



TWS-B-YE

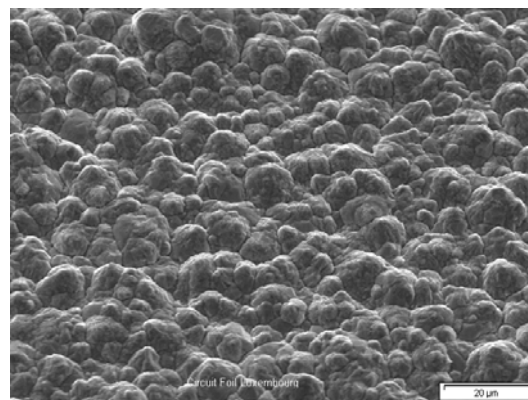
Technical Characteristics

TWS-B style of foil is an high performance single-sided treated electro-deposited copper foil, where bonding treatment is applied to the “shiny” side (so-called “Reverse Treated Foil”). This products is designed to provide high bond strength on a wide range of high T_g substrates and new engineering plastics. Base foil is characterized by enhanced high temperature elongation properties [Grade 3].

This foil is now available with the inorganic **YE** protection on the untreated matte surface, assures superior resistance to oxidation, especially in warm and humid environments.

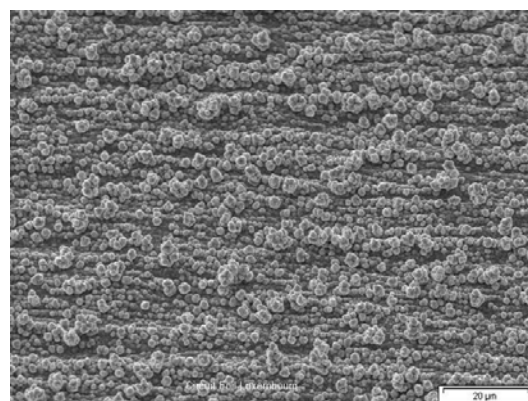
The product is designed for the manufacture of high performance laminates with extended thermal stability and electrical properties for multilayer PCB's, where inner layers will be submitted to “oxide-bonding” chemistries.

Typical substrates include polyimide and bismaleimidetriazine (BT) epoxy blends and cyanate esters.



Untreated matte side

Treated shiny side



Typical average properties

TWS-B-YE						
MEASURED PARAMETERS	UNITS	PRODUCT GAUGE			IPC	
Nominal Thickness	μm oz.	18 1/2	35 1	70 2	Specification IPC-4562A	Test Method IPC-TM-650
Area Weight (± 5 %)	oz/ft ²	0.51	0.95	1.90	(a)1.2.5, table 1-1	2.2.12
	g/m ²	157	290	580	(b)3.4.4	
	g/254 in ²	25.7	47.5	95.0	(c)4.6.3	
Untreated Matte Side Roughness (Rz)	μm μ.inch	3.0 - 5.5 118 - 217	4.5 - 6.5 177 - 256	7 - 9 276 - 354	3.5.6	2.2.17
Treated Shiny Side Roughness (Rz)	μm μ.inch	5 - 6 197 - 236			3.4.5	2.2.17
Tensile Strength Transverse at RT	MPa k.Lb/in ²	> 276 > 40			3.5.1	2.4.18
Tensile Strength Transverse at 180 °C	MPa k.Lb/in ²	> 138 > 20			3.5.1	2.4.18
Elongation Transverse at RT	%	> 6	> 10	> 15	3.5.3	2.4.18
Elongation Transverse at 180 °C	%	> 3			3.5.3	2.4.18
Peel Strength Treated Shiny Side (RT) FR4 ^{1/1}	N/mm Lb/in	> 1.1 > 6.2	> 1.4 > 8.0	> 1.7 > 9.7	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

^{1/1} Laminate construction with thickness >= 0.5 mm



Advanced Product Features

General Features

- High temperature elongation - [HTE-Type E / Grade 3] properties prevent "barrel cracking" failures in multilayer PCB's.
- Thermally stable microstructure - stable mechanical properties unaffected by thermal excursion from lamination or post laminate baking cycles - which could degrade laminate dimensional stability, warp & twist, and drilling characteristics (nail heading).
- The product meets or exceeds all of the requirements of IPC-4562A when tested on typical epoxy and multifunctional prepregs, in accordance with IPC test methods, including high temperature peel strength, solder shock and accelerated ageing.

Bonding Surface Related (Treated shiny side)

- Higher laminate bond strength on "difficult" high T_g substrate from a combination of an increased mechanical bonding surface area and, where applicable, chemical adhesion.
- Low Profile bonding surface roughness ($R_z \leq 10.2 \mu\text{m} / 400 \mu\text{.inch}$) ensures fast clean etching, with minimal loss of bond strength compared to conventional products.
- Increased etch capacity throughput from reduced etch times.
- Improved fine line capability and overall yield.

Copper Surface of Laminate (Untreated matte side)

- An "as plated" copper surface with a uniform controlled micro roughness provides an ideal surface for PCB processing:
- Eliminates all aggressive and variable mechanical processing, such as pumice scrubbing, to roughen the copper surface. This enhances the laminate dimensional stability and is especially important for thin laminates prone to mechanical damage.
- Easy removal of the non-tarnish passivation layer by simple chemical processing (typically 30 s immersion in 10 % sulphuric acid at room temperature) prior to photo resist application.
- Improved photo resist adhesion, reducing undercut and improved line definition.
- Simplified "oxide" processing. The already roughened untreated matte surface eliminates the need for chemical micro etching prior to oxide processing and the associated etch waste disposal costs.

Notes

- Products can be supplied in both roll and sheeted formats.
- Roll product is available in widths of 150 mm (~ 5.9") to 1360 mm (~ 53.5").
- 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.

Circuit Foil Luxembourg	Circuit Foil America	Circuit Foil Trading Inc. (USA)	Circuit Foil Asia Pacific Co. Ltd. (Zhangjiagang Free Trade Zone)	Circuit Foil Asia Pacific Ltd. (HK) Hong Kong Head Office
POB 9 L - 9501 Wiltz G.D. of Luxembourg	625, rue du Luxembourg Granby, J2J 2S9 Canada	115, East Glenside Ave./Suite 12 Glenside, PA 19038 USA	Block A, 8 Guangdong Road Free Trade Zone Zhangjiagang Jiangsu Province 215 634 People's Republic of China	Rm. 706, Well Fung Industr. Centre 68 Ta Chuen Ping Street, Kwai Chung N.T. Hong Kong
Phone: +(352) 95 75 51 1 Fax: +(352) 95 75 51 249 E-mail: office@circuitfoil.com Internet: www.circuitfoil.com	Phone: +(1) 450 770 8558 Fax: +(1) 450 405 4622 E-mail: cfa@circuitfoil.com	Phone: +(1) 215 887 7255 Fax: +(1) 215 887 6911 E-mail: cfinc@circuitfoil.com	Phone: +(86) 512 58 32 21 82 80 03 Fax: +(852) 512 58 32 21 82 81 E-mail: cfapzjg@circuitfoil.com	Phone: +(852) 24 23 97 56 Fax: +(852) 24 23 70 92 E-mail: cfap@circuitfoil.com