ThunderClad 2 Sp
Process Guideline

TU-883 Sp
HF Very Low Loss

- Laminates & Prepregs
- Mass Lamination Service
- Insulated Metal Substrate Materials

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Laminate Surface Treatment

Micro-etch Treatment

When MLS copper foil (or Reversed Treated Foil) is used; the recommendation is to by-pass the micro-etch surface pretreatment process to protect the copper surface roughness that enhances the oxide bond strength.

Oxide Treatment

Oxide Alternative is preferred & recommended over the other oxide chemistry for the advanced board fabrications; especially for lead-free and high layer count applications.

Post oxide baking at 120 ˚C (material temperature) for 2 hour is compulsory to remove the moisture entrapment in the inner layers. For effective inner layers baking; the inner layers should not be stacked together during the bake cycle in the hot air recirculation oven.

Note: The general recommendation of process guidelines are provided to assist laminate and prepreg users for successful processing during PWB fabrication. They are for general review purposes only and process adjustments may be required to achieve optimum results in your specific.

Laminate

Recommended Press Lamination Profile

Press type	Hydraulic vacuum press
Curing Temp.	Material temperature should be kept at 200°C for 120 minutes. For sequential lamination contact Technical Resource.
Rate of Rise	2.3~3.3°C/min
Pressure	Kiss pressure: 80 psi; Full pressure: 375psi～450psi Full pressure apply at 100°C-120°C of material temp.
Cooling rate	< 2°C/min from 190°C to RT
Vacuum	28 mm Hg

For ≥2oz copper Stack-up recommend to use Compression Pad

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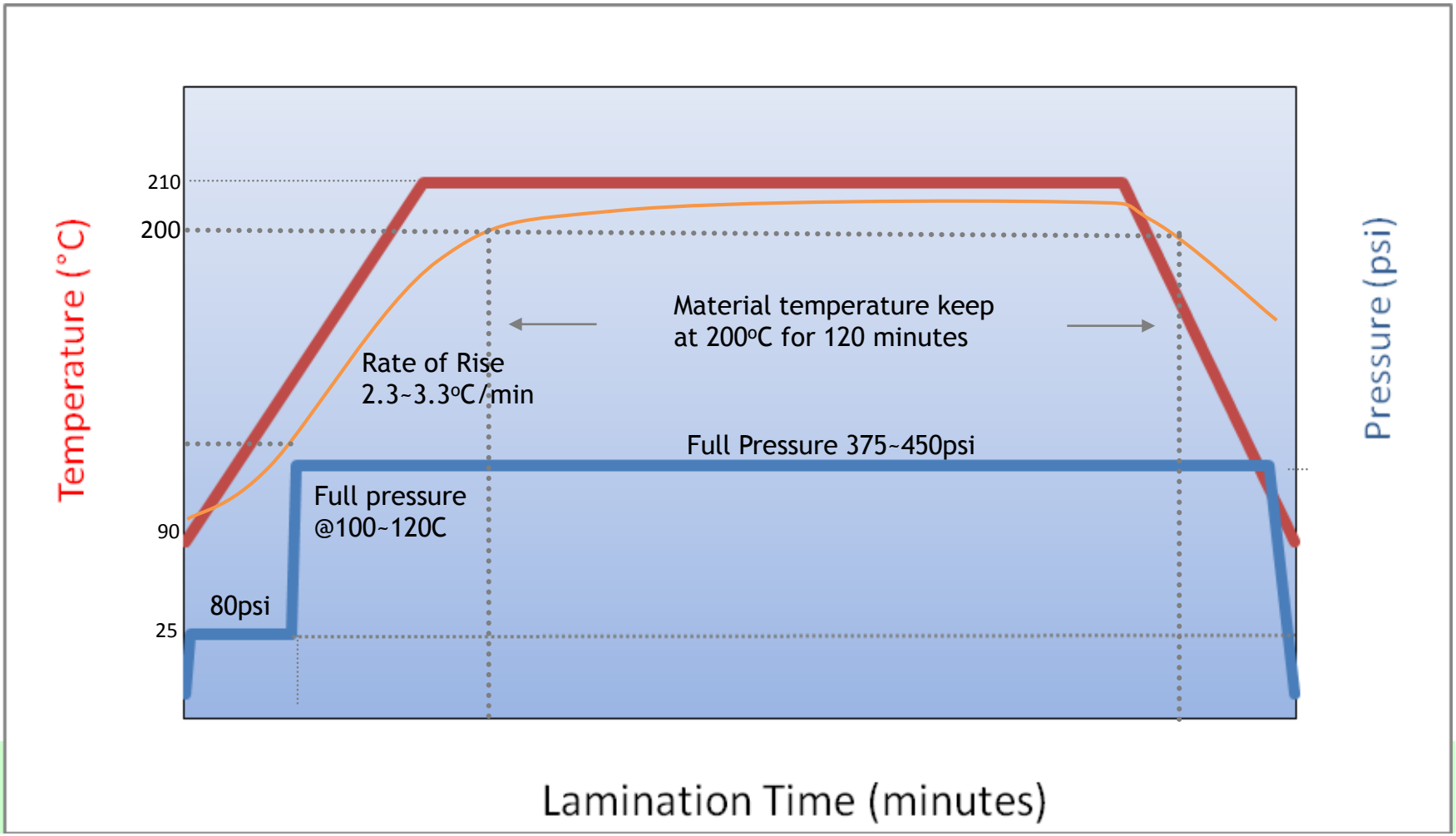
Lamination

Press Profile illustration



Drilling

Drilling Parameter

Drill Size		Feed		Speed	Chip load		
(mm)	(in)	IPM	m/min	rpm (K)	mil/rev	um/rev	Max Hit
0.25	0.0098	40	1.02	110	0.36	9.14	800
0.30	0.0118	70	1.78	100	0.70	17.78	1000
0.40	0.0157	88	2.24	95	0.93	23.62	1200
0.50	0.0197	90	2.29	76	1.18	29.97	1200
1.00	0.0394	60	1.52	40	1.50	38.10	1500

Peck drilling recommend base on Copper/Resin Percentage and /or Aspect Ratio, More detail Parameter refer to Technical Resource

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Smear Removal

Plasma process recommend for high quality through hole. The plasma process must be carried out in full load. Use dummy boards of similar surface area to make up for any non-full load during the plasma. Air knife after Drilling recommend for debris removal. Deburr only after Plasma using high pressure rinse with ultrasonic. If possible, use only Plasma. For chemical desmear contact Technical Resource

Segment Number	Gas Percentages				Operating Pressure	Power Level	Final Temp	Process Time
	CF_4	O_2	N_2	Flow				
	v%	v%	v%	SLM	mTorr	Kw	C	min
1	0	80	20	2.5	250	8	85	99
2	10	80	10	2.5	250	4.5	85	30
3	0	100	0	2.5	250	8	85	10

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Storage for Prepreg

- 3 months shelf-life at 25°C/65% R.H. is recommended.
- Open packaging prior to application and repack unused materials with PE film to minimize water absorption. And store at temp. < 23°C,RH < 55% for 3months shelf-life.
- Avoid high humidity environment as it causes the deterioration of properties.

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Storage for Laminate

- Minimum 2 years shelf-life from manufacturing date
- Store flat, avoid bending and scratching
- Prevent unnecessary exposure to atmosphere
- Avoid direct exposure to sunlight and high moisture storage

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