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TAMURA

TAMURA PRODUCT INFORMATION

REFLIGHT RPW-8000-11

REFLIGHT RPW-8000-11 is an alkali developing type, photo-imageable reflection material.
High white degree that is suitable for LED assembly boards.

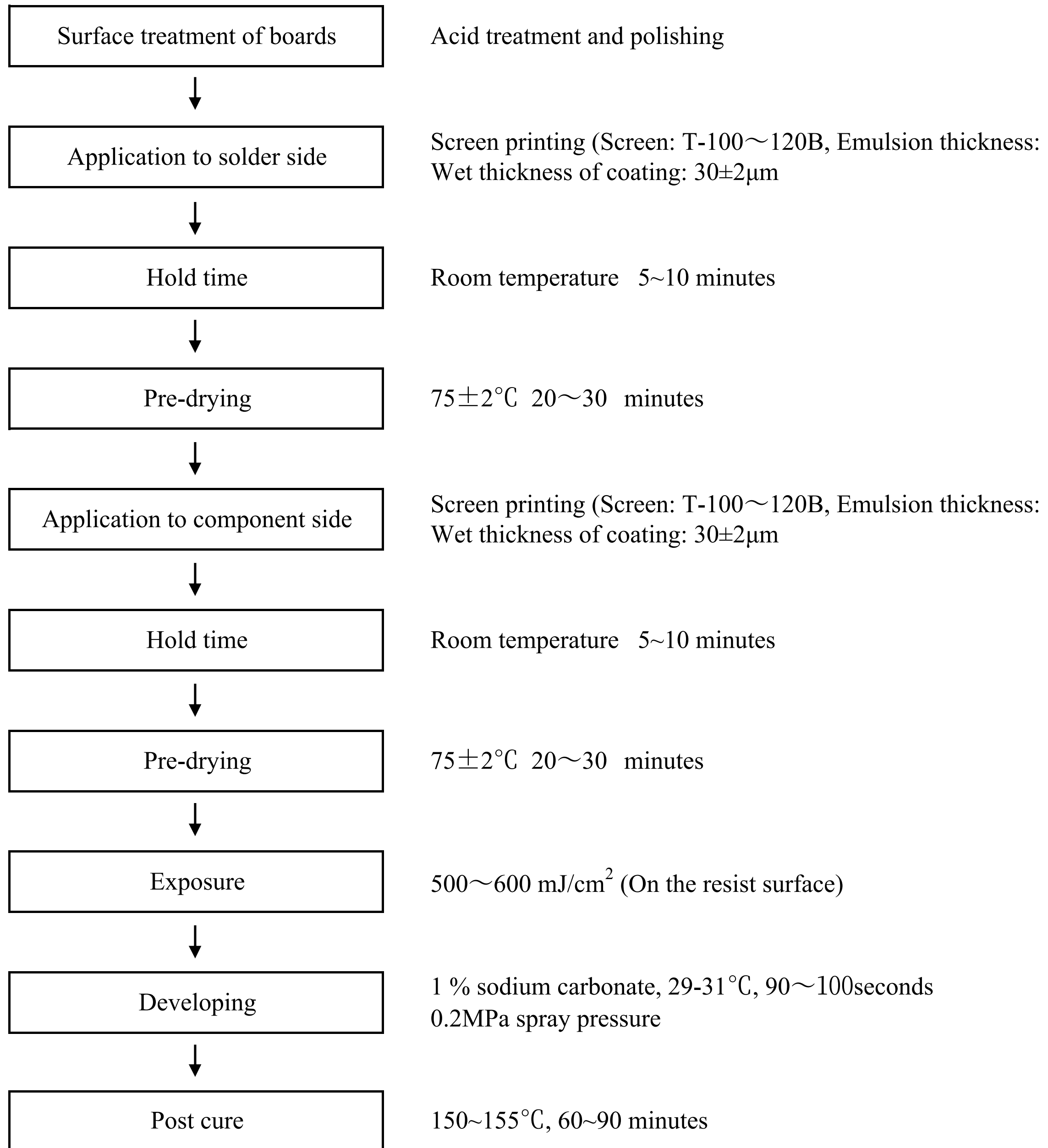
- Reflectance of 450-750nm range is high
- Little color changes for UV irradiation and heat treatment
- Halogen-free and Mist-free application

1. General specifications for REFLIGHT RPW-8000-11

Table 1 General specifications of REFLIGHT RPW-8000-11

Items	Specification
Color	White
Viscosity	150±40 dPa・s (Brookfield HBT at 25℃)
Specific gravity	1.6
Non-volatile components	81±3 %
Ignition point (Tag closed type)	76℃
Mixing ratio	Main component(RPW-8000-11) : 800 g Hardening agent(RPWA-8000-11) : 200 g
Pot life (When stored in a dark place at below 20℃)	24 hours after mixing hardening agent
Shelf life (When stored in a dark place at below 25℃)	Main component and hardening agent: 90 days

2. Example of board processing



In the case of the use of UV symbol marking ink, pre-test for adhesion between UV symbol marking and solder resist should be managed to avoid incompatibility both inks.

3. Direction

As this product is three components type, mix and stir the main component, REFLIGHT RPW-8000-11 , and the hardening agent, HARDENER RPWA-8000-11 in a mass ratio of 800 g : 200 g , before use. And stir for approximately 30 minutes,then use.

4. Precaution for use

a) For cleaning the screen, use the Cleaner #500, ester or cellosolve type solvent, or a mixed solvent of ester and cellosolve type.

b) Use undiluted ink. In case of any viscosity adjustment, use the specified thinner #313.

c) After the surface treatment of printed wiring boards, avoid any hand grease or stain on the boards and immediately print with the ink and cure it.

d) For drying the film after printing, pre-drying temperature is suitable at 75±2℃, however, the drying condition should be set in advance. Because the temperature depends on shape, heat capacity of a dryer and the number of boards. If the drying is not sufficient, the film is sticky and sticks to the artwork film when in exposure. If the drying temperature is excessively high, it results the defective development.

e) Use this ink in places to avoid any fire.

f) Use this ink in a well-ventilated working room.

g) Store this ink in a cool place at below 25℃

5. Experiment data (Reference)

5-1. Properties of cured film of REFLIGHT RPW-8000-11

Table 2 Hardened film performance of REFLIGHT RPW-8000-11

Items	Performance	Test methods (Test conditions)
1. Pencil Hardness	6H	JIS C 5012-1993 8.6.3 Pencil hardness
	6H	IPC-SM-840C 3.5.1/TM 2.4.27.2
2. Adhesion	100/100	JIS C 5012-1993 8.6.2 Cross-cut Tape Test
	Passed	IPC-SM-840C 3.5.2.1/TM 2.4.28.1 No peeling shall occur on copper or boards.
3. Machinability	Passed	IPC-SM-840C 3.5.3 No crack or burst greater than those observed on the base material shall be caused on the film when drilling, sawing and press punching is performed.
4. Resistance to solvents and cleaning agents	No abnormality on the film	IPC-SM-840C 3.6.1.1 No blister, peeling, swelling or discoloration shall occur on the film: Isopropanol Room temperature 2 minutes 3-methoxy-propanol acetate Room temperature 60 minutes
5. Resistance to chemicals	No abnormality on the film	No abnormality shall occur on the film. 10 % sodium hydroxide Room temperature 30 minutes
6. Solderability and Resistance to solder	Passed	IPC-SM-840C 3.7 Solderability 3.7.1 No bad influence shall be caused on the solderability of the spot to be soldered when soldering is performed in accordance with J-STD-003.
	Passed	IPC-SM-840C 3.7 Resistance to soldering 3.7.2 No solder shall adhere to the film after soldering (260±5℃, 10±1 seconds.) under the specified conditions (J-STD-004: M type flux, J-STD-006; Sn60 or Sn63 solder).
7. Solder heat resistance *1	Passed	JIS C 5012-1993 10.5.1 Solder Bath Method No blister or peeling shall occur on the film. Observe the appearance after tape peeling Flux: SOLDERITE MH-820V Solder temperature 260℃, 10 seconds, dipping 2 times Solder temperature 288℃, 10 seconds, dipping 1 times

Items	Performance	Test methods (Test conditions)
8. Resistance to Pb free hot air leveler	No abnormality on the film	No blister or peeling shall occur on the film. Observe the appearance after tape peeling. Solder:Sn94.7/Ag3/Cu0.5 Flux: W-2304 Solder temperature 247℃, dipping time 7 seconds, hot air temperature 220℃, pressure 0.38 MPa, dipping 3 times
9. Insulation resistance	Before soldering $1\times10^{14}\Omega$cm After soldering $1\times10^{13}\Omega$cm	IPC-SM-840C 3.8.2/TM 2.6.3.1 (IPC B pattern) More than 500 MΩ for before and after soldering.
10. Sensitivity	Step 9	500 mJ/cm^2 (above the resist surface), Kodak step tablets 21 step
11 .Resolution	100 μm	500 mJ/cm^2 (Above the resist surface) Film thickness: wet 30 μm Test board for QFP, Copper foil thickness: 35 μm
12. Resistance to gold plating *2	No abnormality in cured film No abnormality in cured film	No blistering, peeling, swelling or discoloration shall occur on the film. 1) Electrolytic gold plating Ni:3-5μm,Au:0.7 μm, appearance after peeling off tape. 2) Non-electrolytic gold plating Ni:3-5 μm,Au:0.05 μm, appearance after peeling off tape.

*1 Abnormality may occur on the film, depending on the type of flux used. Use, therefore, after performing tests in advance.

*2 Abnormality may occur on the film, depending on conditions of plating bath. Use, therefore, after perfoming tests in advance.

5-2 Relationship between viscosity and temperature.

Measuring instrument : Brookfield HBT
Spindle No.4

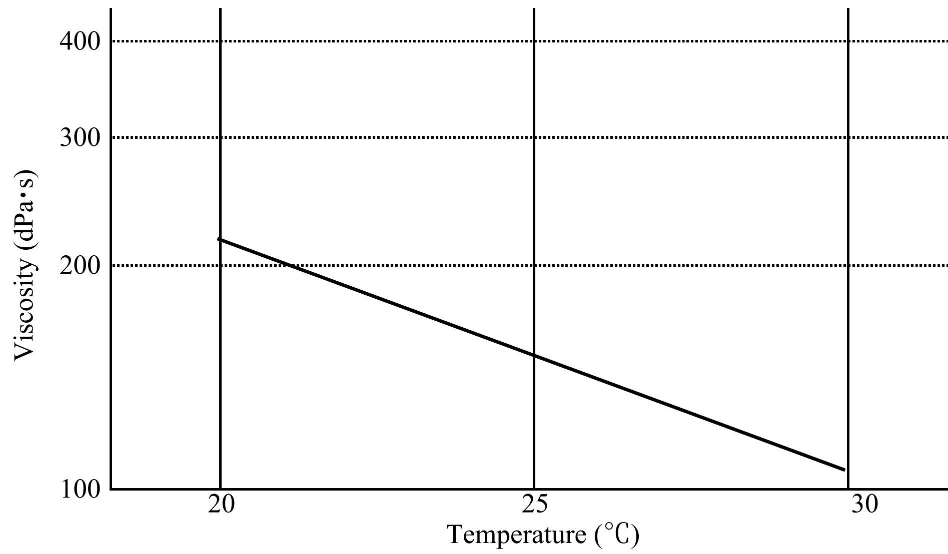


Fig.1 Relationship between viscosity and temperature

5-3 Relationship between viscosity and addition of thinner #313

Measuring instrument : Brookfield HBT
Spindle No.4

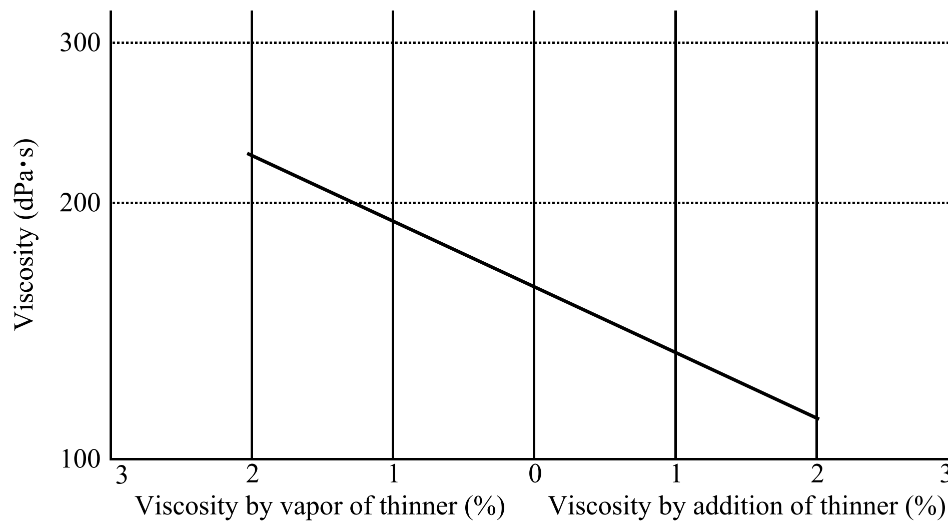


Fig.2 Relationship between viscosity and addition of thinner #313

5-4 Pre-drying

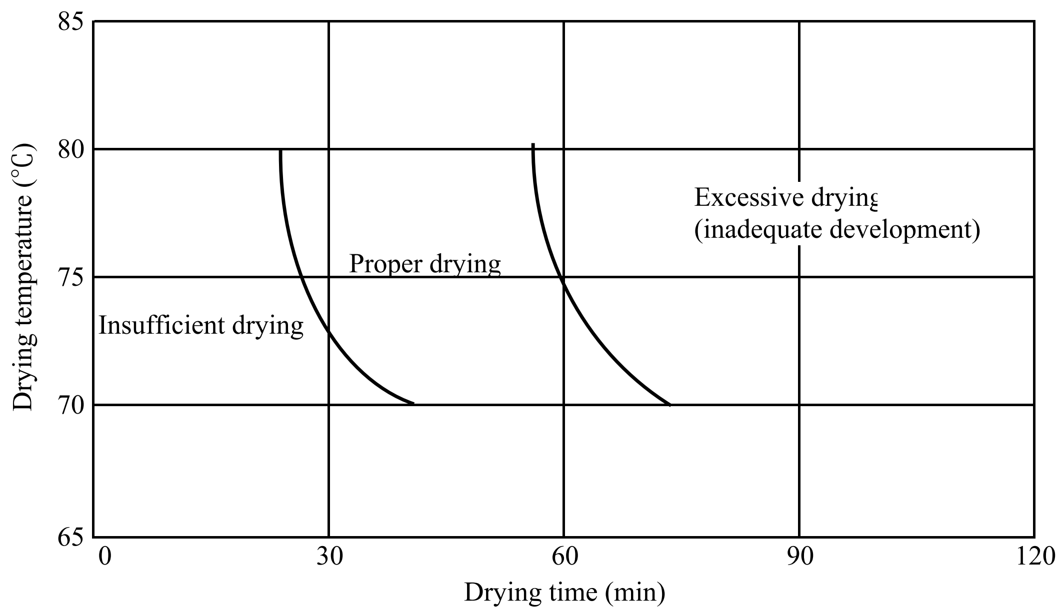


Fig.3 Pre-drying temperature, drying time and the dried condition of the film

Note: Test results shown are based on experiments conducted at Tamura Kaken laboratories.
However, no guarantee is given for the numeric values.

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