the negative of your art work like in the picture. The paper is green without been exposed and it will become blue when is already exposed. The first photo looks purpule because I leave it standing around one day before etching. The color should be more like the second photo.
I tired an UV light but it is too strong for the paper. It turned the paper's color to dark purpule and the paper became brittle. Not good.

3.- Once exposed remove the second protectic layer and develop the copper with the sodium carbonate solution. You have to use 0.85% sodium carbonate concentration, that means that you have to put 0.85 grams of sodium cabonate on a liter of water.

4.- Etch the board with a fresh etching solution. Use a fresh etching solution to cut down the etching time.

5.- Once the board is etched we need to prepare a solution of 2-5% of sodium hidroxyde.
Caution: if you are using sodium hidroxyde crystals pour the water slowly and in a ventilated area. The solution will generate heat and will expel fumes. Use gloves .
Put the board in the solution and wait util the paper becomes transparent, remove the board from the solution with the help of some plastic pliers or something similar. Rinse the board with water and the paper will start to peel off.

Now all you need is to apply the dry film solder mask already explained in another instructable, put your components and you will end up with a board like the one in the last photo.



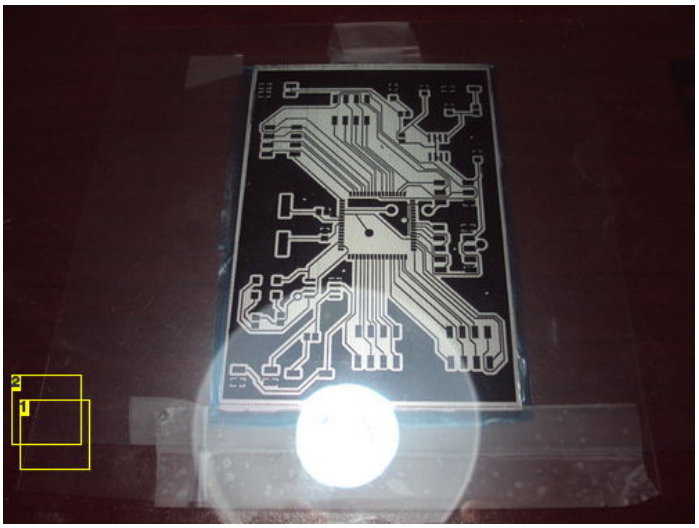


Image Notes
1. Exposing to florescent light
2. exposing the paper with the art work

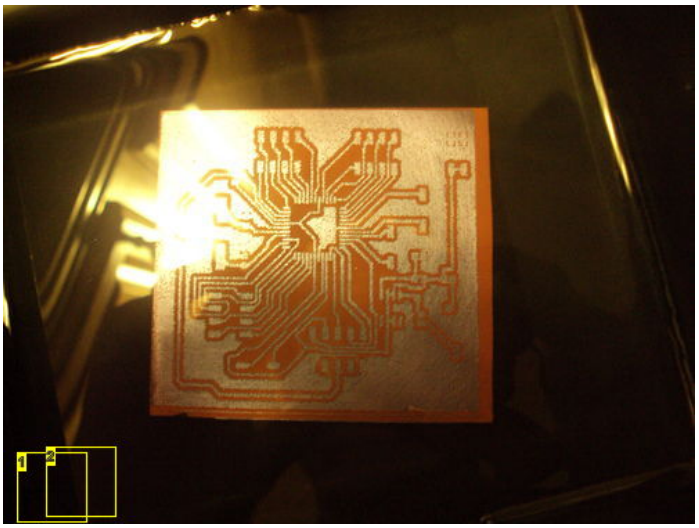


Image Notes
1. Developing with a sodium cabonate solution
2. Developing the paper with a solution of sodium carbonate

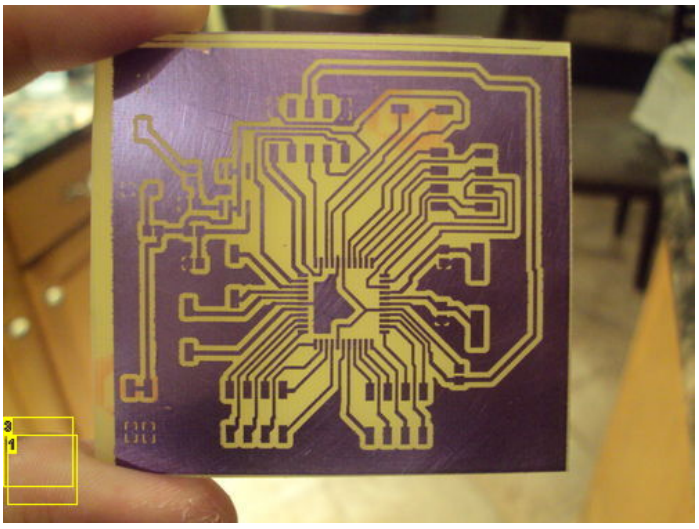
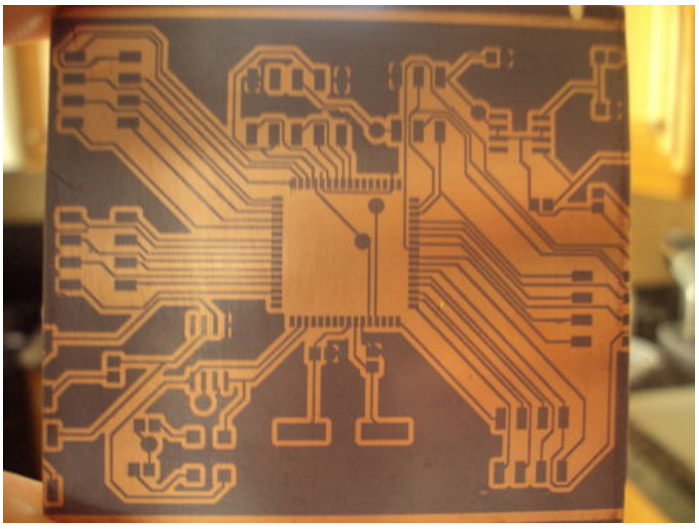
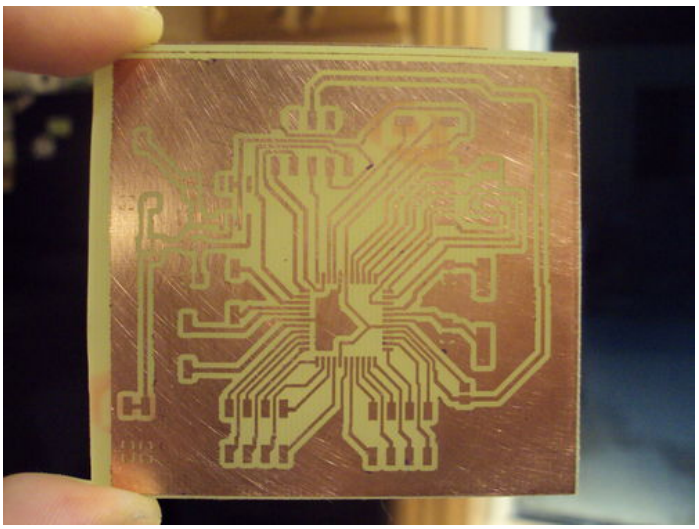
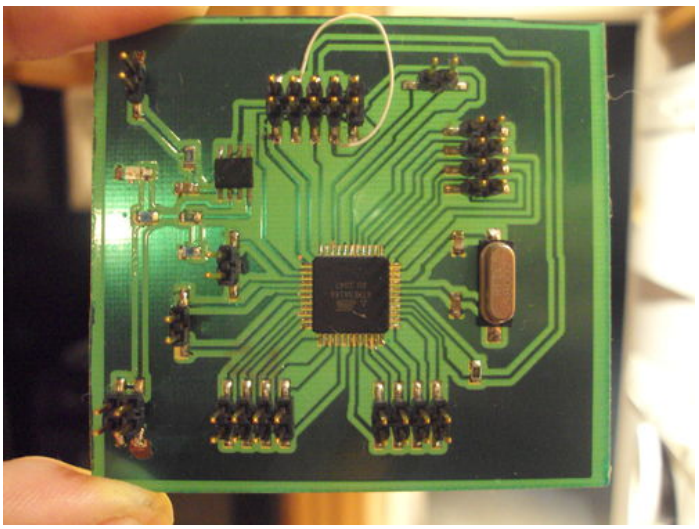


Image Notes
1. Board already etched
2. Board already etched
3. Board already etched







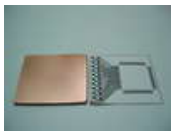
Related Instructables

Dry Film Solder Mask by cpeniche

Modified laminator for PCB Toner transfer by hobby16

Two sided PCB using toner method by jmengel

PCB etching using laser printer by Robotplatform



Cheap and Easy Toner Transfer for PCB Making by hilarycheng

Killer PCBs by incoherent