

Conductor Materials

Copper is used almost exclusively as the conductor material, although silver, brass, and aluminum also have been used. The common thicknesses of foil are 0.0013 inch (1 oz/sq ft) and 0.0027 inch (2 oz/sq ft). The current-carrying capacity of a copper conductor may be determined from Fig. 24.

Manufacturing Processes

The most widely used production methods are:

(A) Etching process, wherein the desired circuit is printed on the metal-clad laminate by photo-

graphic, silk-screen, photo-offset, or other means, using an ink or lacquer resistant to the etching bath. The board is then placed in an etching bath that removes all of the unprotected metal (ferric chloride is a commonly used mordant for copper-clad laminates). After the etching is completed, the ink or lacquer is removed to leave the conducting pattern exposed.

(B) Plating process, wherein the designed circuit pattern is printed on the unclad base material using an electrically conductive ink and, by electroplating, the conductor is built up to the desired thickness. This method lends itself to plating through punched holes in the board for making connections from one side of the board to the other.

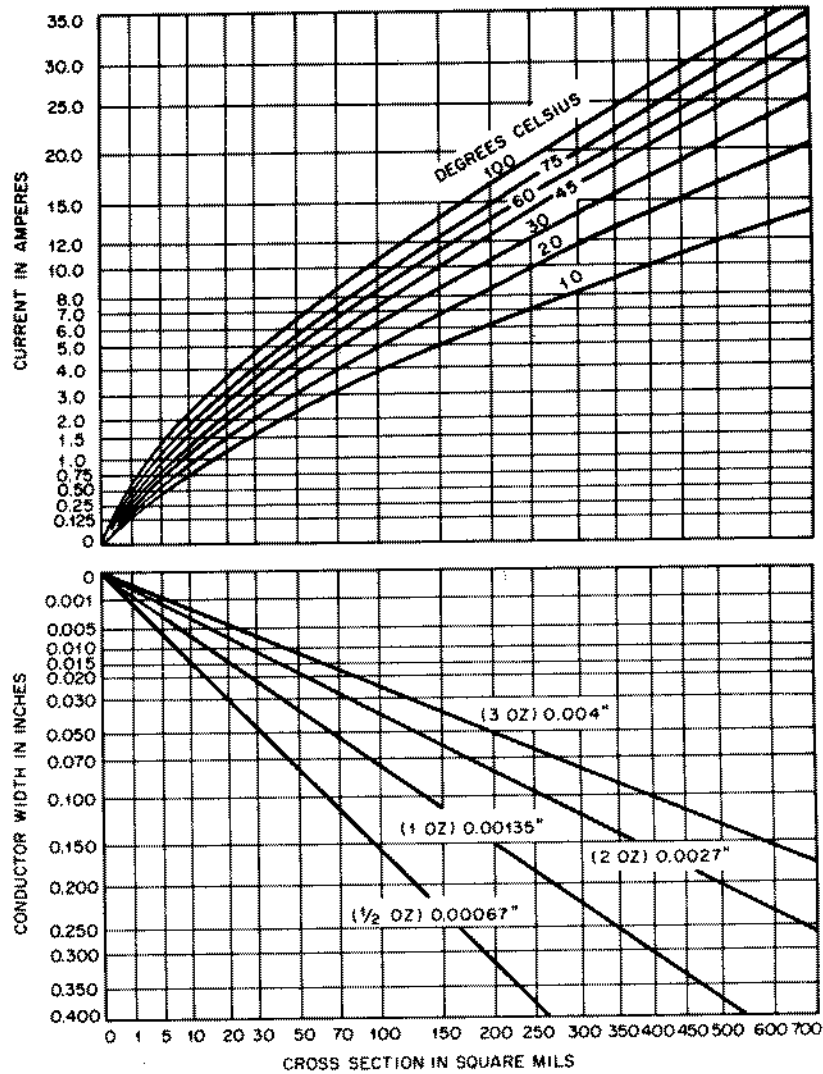


Fig. 24—Current-carrying capacity and sizes of etched copper conductors for various temperature rises above ambient. From MIL-STD-275B, 18 December 1964.

(150) — Excellent — Excellent — Excellent — Good — FEP — ethylene propylene
 Glass-fabric-base fluorinated

* MIL-STD-275B rating shown in parentheses if different from industry rating.