

Skin Depths in Copper

From <http://www.microwaves101.com/encyclopedia/calsdepth.cfm>

Table 1: Skin Depths in Copper

Freq (GHz)	Skin Depth(δ) (microns)	5δ (microns)
1.0	2.06	10.3
1.5	1.68	8.40
2.0	1.46	7.30
2.5	1.30	6.50
3.0	1.19	5.95
3.5	1.10	5.50
4.0	1.03	5.05
5.0	0.92	4.60
10.0	0.65	3.25

Table 2:

Notes:

1. Mnemonic: In copper skin depth = 2 microns at 1 GHz, and goes like $1/\sqrt{f}$
2. In making printed circuit bds, 1 Oz Cu is a layer 1.4 mils thick, or 36 microns (1 mil = 25.4 microns).
3. Rule of thumb is you want 5δ , So 1/4 Oz Cu is well-matched to 1 GHz.
4. For other materials, δ scales as $\sqrt{\rho}$, where ρ is the resistivity. See below for values (from <http://www.microwaves101.com/encyclopedia/conducting.cfm>)

Resistivity of Other Materials:

Silver	1.59 micro-Ohms-cm
Copper	1.673 micro-Ohms-cm
Gold	2.44 micro-Ohms-cm
Nickel	8.7 micro-Ohms-cm
Palladium	10.62 micro-Ohms-cm
Platinum	10.62 micro-Ohms-cm