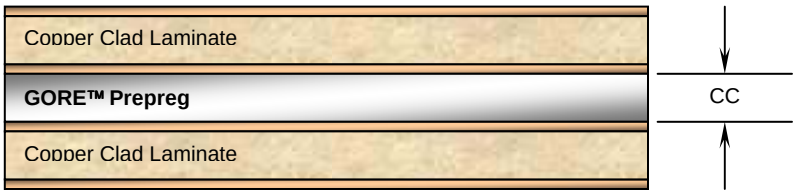
Pressed Thickness Guide for GORE™ SPEEDBOARD® C and LF and G400 - G600 Series Prepregs

GORE™ SPEEDBOARD® C and LF and G400 - G600 Series Prepregs are composite dielectrics consisting of a thermoset resin contained in an ePTFE membrane. They do not contain fiberglass reinforcement and are therefore more conformable than conventional prepregs. The pressed thickness of GORE™ Prepregs is determined using the IPC TM-650-2.4.38 test method. Applied to a printed wiring board, the pressed thickness of GORE™ Prepregs is equal to the copper-to-copper distance between two planes. See Case 1.



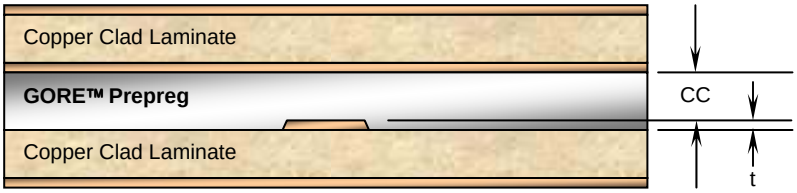
Case 1: Pressed Thickness

$$cc = t_p$$

Where **cc** is the copper-to-copper distance and
t_p is the pressed thickness of the GORE™ Prepreg

Example: A single ply of 2.2 mil GORE™ SPEEDBOARD® C Prepreg will yield a copper-to-copper distance of 2.2 mils when laminated between two copper planes.

The copper-to-copper distance for idealized “signal – plane” and “signal – signal” configurations are given below in Cases 2 and 3.



Case 2: Signal – Plane, Signal Layer ≤ 7% Cu

$$cc = t_p - t$$ for copper area ≤ 7% on the signal layer

Where **t** is the thickness of the copper on the signal layer.

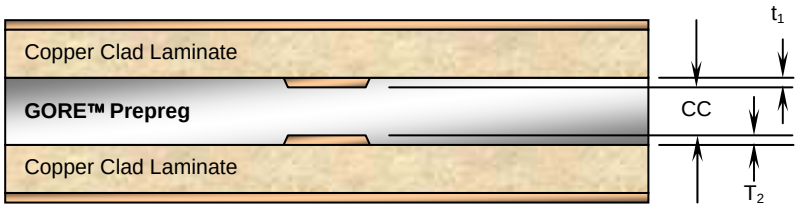
Example: Given half ounce copper layers, t = 0.0007”
and a single ply of 2.2 mil GORE™ SPEEDBOARD® C Prepreg
cc = 0.0022” – 0.0007”
cc = 0.0015”

W. L. Gore & Associates, Inc.

North America
1 (800) 445-GORE (4673)

International
1 (302) 292-5100

Europe
+49 9144 6010
+44 1382 561511



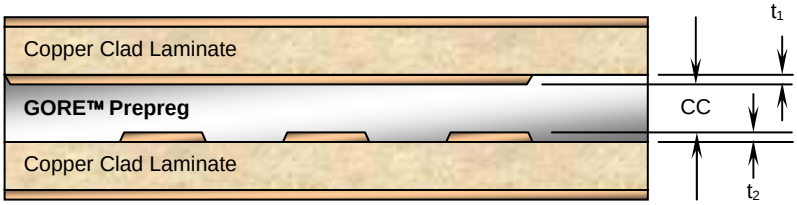
Case 3: Signal – Signal, Signal Layers < 3.5% Cu

$cc = t_p - (t_1 + t_2)$ for copper areas ≤ 3.5% on both signal layers

Where t_1 and t_2 are the copper thickness on the corresponding signal layers.

Example: Given ½ ounce copper on both layers, $t_1 = t_2 = 0.0007$”
and a single ply of 3.4 mil GORE™ SPEEDBOARD® C Prepreg
cc = 0.0034 – (0.0007 + 0.0007)
cc = 0.0020

Use Case 4 to calculate the approximate copper-to-copper distance for the more generalized case of mixed signal and plane layers. The calculation is based on the principle of conservation of volume.



Case 4: Mixed Signal & Plane Layers

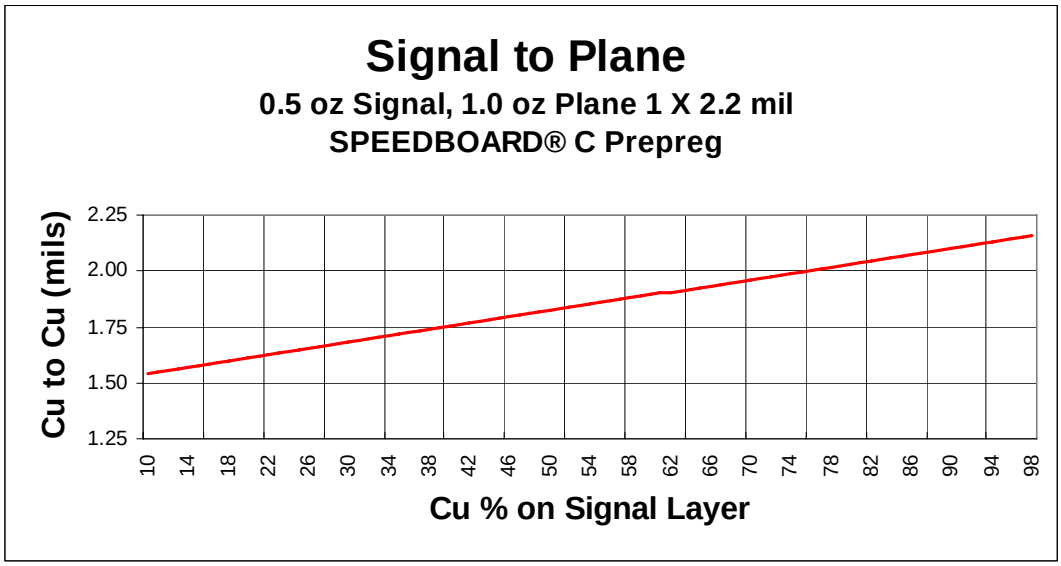
$cc = t_p - t_1 * (1 - Cu_1\%) - t_2 * (1 - Cu_2\%)$

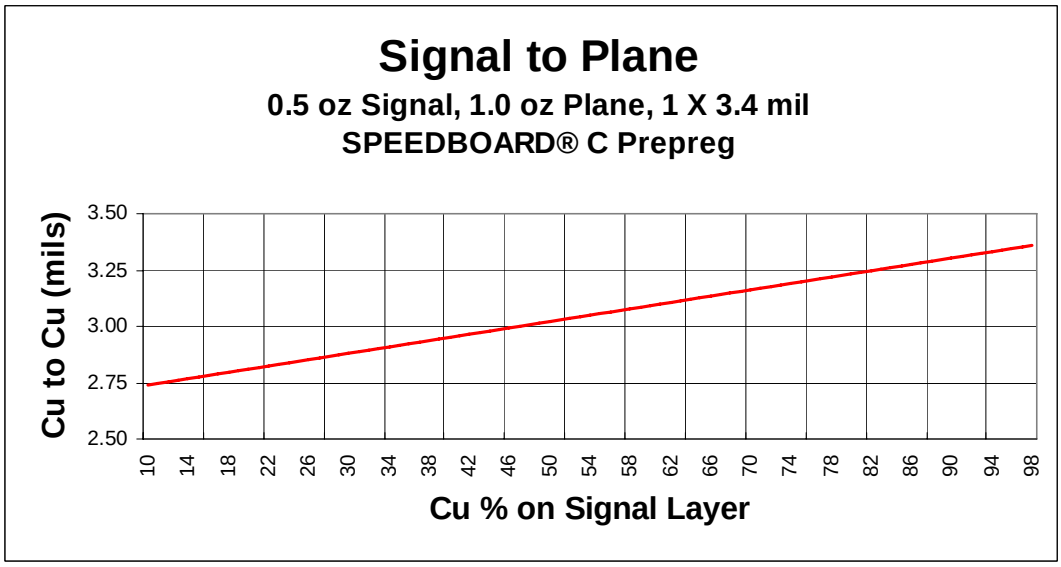
Where $Cu_1\%$ and $Cu_2\%$ is the percentage of copper coverage of the corresponding layer.

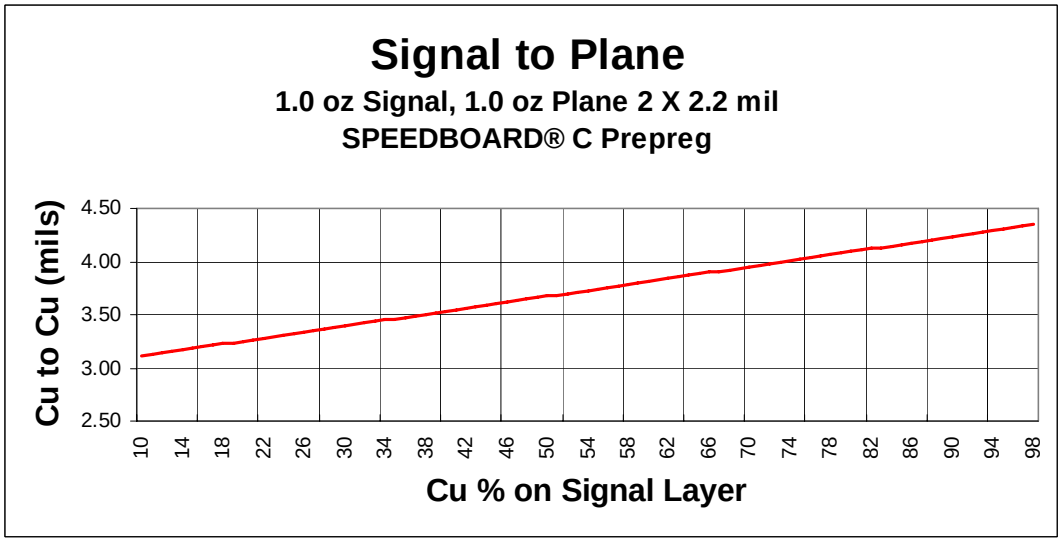
Example: Given 1 oz. copper on both layers, $t_1 = t_2 = 0.0014$
and 2 plies of 2.2 mil GORE™ SPEEDBOARD® C Prepreg
and $Cu_1\% = 76.3\%$ and $Cu_2\% = 38\%$
$cc = t_p - t_1 * (1 - Cu_1\%) - t_2 * (1 - Cu_2\%)$
cc = 0.0044 – 0.0014*(1-0.763) – 0.0014*(1-0.38)
cc = 0.0032”

The following charts were created using these equations to plot copper-to-copper thickness for several representative constructions for Cases 2, 3, and 4.

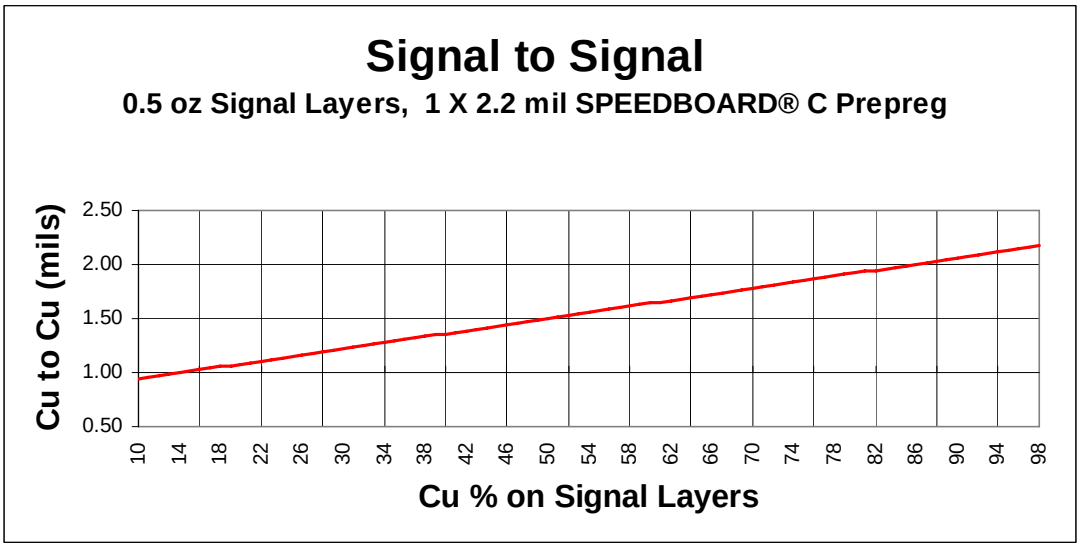
Copper-to-Copper Thickness for Selected Case 2 Configurations

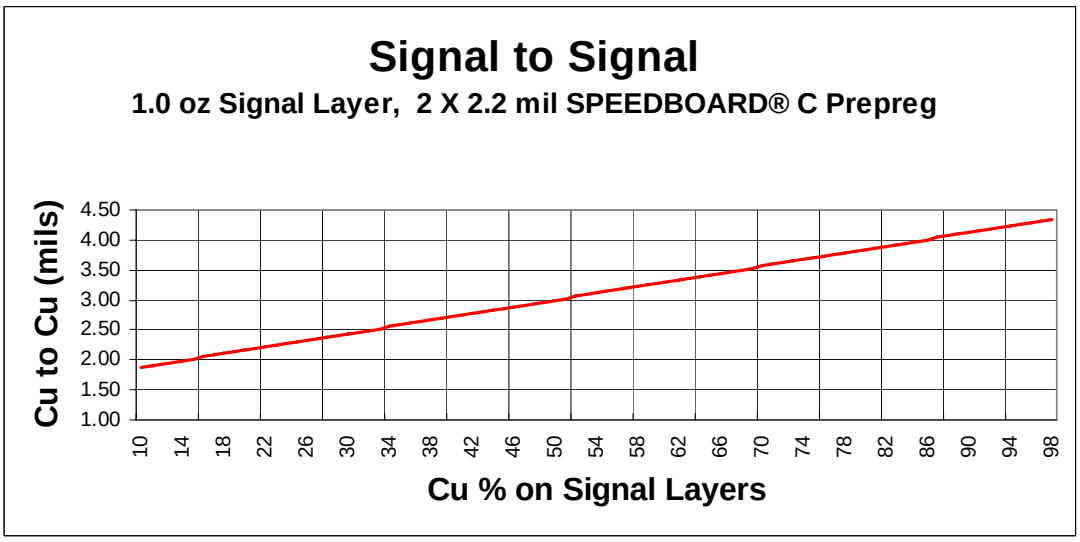


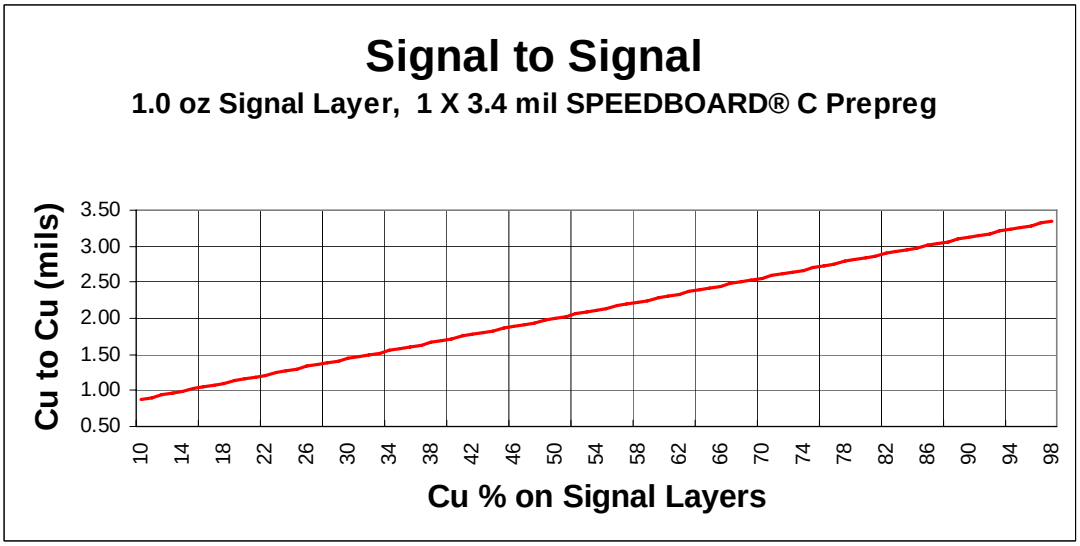




Copper-to-Copper Thickness for Selected Case 3 Configurations



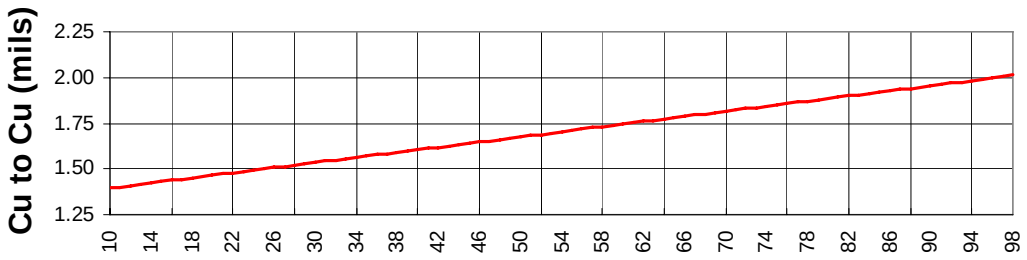




Copper-to-Copper Thickness for Selected Case 4 Configurations

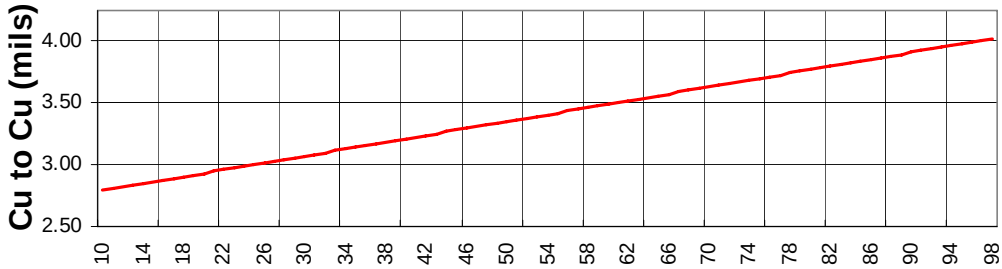
Signal to Signal/Plane Layer

0.5 oz Signal, 0.5 oz Signal/Plane Layer (75% Cu),
1 X 2.2 mil SPEEDBOARD® C Prepreg



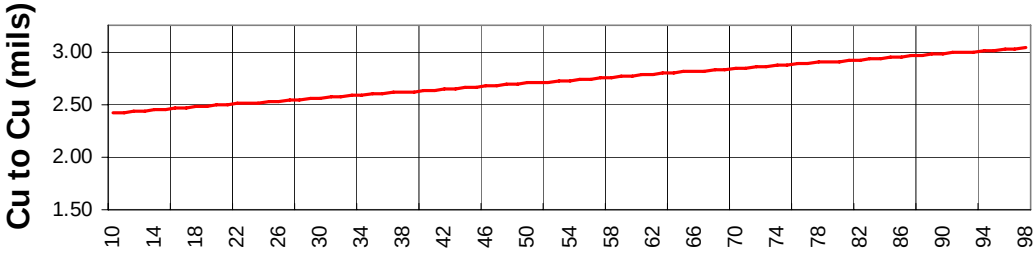
Signal to Signal/Plane Layer

1.0 oz Signal Layer, 1 oz Signal/Plane Layer (75% Cu)
2 X 2.2 mil SPEEDBOARD® C Prepreg



Signal to Signal/Plane Layer

0.5 oz Signal Layer, 1 oz Signal/Plane Layer (75% Cu)
1 X 3.4 mil SPEEDBOARD® C Prepreg



GORE™ Prepreg Common Part Numbers

GORE™ SPEEDBOARD® C Prepreg		
Part Number	**Thickness (mils)**	**Thickness (microns)**
77GS-8215-xx	1.5	38
77GS-8320-xx	2.0	51
77GS-8222-xx	2.2	57
77GS-8234-xx	3.4	86

GORE™ SPEEDBOARD® LF Prepreg		
Part Number	**Thickness (mils)**	**Thickness (microns)**
77GS-8502-xx	2.2	57
77GS-8503-xx	3.4	86

GORE™ G410 Prepreg		
Part Number	**Thickness (mils)**	**Thickness (microns)**
74ML-5001-xx	2.5	62

GORE™ G620 Prepreg		
Part Number	**Thickness (mils)**	**Thickness (microns)**
74ML-4477-xx	2.4	60

Please specify cut sheet dimensions when ordering.