睿龙科技

RLP30

Hydrocarbon Microwave Multilayer Bonding Ply

RLP30 bonding ply, which mainly contained glass cloth, composite resin and special ceramic filler, is a good bonding material for microwave multilayer application. It is suitable for the applications with low dielectric constant and low dissipation requirements, as well as high performance PCB multilayer bond with high frequency and high speed transmission requirements. The press/cure temperature of the RLP30 is 180℃, so it will still be good to use even if PCB shop without high temperature press.

RLP30 has low dielectric constant (@10GHz Dk 3.00), and low dissipation (@10GHz Df 0.0020), high glass transition temperature(Tg 280℃), and good thermal stability. RLP30 with high operating temperature (MOT), excellent filling performance and good blind hole filling effect.

RLP30 is used in aerospace and high performance civilian multi-layer lamination application, for instance: Radars, antennas, RF couplers, filters, passive components, power amplifiers, etc., it could be used to a broad fields: from commercial consumer products to defense aviation.

Features and Benefits:

- Low dielectric constant (@10GHz Dk 3.00)and dissipation (@10GHz Df 0.0020)
- High glass transition temperature(Tg 280℃)
- Low press temperature 180℃
- Reliable multiple press characteristics
- Good blind hole filling effect
- Excellent thickness uniformity

Typical Applications:

- Radar
- Antennas
- RF couplers
- Filter
- Passive components
- Power amplifier

Bond Ply type and thickness information:

RelongB/S models	Reinforcing Material	Resin content (%)	S/F Pressing thickness (mils)
RLP30	Glass Fibre Cloth	73±2	4.40±0.4

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Typical Properties：

Property	Units	Value	Test Method
1. **Electrical Properties**			
Dielectric Constant			
@10GHz	Bonding sheet resin content 73%	3.00	IPC TM-650 2.5.5.5
Dissipation Factor			
@10GHz	-	0.0020	IPC TM-650 2.5.5.5
Volume Resistivity			
C96/35/90	MΩ-cm	6.5×10^9	IPC TM-650 2.5.17.1
E24/125	MΩ-cm	8.0×10^9	IPC TM-650 2.5.17.1
Surface Resistivity	MΩ-cm	7.5×10^9	IPC TM-650 2.5.17.1
C96/35/90	MΩ	$6.5x\ 10^8$	IPC TM-650 2.5.17.1
E24/125	MΩ	5.0×10^8	IPC TM-650 2.5.17.1
Electrical Strength	Volts/mil (kV/mm)	1000 (40)	IPC TM-650 2.5.6.2
Dielectric Breakdown	kV	40	IPC TM-650 2.5.6
Arc Resistance	sec	150	IPC TM-650 2.5.1
2. **Thermal Properties**			
Glass transition temperature(Tg)			
DSC	°C	280	IPC TM-650 2.4.25
3. **Physical Properties**			
Water Absorption (0.060")	%	0.05	IPC TM-650 2.6.2.1
Thermal Conductivity	W/mK	0.51	ASTM D5470
Flammability	Class	HB	UL-94
4. **Mechanical Properties**			
Peel Strength to Copper （1oz/35um）			
After Thermal Stress	lb/in	7	IPC TM-650 2.4.8
At Elevated Temperatures	lb/in	6.5	IPC TM-650 2.4.8.2
After Process Solutions	lb/in	6.5	IPC TM-650 2.4.8

RLP30 Processing Guide

一、The storage of RLP30 bonding ply：

The bonding ply should be vacuum packed in aluminum film bag, and the storage conditions should meet the storage standard of IPC-4101D for bonding sheet materials. At present, the shelf life of RLP30 is 6 months under normal 23 ℃, 50% relative humidity.Relong promises 2 months shelf life. Once vacuum package be broken and partial bond plies were used, the remained bond ply should be sealed again to avoid moisture absorption. Moisture is sensitive to the performance of the bonding ply, so it is recommended to store it at <23 °C <50% relative humidity for a long time. If the bonding sheet stored at 5 ° C, it should be warmed up at about 23 ° C and then open package to avoid dew on bond ply.

二、Process conditions:

1. Recommended process conditions

1.1 The inner core can be etched and stripped by standard board process. Propose inner layer core go through baking process (at 107 degree C to 120 degrees C for more than 60 minutes) before you ply up.

1.2 RLP30 is not recommended for direct compression with copper foil applications.

1.3 Symmetrical PCB structure design is recommended, otherwise it will cause warpage, which will have an impact on processing and PCB flatness. Generally, backpressure leveling will not help to improve warpage, and excessive leveling pressure may damage the material.

2.Press condition：

2.1 After inject to press, please vacuum for 20 minutes before press cycle start, and vacuum is whole press cycle required. The kiss pressure is 140 PSI, go with full pressure 350~400 PSI after temperature reach 100 degree C. It is not recommended to use excessive pressure.

Propose heating up rate 4 °C / min. Curing temperature and cure time are180 °C and 90-100min, the cooling rate is less than 3.5 °C/min. Propose symmetrical PCB structure design to reduce warpage risk.

2.2 Proposed Press Recipe

Press recipe need to be adjusted according different application for example: different ply up structure, different cushion pads etc. If you want to look at filling result, the edge resin flow after pressing could be a clue. If you could not see resin flow at edge, you could look at bond ply resin content or increase bond ply quantity according your need.

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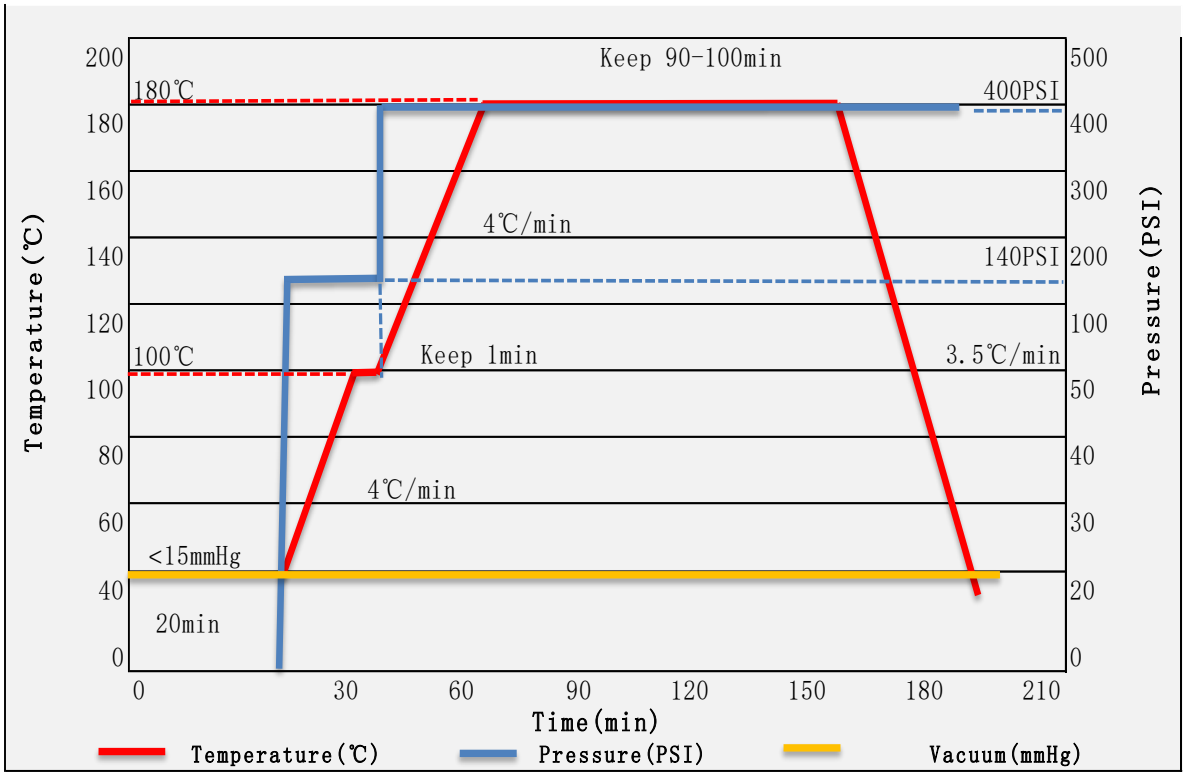

3. Drilling parameters：

Propose drilling speed is 350-400SFM. If drill hole diameter is 0.45mm or below, please use undercut drill needles. And after drilling, please clean drilling hole with plasma and common potassium permanganate solution; If there is a requirement for back drill，Plasma is preferred.

3.1 RLP30 can be used in traditional electroplating process of PCB industry.

3.2 RLP30 can use standard milling profile parameters

3.3 Reflow soldering or before HASL, It needs baking 1 to 2 hours

Material Availability:

The RLP30 current specifications is RLP30,if you need the other specifications, please consult the sales or customer service representative.

The adhesive sheets are in the form of rolls and sheets, the Roll width size is 49.5". The Sheet Common panel sizes include (not limited):18"x 12"and 18" x 24 ". When place order, please specify panel size or other special requirements.

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