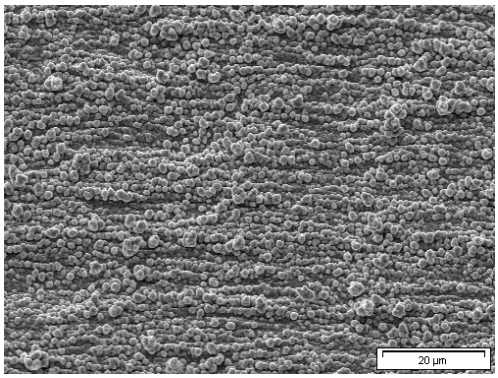
TWS-TWS

Technical Characteristics

TWS-TWS is an advanced double-side treated electro-deposited copper foil designated for use on high performance substrate. The additional bonding treatment applied to the shiny side of the Grade 3 base foil provides "ready-to-use" laminate products for inner layer PCB fabrication.

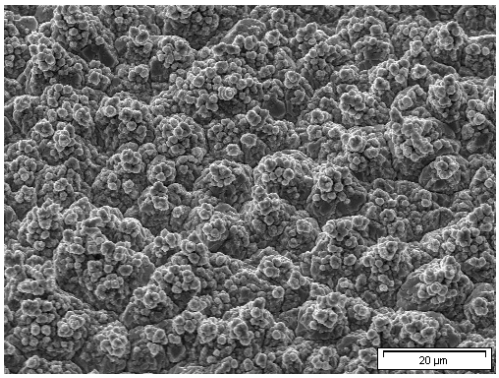
Laminates manufactured with these foils are used to produce inner layer PCB's with high inner layer-to-layer bond strengths on high performance resin systems without the necessity of wet chemical oxide or alternative processing.

Typical substrates would include FR-4 and high T_g epoxy resins, BT blends, cyanate esters, polyimides and advanced thermoplastics.



Treated shiny side

Treated matte side



Typical average properties

TWS-TWS						
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/ft² g/m² g/254 in²	0.52 159 26.1	0.95 290 47.5	1.92 585 95.9	(a)1.2.5, table 1-1 (b)3.4.4 (c)4.6.3	2.2.12
Treated Shiny Side Roughness (Rz)	µm µ.inch	< 5.1 < 201			3.4.5	2.2.17
Treated Matte Side Roughness (Rz)	µm µ.inch	6 - 8 236 - 315	7 - 10 276 - 394	9 - 12 354 - 472	3.4.5	2.2.17
Tensile Strength Transverse at RT	MPa k.Lb/in²	> 276 > 40			3.5.1	2.4.18
Tensile Strength Transverse at 180 °C	MPa k.Lb/in²	> 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 (RT) polyimide [1] *Treated Shiny Side*	N/mm Lb/in	> 0.53 > 3.0	> 0.6 > 3.4	> 0.7 > 4.0	3.5.4	2.4.8
Peel Strength (RT) polyimide[1] *Treated Matte Side*	N/mm Lb/in	> 0.8 > 4.6	> 1.14 > 6.5	> 1.4 > 8.0	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

Advanced Product Features

- Consistent high inner layer-to-layer adhesion as a consequence of the well defined electrochemically applied bonding treatment on the foil's shiny side - eliminating delamination during solder shock at final assembly.
- Elimination of "Pink Ring" lamination failures during PTH processing.
- Improved yield on thin core laminates due to the elimination of the handling damage from multi-stage wet chemical processing.
- Elimination of the capital costs for multi-stage wet chemical oxide or alternative processing.
- Freedom from the variability of wet chemical processing and the associated process, disposal, pollution and environmental costs.
- High temperature elongation - [HTE-Type E / Grade 3] {IPC-4562A / 1.2.4.1} prevents "barrel cracking" failures in multi-layer 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.

Notes

- Double Treated copper foil (TWS-TWS) is designed for use on high performance resin systems and "regular" FR-4 / glass epoxy systems.
- 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 up to 1430 mm (~ 56") wide product is available on special request}.
- 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.

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