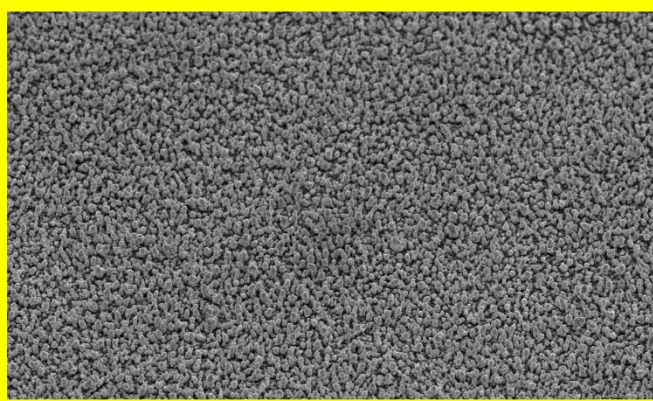
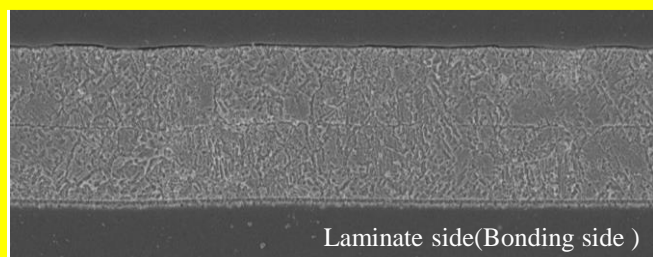


35μm Untreated-side Foil SEM × 1,500



35μm Treated-side Foil SEM × 1,500



Laminate side(Bonding side)

35μm Foil Cross Section SEM × 1,500

Composition :

Resist side

– Cross Section :



Laminate side(Bonding side)

– Resist/ Bonding side Color : Pink/ Pink

Application:

- Additional alternatives for ultra-high frequencies (> 40 GHz) are our extremely smooth VF413.
- Material: PTFE

Feature:

- The VF413 is designed for the manufacture of high- performance laminates with extended thermal stability and electrical properties designated for very high frequency circuitry applications, as for RF antennas and wireless devices.
- PCB's manufactured with such laminates may be designed to operate at ultra-high frequencies often in hostile or remote locations where long term reliability and stability is of crucial importance.
- Excellent PIM, SI performance and anti-oxidation and shelf life.

VF413

MEASURED PARAMETERS			UNITS	PRODUCT GAUGE			IPC	
Nominal Thickness			μ m oz.	12 3/8	18 1/2	35 1	Specification IPC-4562A	Test Method IPC-TM-650
Area Weight			g/m ²	107±3	153±5	285±8	3.4.4	2.2.12
Treated Side Contact Roughness	Rz	JIS B 601	μ m	≤1.5	≤1.5	≤1.5	-	2.2.17
	Rz	ISO 4287		≤2.0	≤2.0	≤2.0	3.4.5	
Treated Side Contactless Roughness	Sa	ISO 25178	%	~0.38	~0.35	~0.31	-	2.2.22 Draft
	Sz	ISO 25178		~4.4	~4.1	~3.7		
	Sdr	ISO 25178		~11.5	~11	~10.5		
Untreated Side Contact Roughness	Ra	JIS B 601	μ m	≤0.3			3.5.6	2.2.17
Untreated Side Contactless Roughness	Sa	ISO 25178		~0.20			-	2.2.22 Draft
Tensile Strength		RT	MPa (Kg/mm ²)	≥294 (≥30)			3.5.1	2.4.18
		180°C		≥167 (≥17)				
Elongation		RT	%	5-20	8-25	12-35	3.5.3	
		180°C	%	4-15	5-20	8-25		
Peel Strength Very Low Loss Resin (RT)			N/mm (Lb/in)	≥0.45 (≥2.6)	≥0.5 (≥2.9)	≥0.6 (≥3.4)	3.5.4	2.4.8