



# COPPER CLAD LAMINATES, METAL CLAD LAMINATES & COPPER FOILS



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We offer the best choice of Copper clad laminates for different applications in the PCB Fabrication process with competitive pricing, excellent quality and reliable delivery. Most importantly, having over 30 years of experience with these materials and their applications, our expertise in this arena is unsurpassed. We specialize in custom thickness, coppers and other metal clad applications for short runs, prototypes and production runs.

## Glass Epoxy; Copper Clad Laminates FR4 (Rigid/Thin Core). SIC Also offers both CEM1 & CEM3 grade laminates.

FR4 copper clad laminates are a fire rated electrical grade, dielectric fiberglass material created under high pressure with electro deposited HTE (high-temperature elongated) Copper laminated on to the FR4 substrate. FR4 Glass epoxy sheet also known as fiber glass sheet, glass reinforced plastics grp is made from fiber glass cloth and epoxy resin. CEM1 & CEM3 Pepper Epoxy having good heat resistance and moisture resistance, good mechanical properties and electrical properties. [Quality: UL, ISO9001 & ISO14001 Approved](#)

Mainly produced as \*FR4 Rigid Common Laminate \*FR4 Thin Common Laminate for MLB \*FR4 U/V Blocking \*FR4 Non-U/V Blocking \*FR4 High Tg \*FR4 Lead Free Compatible \*FR4 Halogen & Lead Free \*FR4 High CTI \*FR4 Low DK \*CEM3 White and Opaque \*CEM3 Excellent Mechanical Process ability

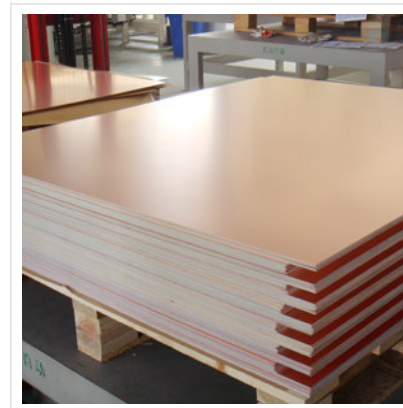
FR4 Thin Laminate Usual thickness ranges from 0.076 mm to 1.039 mm

FR4 Rigid Laminate Usual thickness ranges from 0.80 mm to 1.60 mm

Usual sizes include: 20"x 24"; 36x48, 40"x 48" (can enlarge by 1")

Copper cladding: H/0;H/H;1/0;1/1;2/0;2/2, 3/0, 3/3

\*Special requirement subject to negotiations (Technical specifications Data Sheet available on request)



## Paper Phenolic; Copper Clad Laminates XPC, FR1 & FR2

Paper phenolic Copper Clad Laminate is the primary material for household appliances, information and telecommunications peripheral devices. The production processes are fully automated and have received UL, BSI, VDE, ISO9000 and ISO14000 Certifications. "Focusing on service quality and grasping the customer's need" is the primary marketing concept of the company. [Quality: UL, ISO9001 & ISO14001 Approved](#)

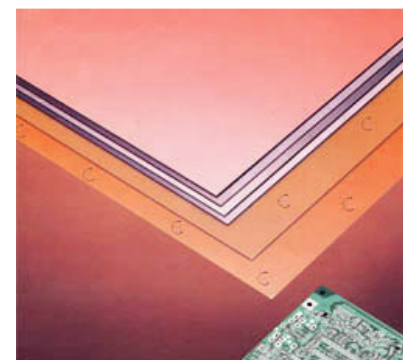
Phenolic Paper, Flame Resistance Copper Clad Laminates are made of phenolic paper as the reinforcement adheres by flame resistance epoxy resin. With good electrical and mechanical characters, heat resistance and smooth appearance, it is suitable for products with high request electron insulating, such as electrical insulating seat and plate for related appliance and instruments.

Usual thickness ranges from 0.80 mm to 3.20 mm

Usual sizes include: 20"x 24"; 40"x 48" (can enlarge by 1")

Copper cladding: H/0;H/H;1/0;1/1;2/0;2/2

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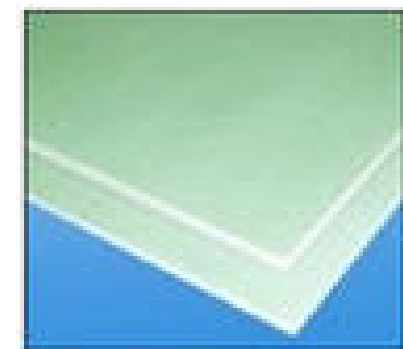
## Unclad Laminates

Unclad Laminates are primarily used for electrical insulation and as a base material in additive circuitry process. Unclad Laminates are made from layers of paper bonded together or from fine threaded fiber cloth using phenolic resin and the other type is made from glass cloth using epoxy resin; these laminates are graded on the basis of their electrical & mechanical properties i.e. XPC, FR1 & FR2, CEM1, CEM3, FLE, FR4 & G10 in general. Some Main features include small and consistent warpage/torsion. [Quality: UL, ISO9001 & ISO14001 Approved](#)

**While Ordering Unclad please define:** Application as Standard electrical apparatus insulation, Electrical & electronics apparatus via punching or via CNC machining, Multi-layer pressing, required NEMA grade, required sheet thickness in (mm) general thickness ranges from 0.50mm to 50mm (standard NEMA grade laminates designated thickness and relevant UL flame retardant values apply) .

**Standard sheet sizes are 20"x 24"; 36x48; 40"x 48" (can enlarge by 1").**

\*Special requirement subject to negotiations (Technical specifications Data Sheet available on request)



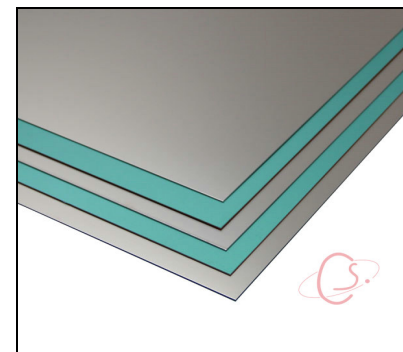
## Metal Clad (Aluminum-based) Copper Clad Laminates.

Aluminum-based copper-clad laminates are of excellent flame retardant ability, high mechanical strength, dimensional stability, etc. Especially, very good heat sink, electromagnetic shielding and solder ability; widely used for auto mobile application such as ECU & BCU, ABS & TCU, Telemetric & Navigation, Junction box & LED lights, and other uses are Power supplies, Voltage regulator converter, UPS & Inverter, Substrate for LED, Converter in PDP, Audio products, Regulator for TV, , power LED, sound box, and for acoustics shielding system, etc. **Substrate structure of MCCL:** COPPER FOIL; CIRCUIT LAYER; EPOXY+CERAMIC FILLER; DIELECTRIC LAYER; AL PLATE SUSTRATE LAYER. [Quality: UL, ISO9001 & ISO14001 Approved](#)

**While Ordering please define:** **Copper foil** material i.e. Deposited Cu (Thickness 0.5~3.0 Oz) or Rolled Cu (Thickness 4~12 Oz); **Thermally conductive dielectric layer** Epoxy Ceramic material i.e. Epoxy resin filled inorganic filler (Thickness 85~120 um); and T-Preg material i.e. Epoxy resin filled inorganic filler -glass fabric prepreg (Thickness 85~250 um); FR4 material i.e. Epoxy-glass fabric prepreg (Thickness 85~110 um); and finally **Metal base plate Al** material #1050, #5052, #6061 (Thickness 0.30~3.00 mm)

**Standard Base sizes 13"x 15"; 20"x24"; 15"x26"; 47.3"x20"; 47.3"x24".**

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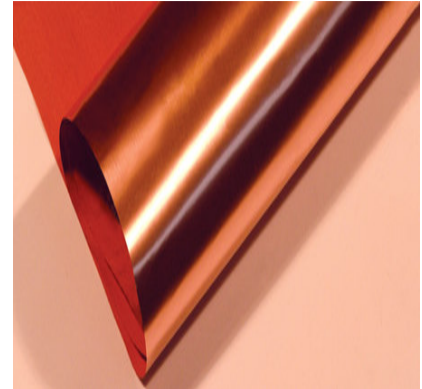
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## SICS-III General purpose copper foil for MLB's

Copper foil is attached and etched on the insulated polymer constitutes a micro circuit that mounts active and passive components. Specially designed for thin-core and general purpose multi-layer PCB's, Main features are uniform surface profile with high peel strength, Stable thermal Et chemical resistance, Very clean etching, ITY (Yellow) and ITP (Pink) treatments are available. Same as HTE foil (IPC grade III). Available in various thickness i.e. 12um, 18um, 35um, 70um, and 105um Quality: UL, ISO9001 & ISO14001 Approved  
Standard Width 640mm and sold as per weight per Kg.



### Properties

| Thick-ness | *Peel Strength (kgf/cm) | Area Weight (g/ m <sup>2</sup> ) | Surface Profile(μm) |                 | Tensile strength (Kgf/mm <sup>2</sup> ) | Elongation (%) |          |
|------------|-------------------------|----------------------------------|---------------------|-----------------|---|----------------|----------|
|            |                         |                                  | Shiny Side (Ra)     | Matte Side (Rz) |   | At R.T         | At 180°C |
| 12μm       | 1.00                    | 107±5%                           | ≤ 0.43              | ≤ 4.5           | ≥ 30                                    | ≥ 5            | ≥ 3      |
| 18μm       | 1.43                    | 155±5%                           | ≤ 0.43              | ≤ 6.0           | ≥ 28                                    | ≥ 5            | ≥ 6      |
| 35μm       | 1.80                    | 285±5%                           | ≤ 0.43              | ≤ 8.0           | ≥ 28                                    | ≥ 5            | ≥ 6      |
| 70μm       | 2.40                    | 585±5%                           | ≤ 0.43              | ≤ 12.0          | ≥ 28                                    | ≥ 5            | ≥ 6      |
| 105μm      | 3.00                    | 915±5%                           | ≤ 0.43              | ≤ 20.0          | ≥ 28                                    | ≥ 10           | ≥ 6      |

\*FR-4 Prepreg applied

\*Special requirement subject to negotiations (Technical specifications Data Sheet available on request)