PROPCB

# PCB material comparison table

| Material | Key features | Advantages | Disadvantages | Applications |
|---|---|---|---|---|
| **FR-4** | Fibreglass reinforced epoxy laminate | High durability<br>Good electrical insulation<br>Affordable | Limited resistance to very high temperatures | Consumer electronics<br>Computers<br>General electronic circuit applications |
| **Rogers** | High quality dielectric material | Excellent signal properties at high frequencies | Higher production cost | Telecommunications<br>RF devices<br>Radars |
| **CEM-1** | Paper-based laminate | Low cost<br>Suitable for simple circuits | Low durability<br>Not suitable for multilayer PCBs | Single-sided circuits<br>Inexpensive electronics |
| **CEM-3** | Fibreglass-based laminate | Similar to FR-4<br>Can be manufactured and processed more easily | Lower mechanical strength compared to FR-4 | Low-cost electronics |
| **Aluminium (Al)** | Metal core<br>High thermal conductivity | Excellent heat dissipation | More expensive to manufacture<br>Limited capabilities in complex circuit designs | LED lighting<br>Power delivery systems<br>Automotive |
| **Copper (Cu)** | Metal core<br>High thermal conductivity | Excellent thermal and electrical conductivity | Very high cost<br>More difficult to machine and process | High power applications<br>Specialized electronic devices |