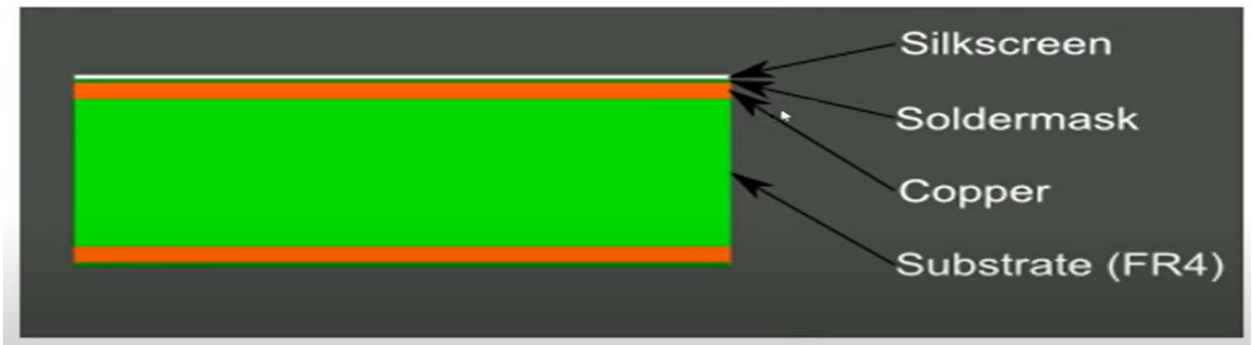


B- PCB Layers:

Basic Board Structure



- Copper: are the wires in the circuit on the top layer and the bottom layer
- Substrate:

- Types:

1- (FR4): is a dielectric material used to separate the top layer and bottom layer

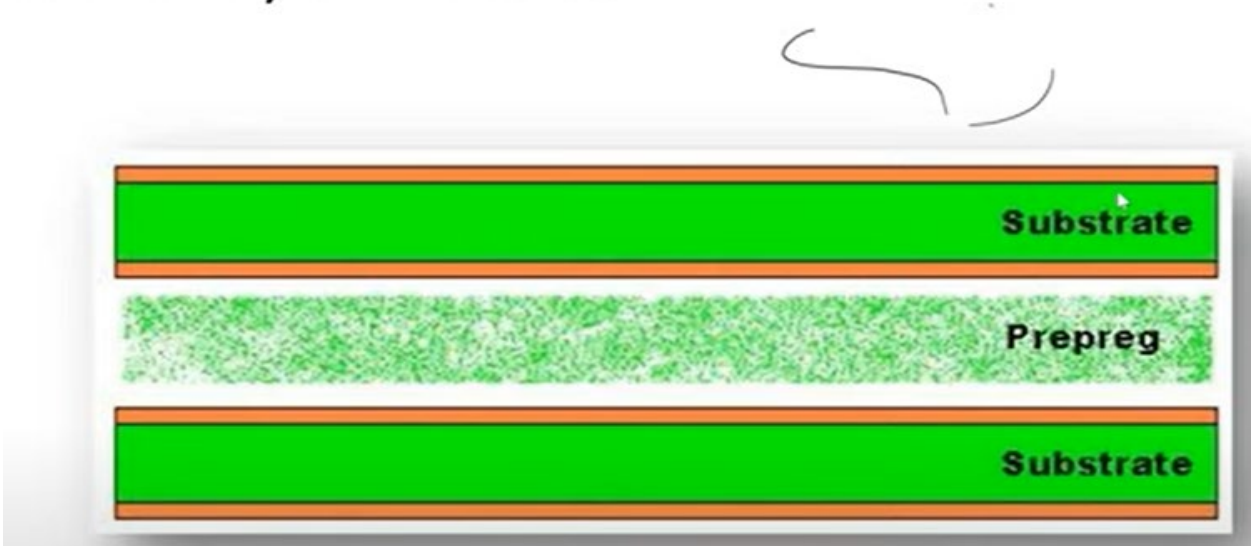
This is a great material when you're working with clock speeds of $< 5\text{Gbps}$ and is classified as a low speed material. FR-4 has a decent ability to control impedance and is also known for its low cost.

2- **Nelco, SI, or Megtron**. In the realm of high speed design, you'll likely be working with these materials. Each is suited for 5-25 Gbps clock speeds.

3- **Rogers**. If your first high speed design is pushing 56Gbps, then you'll likely end up using a Rogers laminate. This is a high frequency, high-temperature material known for good impedance consistency, but it's also expensive to produce.

- Solder mask or Solder resist: is a layer of insulation that sits on the top of the top layer to prevent the components from touching each other, Solder resist is typically 20–30 micrometres thick.
- Silkscreen: is a text that help us identify on the board that help us identify what the components are.

Multilayer Boards



The above image shows a 4layer board which consist the same as 2 of the 2layer board

Copper (top layer)

Substrate

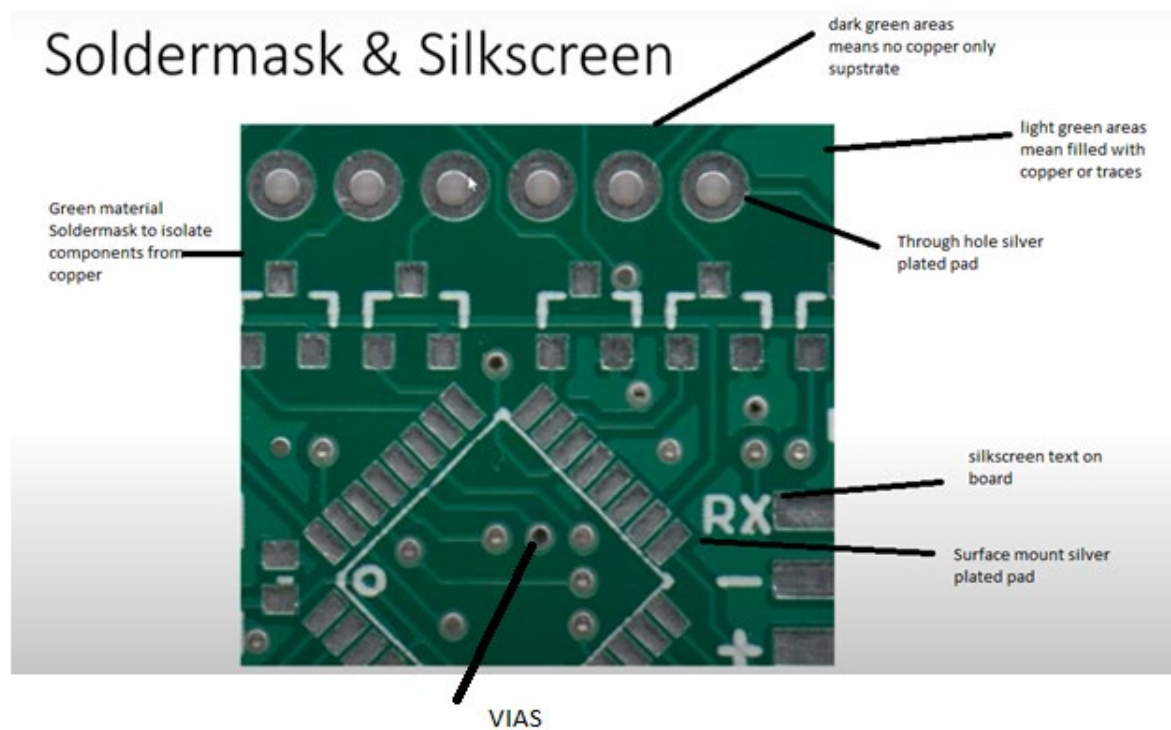
Copper (2nd layer)

Prepreg: Cheaper element than the FR4 that helps components to adhere (Stick fast on the board)

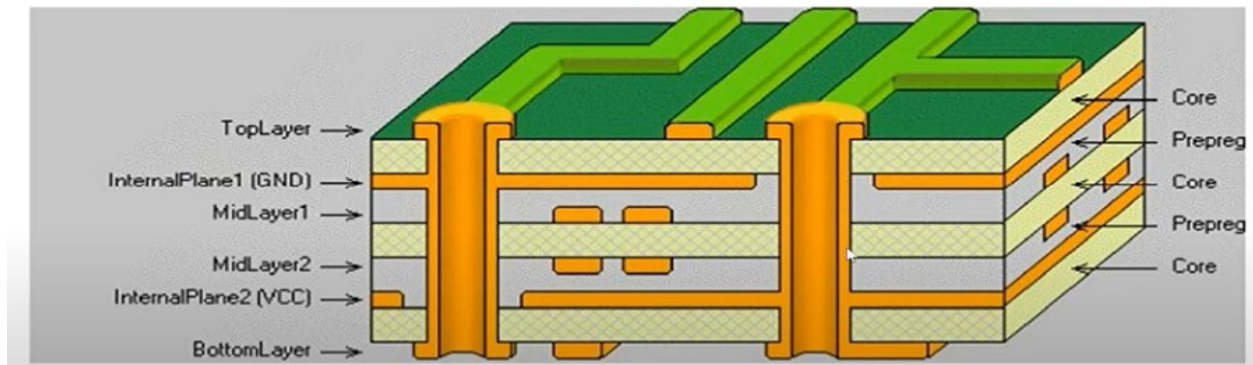
Copper (3rd layer)

Substrate

Copper (bottom layer)



Multilayer Boards



The above image shows a 6-layer PCB a GND plane VCC plane and other planes for signals which will be discussed later howe place.