

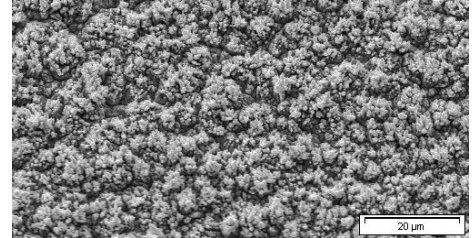
HIGH BOND COPPER FOIL ON HYDROCARBON SUBSTRATES.

IPC
Grade 3



TYPICAL SUBSTRATES

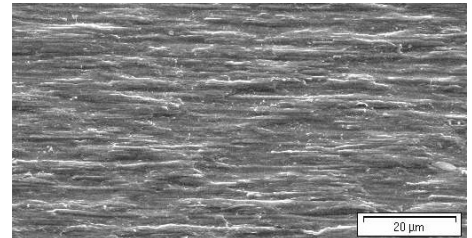
Hydrocarbon, Polyphenylene Ether/Oxide (PPE / PPO) based, high Tg and highly filled resin systems.



Treated Electrolyte Side

TYPICAL PROCESSES

Radio frequency, microwave and high speed digital multilayer Printed Circuit Boards.



Untreated Drum Side

TYPICAL APPLICATIONS

Base stations infrastructures, automotive radars and digital applications.

TYPICAL AVERAGE PROPERTIES*

TWLS							
MEASURED PARAMETERS	UNITS	PRODUCT GAUGE				IPC	
Nominal Thickness	µm oz.	12 3/8	18 1/2	35 1	70 2	Specification IPC-4562A	Test Method IPC-TM-650
Area weight	g/m ²	108	157	283	577	3.4.4	2.2.12
Untreated Side Roughness (Ra)		≤ 0.40				3.5.6	
Treated Side Roughness Rz	µm	3.7 - 5.4	5 - 7.5	5.8 - 9.2	6.7 - 11.8	-	2.2.17
	JIS						
	ISO	4.5 - 6.5	6 - 9	7 - 11	8 - 14	3.4.5	
Tensile Strength Transverse (RT)	MPa (k.Lb/in ²)	≥ 276 (≥ 40)				3.5.1	2.4.18
Tensile Strength Transverse (180 °C)		≥ 138 (≥ 20)					
Elongation Transverse (RT)	%	≥ 3	≥ 6	≥ 9	≥ 12	3.5.3	
Elongation Transverse (180 °C)		≥ 2	≥ 3				
Peel Strength Filled Hydrocarbon Resin ^[1] (RT)	N/mm (Lb/in)	≥ 0.6 (≥ 3.4)	≥ 0.7 (≥ 4.0)	≥ 0.9 (≥ 5.1)		3.5.4	2.4.8
Peel Strength Very Low Loss (PPE Based Resin) ^[1] (RT)		≥ 0.85 (≥ 4.8)		≥ 1.0 (≥ 5.7)			

^[1] Laminate construction with thickness ≥ 0.5 mm

ALTERNATIVE

For reverse treated type please consult TWLS-B datasheet.
For fluoropolymer resin system please consult HFA-LP datasheet.

* ALL OF THIS TECHNICAL INFORMATION HAS BEEN DETERMINED WITH DUE CARE AND THOROUGHNESS. HOWEVER, BECAUSE THE CONDITIONS OF USE AND PROCESS AND APPLICATION TECHNOLOGIES EMPLOYED CAN SUBSTANTIALLY VARY, THE PROVIDED DATA AND FIGURES CAN ONLY SERVE AS NON-BINDING GUIDELINES. THEY DO NOT CONSTITUTE A GUARANTEE THAT THE PURCHASED ITEM WILL POSSESS CERTAIN ATTRIBUTES. FOR THIS REASON, NO LIABILITY WHATSOEVER CAN BE ASSUMED FOR THEM. THE BUYER IS OBLIGED TO CHECK THE SUITABILITY OF ALL SUPPLIED PRODUCTS.