

TWS

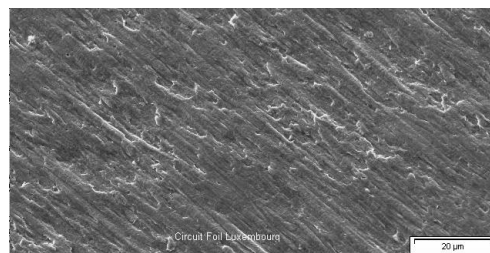
Technical Characteristics

TWS represents a family of high performance matte-sided treated products designed to provide high bond strength on a wide range of high T_g substrates and new engineering plastics. The base foil is characterized by enhanced high temperature elongation properties [IPC-Grade 3] and thermally stable microstructure

The product is designed for the manufacture of high performance laminates with extended thermal stability and electrical properties.

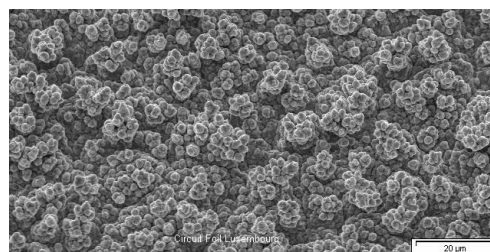
Typical substrates include polyimide, cyanate esters, hydrocarbon-ceramics and thermoplastics.

For fluorocarbon containing resins, please consult HFZ-LP and BF-HFZ datasheets.



Shiny side

Treated matte side



Typical average properties*

TWS							
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	oz/ft ² g/m ² g/254 in ²	0.37 112 18.4	0.53 163 26.7	0.97 295 48.3	1.93 588 96.4	(a)1.2.5, table 1-1 (b)3.4.4 (c)4.6.3	2.2.12
Untreated Side Roughness (Ra)		0.20 - 0.40 (8 - 16)				3.5.6	
Treated Side Roughness Rz	ISO	6 - 8.5 (236 - 335)	7 - 11 (276 - 433)	8 - 13 (315 - 512)	10 - 15 (394 - 591)	3.4.5	2.2.17
	JIS	5 - 7.1 (197 - 280)	5.8 - 9.3 (228 - 366)	6.7 - 11 (264 - 433)	8.0 - 12.7 (315 - 500)	-	
Tensile Strength Transverse at RT	MPa	≥ 276 (≥ 40)				3.5.1	2.4.18
Tensile Strength Transverse at 180 °C	(k.Lb/in ²)	≥ 138 (≥ 20)					
Elongation Transverse at RT	%	≥ 3	≥ 6		≥ 9	3.5.3	
Elongation Transverse at 180 °C		≥ 2	≥ 3				
Peel Strength (RT) ^[1]							
High T _g and Filled Epoxy	N/mm (Lb/in)	≥ 1.05 (≥ 6.0)	≥ 1.2 (≥ 6.9)	≥ 1.4 (≥ 8.0)			
Filled Hydrocarbon Resin		-	≥ 0.7 (≥ 4.0)	≥ 0.8 (≥ 4.6)			
Polyimide		-	≥ 1.2 (≥ 6.9)	≥ 1.4 (≥ 8.0)	≥ 1.6 (≥ 9.1)		
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

Higher laminate bond strength on “difficult to bond” high T_g substrates are achieved through a combination of increased mechanical bonding surface area and, where applicable, chemical adhesion.

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* 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.