**MAKING OF PCB**

**INTRODUCTION:**

One of the most discouraging things about making a hardware project is building the printed circuit board-PCB.it is sometimes possible to use strip board or some other pre-fabricated board but more often than not the circuit complexity and performance requires a proper PCB to be made .The good news is that due to improvements in printing and processing technologies it is now relatively easy to make inexpensive high quality PCB’s at home.

WARNING-Making PCB’s requires the use of Ferric Chloride(FeCi3) which is corrosive so avoid skin and eye contact .Remember safety-first so, use glasses, gloves and protective overalls .Ferric Chloride is also very good at distorting cloths weeks after you think you have washed it off. If you do get any on your skin then wash it off immediately with lots of water and soap.

**THE ARTWORK**:

The first stage is to transfer the circuit layout from the PC to the special Press-n-Peel film. Put the film in the laser printer so that the print will appear on it. This will produce a contact print where the black image will end up as copper on the final PCB. Now to transfer the artwork to the Copper board by following the instructions with the Press-n-Peel film:

* Clean the copper board very well with the PCB cleaning rubber.
* Heat the cloths iron to 300 deg F.
* Hole the film with the print in contact to the copper and smoothly iron the film down until the print appears black through the film (about 1min).
* Allow 5min to cool down (or speed up this with water) then peel the film off.

This should produce a clean black print on to the copper. If you let the film move or overheat then you will find that the tracks and writing will be smeared and out of focus also the film may be wrinkled up. If you don’t use enough heat or heat unevenly then the film may not stick or to be dark enough. In either case clean off the PCB and try again, you should get it right after a couple of goes.

**THE ETCHING**

Etching the PCB is to remove the unwanted copper.

* Dilute the concentrated Ferric Chloride fluid with water (1:1) and pour into the one liter glass jar.
* Put the PCB copper side up on the top tray and pour all Ferric Chloride on top.
* Gently rock the top tray to keep the etch fluid moving avoiding spillage.
* After about 15min all of the unwanted copper disappears.
* Remove the board and drop it into a bucket of cold water to clean off.

**DRILLING**

Drilling with 0.8mm drill bits can be bit tricky as it is easy to break the drill bits. Always hold the drill straight and do not bend it when the hole has started .Using a 0.8mm PCB drill bit, drill out all of the component holes that are required. So, now the PCB is finished and it is ready to solder.

**ADVANTAGES OF PCB:**

* Reducing wiring errors.
* ecreases assembly cost.
* Typically consume less space than traditionally build circuits.