

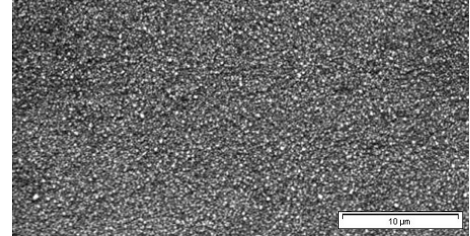
SUPER FLAT PROFILE COPPER FOIL FOR REDUCED SIGNAL LOSSES. BF-NN-HT VERSION WITH HIGHER THERMAL RELIABILITY IS ALSO AVAILABLE.

IPC
Grade 10 & 3



TYPICAL SUBSTRATES

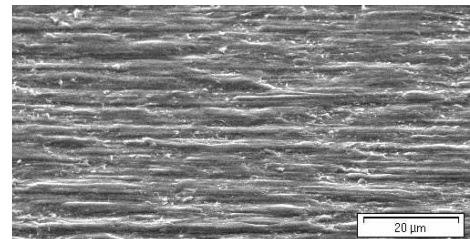
Ultra low loss substrates including Polyphenylene Ether/Oxide (PPE / PPO) based resin systems.
Also convenient for pure or modified fluoropolymer (PTFE) resin systems.



Treated Electrolyte Side

TYPICAL PROCESSES

Radio frequency, microwave and high speed digital Printed Circuit Boards.
The super flat profile surface structure helps mitigating the impact of the skin effect.
The pure copper treatment supports reducing the passive intermodulation (PIM).



Untreated Drum Side

TYPICAL APPLICATIONS

Networking and communication infrastructures including routers, switches and servers especially for 5G.
Also used for base stations infrastructures and 77 GHz automotive radars.

TYPICAL AVERAGE PROPERTIES*

BF-NN / BF-NN-HT									
MEASURED PARAMETERS			UNITS	PRODUCT GAUGE				IPC	
Nominal Thickness			μm oz.	9 1/4	12 3/8	18 1/2	35 1	Specification IPC-4562A	Test Method IPC-TM-650
Area Weight			g/m ²	71	100	143	277	3.4.4	2.2.12
Untreated Side Contact Roughness	Ra	ISO 4287	μm	≤ 0.3				3.5.6	2.2.17
Untreated Side Contactless Roughness	Sa	ISO 25178		~ 0.20				-	2.2.22 ^[2]
Treated Side Contact Roughness	Rz	JIS B 601		≤ 1.4	≤ 1.2	≤ 1.1	≤ 1.0	-	2.2.17
	Rz	ISO 4287		≤ 1.8	≤ 1.6	≤ 1.4	≤ 1.3	3.4.5	
Treated Side Contactless Roughness	Sa	ISO 25178		-	~ 0.18	~ 0.16	~ 0.14	-	2.2.22 ^[2]
	Sz			-	~ 2.3	~ 1.7	~ 1.5		
	Sdr			-	~ 1.4	~ 1.1	~ 0.8		
Tensile Strength Transverse (RT)			MPa (k.Lb/in ²)	≥ 276 (≥ 40)				3.5.1	2.4.18
Elongation Transverse (RT)			%	4 - 14	5 - 15	7 - 25	10 - 35	3.5.3	
Peel Strength Very Low Loss (PPE Based Resin) ^[1] (RT)			N/mm (Lb/in)	≥ 0.6 ^[3] (≥ 3.4)	≥ 0.35 (≥ 2.0)	≥ 0.4 (≥ 2.3)	≥ 0.5 (≥ 2.9)	3.5.4	2.4.8

^[1] Laminate construction with thickness ≥ 0.5 mm

^[2] IPC TM 2.2.22 as of May 2020

^[3] After build-up to 35 μm

ALTERNATIVE

For reduced conductor losses please consult BFL-NN and BFL-NF datasheets.

* 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.