

FINEDEL DSR-2200TT

FINEDEL DSR-2200TT is an alkali developing type, photo-imaginable liquid solder resist for simultaneous exposure on both sides of printed wiring board. This solder resist is superior to previous one in terms of solder heat resistance to gold plating. This product shows black.

General specifications for FINEDEL DSR-2200TT :

Items	Specification
Viscosity	180dPa's (Visco tester VT-04E at 25)
Specific Gravity	1.3
Non-volatile Components	75 %
Flash Point (Tag Closed Type)	76
Mixing Ratio	Main component : 750g Hardening agent : 250g
Pot Life (When store in a dark place at below 20)	24hours after mixing hardening agent

Example of board processing :

Surface treatment of boards	Acid treatment and polishing
Application to solder side	Screen printing (Screen : T-120B , Emulsion thickness : 120 μ m) Wet thickness coating : 35 μ m
Pre-drying	75 30minutes
Application to component side	Screen printing (Screen : T-120B , emulsion : 120 μ m) Wet thickness of coating : 35 μ m
Pre-drying	75 30minutes
Exposure	400mJ/cm ² (On the resist surface)
Developing	1 % sodium carbonate , 29~30 , 60sec. 0.2Mpa spray pressure
Post cure	150 60minutes
UV curing	1000mJ/cm ² (80W/cm , 3 lamps , 5m/min)

Experiment data (Reference) :

Properties of cured film of FINEDEL DSR-2200TT

Items	Performance	Test methods (Test conditions)
Pencil Hardness	8H	IPC-SM-840C 3.5.1/TM2.4.27.2
Adhesion	Passed	IPC-SM-840C 3.5.1/TM2.4.28.1 No peeling shall occur on copper or boards.
Mach inability	Passed	IPC-SM-840C3.5.3 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.
Resistance to solvents and cleaning agents	Passed	IPC-SM-840C3.6.1.1 No blister, peeling. Swelling or discoloration shall occur on the film : Isopropanol Room temperature.2mins 75 % Isopropanol/ 46±2 15mins 25 % Water D-limonene Room temperature.2mins 10 % alkaline detergent 57±2 2mins Monoethanolamine 57±2 2mins Ion exchanged water 60±2 5mins
	No abnormality on the film	No abnormality shall occur on the film 10 % alkaline detergent Room temperature 30 minutes 10 % sulfuric acid Room temperature 30 minutes 10 % sodium hydroxide Room temperature 60 minutes

Items	Performance	Test methods (Test conditions)
Adhesion immediately after boiling	No abnormality on the film	100 5hours , Observe the appearance after tape peeling.
Adhesion after treatment with pressure cooker	No abnormality on the film	121 0.2MPa 5hours , Observe the appearance after tape peeling.
Solderability	Passed	IPC-SM-840C3.7 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.
Resistance to solder	Passed	IPC-SM-840C3.7 Resistance to soldering 3.7.2 No solder shall adhere to the film after soldering (260±5 , 10±1seconds.) under the specified condition (J-STD-004 : M type flux , J-STD-006 ; Sn60 or Sn63 solder) .
Solder heat resistance	No abnormality on the film	No blister or peeling shall occur on the film. Observe the appearance after tape peeling Flux : SOLDERITE MH-820V Solder temperature 260 , 10 sec , dipping 3 times
Resistance to hot air leveler	No abnormality on the film	No blister or peeling shall occur on the film. Observe the appearance after tape peeling. Flux : SOLDERUTE HL-201A, Solder temperature 240 , Dipping time 4 sec. hot air temperature 220 , pressure 0.38MPa , dipping 3 times
Dielectric strength	40DC V/ μ m (1000DC V/ μ m)	IPC-SM-840C 3.8.1/TM2.5.6.1 20DC V/ μ m or over (500DC V/mil or over)

Items	Performance	Test methods(Test conditions)
Volume resistivity	1×10^{15} cm	IPC-TM-650 2.5.17.1
Surface resistance	1×10^{15}	IPC-TM-650 2.5.17.1
Insulation resistance	Before soldering 1×10^{14}	IPC-SM-840C3.8.2/TM 2.6.3.1 (IPC B pattern)
	After soldering 1×10^{14}	More than 500M for before and after soldering.
Moisture and insulation resistance	1×10^9 (In-humidity)	IPC-SM-840C 3.9.1/TM2.6.3.1 Class H 65 85 % RH $6^{2/3}$ days (Bias voltage ; 50V and test voltage ; 100V)
	1×10^{11} (Outside the tank)	More than 100M
Electrochemical migration	No occurrence	IPC-SM-840C3.9.2/TM2.6.14 Class H 85 90 % RH 168hrs (Bias voltage ; 10V and test voltage ; 10V)
	1×10^{13}	No occurrence of migration and the insulation resistance shall be higher than 2M
Thermal shock	No abnormality on the film	IPC-SM-840C3.9.3/TM2.6.7.1 Class H -65~-125 100 cycles No blister , crack nor peeling of the film.
Dielectric loss tangent (tan)	0.03	IPC-TM-650 2.5.5.4 Impedance analyzer (4192A Lf manufactured by Yokogawa 1 MHz)
Permittivity ()	3.5	IPC-TM-650 2.5.5.4 1MHz
Sensitivity	Step 7	400mJ/cm ² (above the resist surface) , Kodak step tablets 21 step.

Items	Performance	Test methods(Test conditions)
Resolution	100 μ m	UV light energy : 400mJ/cm ² on surface of pre-dried resist. Coating thickness : 35 μ m (wet) Test boards : for QFP mounting use , with 50 μ m of copper.
Resistance to gold plating	No abnormality in cured film.	No blistering , peeling , swelling or discoloration shall occur on the file.
	No abnormality in cured film.	1. Electrolytic gold plating 42 1.0A/dm ² , 5mins , appearance after peeling of tape. 2. Non-electrolytic gold plating 90 , 5mins , appearance after peeling off tape.
Ionizable detection of Surface contaminants (Dynamic method)	0.32 μ g NaCl/cm ² (2.0 μ g NaCl/Inch ²)	IPC-TM-650 2.3.26 (MIL-P-28809 & MIL-P-55110)
Solder ball	No occurrence	Check the quantity of solder balls caused after flow soldering. Tamura test board : TP-090 Conveyer speed : 1.3m/min Preheat : 80~90 Solder temperature : 245 Soldering time : 4 seconds
Stacking quality	No abnormality on the film	No sticking or peeling after sustained loading on top of stacked boards after pre-drying (60 , 20mins) Load : 500g Holding conditions : 23 , 30 % RH , 12hours

Direction :

As this product is two components types, mix and stir the main component, DSR-2200TT and the hardener, CA-2200TT in a mass ratio of 750g : 250g before use. And stir for approximately 30 minutes, then use.

Use the ink within 24 hours after the mixing.

Experimental Data :

Difference in dry film thickness and film performance

Coating thickness	32 μ m	38 μ m
Dry film thickness	19 μ m	22 μ m
Resistance to solder (260 , 4s)	6 cycle	6cycle
Resistance to hot air leveler (240 , 4s)	3 cycle	3cycle
Resistance to solvent (CH ₂ Cl ₂ , Room temperature , 30minutes)	Passed	Passed
Adhesion	Passed	Passed
Pencil hardness	6H	6H

Difference in post-cure and film performance

Items	Post-cure condition	150 30mins	150 60mins
Resistance to solder (260 °C , 30s)	30 μ m	3cycle	4cycle
	35 μ m	4cycle	5cycle
	40 μ m	5cycle	5cycle
Resistance to acid (10 % HCl , Room temperature , 10min)	30 μ m	Passed	Passed
	35 μ m	Passed	Passed
	40 μ m	Passed	Passed
Resistance to solvent (CH ₂ Cl ₂ , Room temperature , 30min)	30 μ m	Passed	Passed
	35 μ m	Passed	Passed
	40 μ m	Passed	Passed
Adhesion	30 μ m	Passed	Passed
	35 μ m	Passed	Passed
	40 μ m	Passed	Passed
Nikel-gold	30 μ m	Good	Good
	35 μ m	Good	Good
	40 μ m	Good	Good
Pencil hardness	30 μ m	6H	6H
	35 μ m	6H	6H
	40 μ m	6H	6H
Holding time after Pre-drying 75 50mins at 25 ~ 60 % RH in a dark place	1day	Passed	
	2days	Passed	
	3days	Scum	