



# Doublethin®

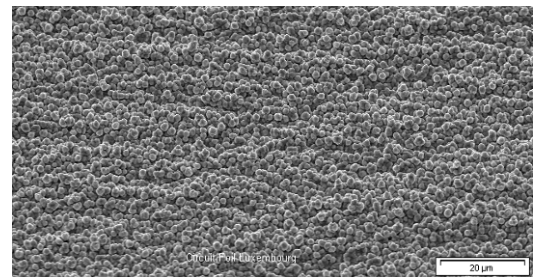
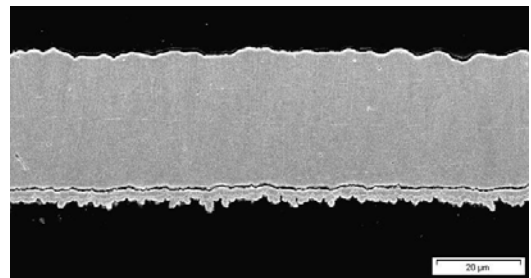
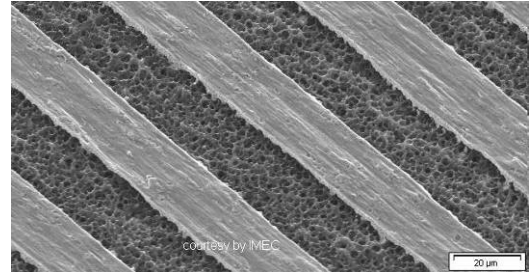
## 5 to 9 μm carrier supported (DTH-TW & DTH-TWS)

### Technical Characteristics

Circuit Foil's **DOUBLETHIN®** products are designed for very fine line and higher density multilayer boards.

The ability to produce ultra fine line circuitry using conventional subtractive technology is primarily limited by etching capability. As line-to-track spacing fall, the ability to accurately replicate well defined line and pad features, rapidly degrades.

The presence of an ED copper carrier protects the functional layer from any adverse damage and contamination.



### Typical average properties

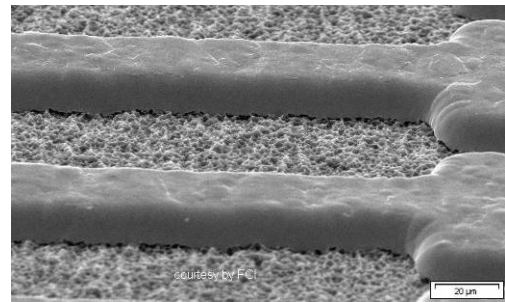
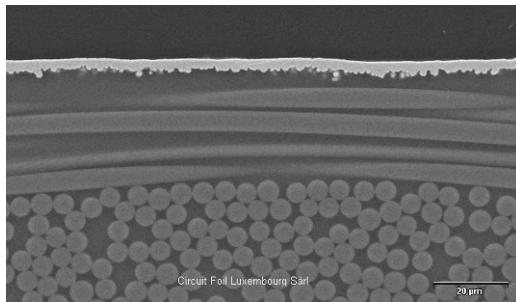
Doublethin® portfolio							
MEASURED PARAMETERS		UNITS	PRODUCT GAUGE				
Functional Foil	Carrier Foil	μm	5	5	7	9	9
			35	70	70	70	70
Area weight	Functional Foil	g/m <sup>2</sup>	45 ± 4		65 ± 6	76 ± 7	
Profile Type			Low Profile				
Roughness profile	average Rz (DIN)	μm	4.5 - 5.5		5.0 - 6.5		7.0 - 8.0
	(JIS)		3.7 - 4.6		4.1 - 5.4		5.8 - 6.7
Treatment Type			TW			TWS	
Laminate Bond on FR-4 <sup>1/1</sup>	average	N/mm	± 1.7		± 1.8		± 2.0
Laminate Bond on polyimide <sup>1/1</sup>	average						± 1.2
Typical Substrates			FR-4, FR-5 Filled epoxy			Polyimides High Tg	
Typical applications			High density multilayers Fine line applications				

<sup>1/1</sup> after galvanic reinforcement up to 35 μm



## Advanced Product Features

<p><b>The Peelable Cu Carrier Foil</b></p> <p>An electrodeposited, in-house produced 35 <math>\mu\text{m}</math> (1 oz.) or 70 <math>\mu\text{m}</math> (2 oz.) carrier copper foil, with a precisely controlled shiny side surface onto which the functional surface of the ultra thin copper foil is replicated. The carrier foil protects the ultra thin functional copper from mechanical damage or contamination during sheeting and lamination. It remains in place on laminated cut panels during all PCB operations until photo imaging and can act as a drill entry material for conventional mechanical drilling. It is easily mechanically separated.</p>	<p><b>The Interface Release Layer</b></p> <p>A proprietary process based on metallic Chromium, which provides the release mechanism between the functional and carrier foil. This organic-free layer totally remains on the carrier foil after peeling, leaving an ultra clean functional copper laminate surface ready for immediate photomechanical processing. The carrier release bond remains low and stable after thermal stress from lamination or post baking cycles until temperatures of preferably below 220 °C (428 °F).</p>
<p><b>The Laminate Bond</b></p> <p>After conventional copper electrolytic build-up to 35 <math>\mu\text{m}</math>, consistent high laminate bond strength of &gt; 1.5 N/mm (&gt; 8.5 lb./in.) on FR-4 or &gt; 1 N/mm (&gt; 5.7 lb./in.) on BT/Epoxy substrates for <math>\mu\text{BGAs}</math> are obtained.</p>	<p><b>The Ultra Thin Functional Layer</b></p> <p>Very regular ultra thin functional foil provides an ideal surface for fine line PCBs. Much higher precision of the functional foil's thickness than by half etching of thicker foils.</p>



## 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](http://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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