

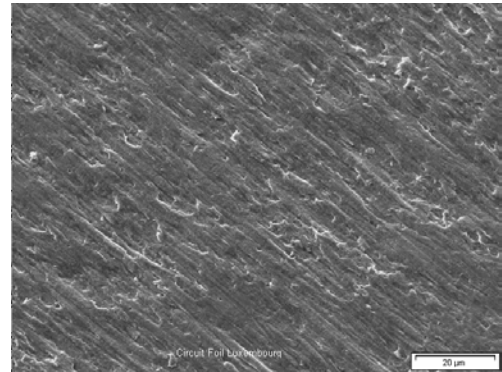
TWS

Technical Characteristics

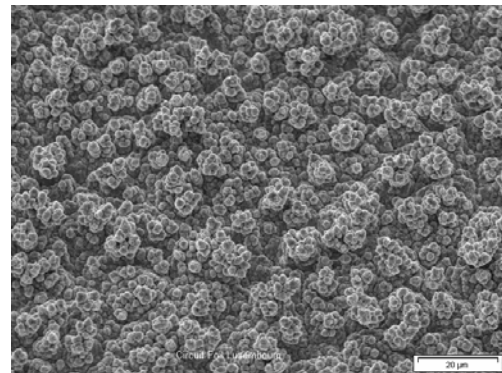
TWS represents a family of high performance single-sided treated products designed to provide high bond strength on a wide range of high T_g substrates and new engineering plastics. The base foil is characterized by enhanced high temperature elongation properties [IPC-Grade 3] and thermally stable microstructure

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

Typical substrates include polyimide and bismaleimidetriazine (BT) epoxy blends, cyanate esters, hydrocarbon-ceramics and fluorocarbon materials.



Shiny side



Treated matte side

Typical average properties

TWS						
Table 1						
MEASURED PARAMETERS	UNITS	PRODUCT GAUGE			IPC	
Nominal Thickness	µm oz.	18 1/2	35 1	70 2	Specification IPC-4562	Test Method IPC-TM-650
Area Weight (± 5 %)	oz/ft ²	0.52	0.95	1.90	(a)1.2.5, table 1-1	2.2.12
	g/m ²	158	290	580	(b)3.4.4	
	g/254 in ²	25.9	47.5	95.0	(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	7 - 10 276 - 394	8 - 11 315 - 433	11 - 15 433 - 591	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



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Table 2						
MEASURED PARAMETERS	UNITS	PRODUCT GAUGE			IPC	
Nominal Thickness	µm oz.	18 1/2	35 1	70 2	Specification IPC-4562	Test Method IPC-TM-650
Peel Strength (RT) ^[1] on some proprietary resin systems:						
High T _g epoxy: Isola IS408, IS420 Nelco N4000 series	N/mm Lb/in	1.1 - 1.3 6.3 - 7.4	1.4 - 1.6 8.0 - 9.1		3.5.4	2.4.8
Matsushita R 1650	N/mm Lb/in	> 1.2 > 6.9	> 1.5 > 8.6		3.5.4	2.4.8
APPE: Polyclad PCL-LD-621	N/mm Lb/in	> 1.2 > 6.9	> 1.4 > 8		3.5.4	2.4.8
Filled hydro-carbon resin: Rogers RO 4450	N/mm Lb/in	> 0.8 > 4.6	> 0.95 > 5.4		3.5.4	2.4.8
Polyimide: Arlon 85N	N/mm Lb/in	> 1.2 > 6.9	> 1.4 > 8	> 1.6 > 9.1	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

- 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.
- The product meets or exceeds all of the requirements of IPC-4562 when tested on typical epoxy and multifunctional prepreps, in accordance with IPC test methods, including high temperature peel strength, solder shock and accelerated ageing.

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.

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