



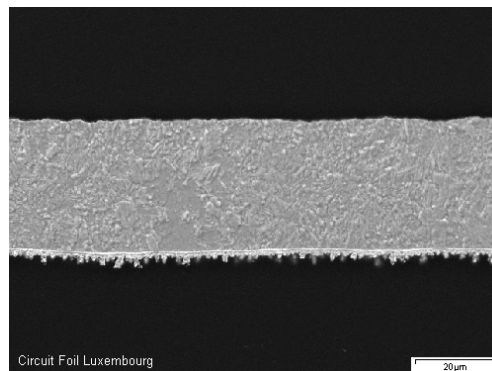
BF-TO-LP3

Technical Characteristics

BF style of foil is an ultra flat single side treated electro-deposited copper foil, characterized by high ductility at room temperature and excellent flexible properties [IPC-Grade 10] and a fine grain size with thermally stable microstructure.

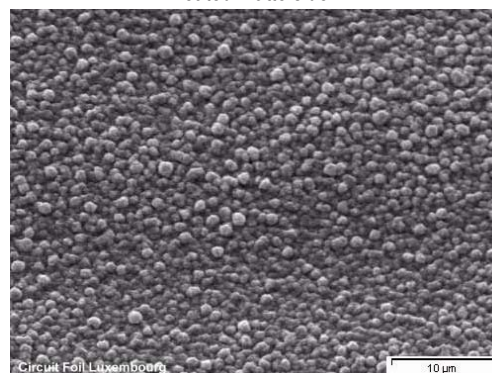
The very uniform pink TO copper treatment is designed to provide excellent bond strength on flexible substrates.

Typical substrates include FPC (PI, PET, PEN) and PTFE for HF low loss application up to 40 GHz.



Cross section

Treated matte side



Typical product range

BF-HFI/TO-LP3							
Table 1							
MEASURED PARAMETERS	UNITS	PRODUCT GAUGE				IPC	
Nominal Thickness	µm oz.	9 1/4	12 3/8	18 1/2	35 1	Specification IPC-4562	Test Method IPC-TM-650
Area Weight (± 5 %)	oz/ft ²	0.26	0.35	0.50	0.95	(a)1.2.5, table 1-1	2.2.12
	g/m ²	79	108	152	289	(b)3.4.4	
	g/254 in ²	12.9	17.7	24.9	47.4	(c)4.6.3	
Untreated Side Roughness (Ra)	µm µ.inch	0.20 - 0.40 8 - 16				3.5.6	2.2.17
Treated Side Roughness (Rz)	µm µ.inch	2.5 - 4.0 98 - 157				3.4.5	2.2.17
Tensile Strength Transverse at RT	MPa k.Lb/in ²	> 207 > 30			> 276 > 40	3.5.1	2.4.18
Tensile Strength Transverse at 180 °C	MPa k.Lb/in ²	> 103 > 15			> 138 > 20	3.5.1	2.4.18
Elongation Transverse at RT	%	5 - 30			10 - 30	3.5.3	2.4.18
Elongation Transverse at 180 °C	%	5 - 30				3.5.3	2.4.18
Fatigue Ductility ⁽¹⁾	%	> 20	> 25			3.5.2	2.4.2.1

⁽¹⁾ after 10 min at 200 °C

BF-TO-LP3

Table 2

MEASURED PARAMETERS	UNITS	PRODUCT GAUGE				IPC	
		9 1/4	12 3/8	18 1/2	35 1	Specification IPC-4562	Test Method IPC-TM-650
Nominal Thickness	μm oz.	9 1/4	12 3/8	18 1/2	35 1	Specification IPC-4562	Test Method IPC-TM-650
Area Weight ($\pm 5\%$)	oz/ft ²	0.26	0.35	0.50	0.95	(a)1.2.5, table 1-1	2.2.12
	g/m ²	79	108	152	289	(b)3.4.4	
	g/254 in ²	12.9	17.7	24.9	47.4	(c)4.6.3	
Peel Strength (RT) FR4 ^[1]	N/mm Lb/in	> 0.8 ^[2] > 4.6 ^[2]	> 1.0 > 5.7	> 1.2 > 6.8		3.5.4	2.4.8
Peel Strength (RT) on some proprietary FPC materials ^[1] :							
Upilex VT ^[4]	N/mm Lb/in	> 1.2 ^[2]	> 1.8 ^[3]			3.5.4	2.4.8
		> 6.8 ^[2]	> 10.3 ^[3]				
Apical Pixeo ^[5] FC-142	N/mm Lb/in	> 0.7 > 4.0	> 1.4 ^[3] > 8.0 ^[3]	> 1.9 ^[3] > 10.8 ^[3]	> 2.4 ^[3] > 13.7 ^[3]	3.5.4	2.4.8
High Temp. Tarnish Resistance	-	120 min @ 180 °C in air: pass					
Solderability	-	Complies with IPC specification				3.6.3	2.4.12

^[1] Laminate construction with thickness ≥ 0.5 mm

^[2] after galvanic reinforcement up to 35 μm

^[3] cohesive fracture

^[4] Upilex is a registered Trademark of UBE Industries

^[5] Apical Pixeo is a registered Trademark of KANEKA Corporation

Advanced Product Features

- Ultra flat profile on both sides.
- Ductility better than Type E, Grade 10 {IPC-4562 / 1.2.4.1}.
- Very high flex fatigue with similar dynamic properties in machine and cross machine direction.
- Fine pitch LP3 type profile (Rz: 2.5 μm – 4.0 μm).

Notes

- Products can be supplied in both roll and sheeted formats.
- Roll product is available in widths of 150 mm (~ 5.9") to 1296 mm (~ 51").
- Product is supplied on sturdy cardboard cores with an ID of ~ 80 mm (3 1/8"). Alternative core sizes and materials are available on request.
- Please visit our website (www.circuitfoil.com) for regular updates.

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.

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