Liquid Photoimageable Solder Mask

(KSM-S6189R03)

KSM-S6189R03 is photoimageable solder mask. It has good screen printing adaptability , excellent adhesion , high resistance to chemicals and heat. It has extensive operating conditions . This liquid photoimageable solder mask possesses easy operation and is wildly accepted.

Properties of ink :

Items	Features	Notes
Color	Red	
Fineness	≤8μm	0~25μm Fineness gauge
Mixing ratio	Base /Hardener=3：1	Weight ratio
Solid content after mixing	75±3%	
after mixing （25℃）	200±30dPa·s	VT-04F
Density after mixing （25℃）	1.20~1.30g/ml	
Pot life after mixing	24 hours	Store below 25℃ in the dark
Pre- baking limit	75℃，60min	
Exposure energy	400~600mJ/cm^2	The effective value through the polyester film
Package	Base ：750g；Hardener：250g	Conventional Packaging
Shelf time	6 months since the date of manufacture	Store below 25℃ in the dark

Properties of the film (after post cured)

Items	Features	Notes

Pencil hardness	≥6H	Pencil harder，JIS K5400 8.4
Adhesion	100/100	Laceration experiment，JIS K5400 8.5
Solvent resistance	Good	25℃, C_2H_5OH, 20min
Acid resistance	Good	25℃ 10vol%H_2SO_4, 20min
Alkali resistance	Good	25℃ 10wt%NaOH , 20min
Boiling water resistance	Good	100℃, 30min
Insulation resistance	≥$1.0\times10^{12}\Omega$	IPC-SM-840C 3.8.2
CTI	≥600	IEC 60112：2003
Resistance to molten solder	288℃×10 seconds×3 times OK	JIS C6481 5.5
Resistance to flame	UL94 V-0	Certified number：UL-E189612
Chemical-plating nickel/aurum	OK	Ni：5μm； Au：0.05μm

Attention :

1. The base and hardener should be mixed according to the ratio and stirred thoroughly before using.
2. We will offer you special diluent if the ink need dilute.
3. The values above are based on experiments in our lab. Experiments need to be carried out in order to get proper using condition.

Liquid photoimageable solder mask direction of use

1. Working procedure

Procedure	**Content**
(1) Mixing	Mixing about 30g main agent with hardener and stirring thoroughly, then mixing the mixture above with the remanent main agent and stirring 5 ~10 minutes. The viscosity of ink is adjusted to 120±20 ps if printed by hand. And it is adjusted to 160 ± 20 ps if printed by

	machine. The viscosity of ink mixed above is measured at 25℃. Please use the special diluent of our company if the viscosity of ink needs to adjust.
(2) Remain time	10 ~15 minutes after stirring uniformly
(3) Screen mesh	Ordinary boards:43T ; Chemical-plating Aurum or Tin boards:36T
(4) Pre-baking	1. Single side printing separately First side :72 ~76℃ ,20 ~25min Second side : 72 ~76℃ , 30 ~35min 2. Double sides printing simultaneously : 72 ~76℃ , 40 ~60min
(5) Exposure	400~600mJ/cm^2(the effective value through the polyester film), 10~12 step
(6) Developing	Developing solution :0.8 ~1.2wt%Na_2CO_3 or K_2CO_3 aqueous solution Developing solution temperature :28 ~32℃ Spray pressure：2.5~3.0kg/cm^2 Developing time：60~90 seconds
(7) Post cure	Spray Tin board：150℃×60~120 min；Chemical-plating Aurum or Tin board： 150℃×50~60 min； boards filled with ink in the hole should be post-baked in subsection:75℃×60~120 min+100℃×30 min+150℃×60 min

1. Caution

1. Requirements of working place :the temperature should be 20~23℃ and humidity is 45~65% in the room for printing and exposure without dust. Please work in the place without UV ray , or it will cause photo polymerization if the ink is used in the irradiation of white ray or sunlight.
2. Mixing the main agent with hardener and stirring thoroughly and using only in room temperature.

3. Appropriate film thickness is from 18 to 22μm. Thinner film will reduce the resistance to heat , chemicals and plating. Thicker film will cause excess under-cut and reduce the degree of dryness because the irradiation can not cure the botton layer of the ink.
4. The screen boards can not be pasted with adhesion tape directly or else the remanent mucus will cause hollow pot on board.
5. The ink can not be printed into the accessory hole. Developing time should be increased if ink gets into the accessory hole or there will be uncleaned.
6. The condition and allowed range of pre-baking vary with the oven type and different number of boards in the oven. Experiments need to be carried out to get proper condition.
7. Exposure energy varies with the board material and ink thinkness. Experiments should be carried out to determine the minimum width , surface gloss and the sensitization of the botton surface and then set proper condition.
8. Inadequate developing temperature and time may cause unclean developing and over of them can cause excess under-cut and the feature of ink will be influenced because of the attack of ink surface. Please control the concentration of developing solution , temperature , pressure and developing time strictly. Experiments need to be carried out to get proper condition.
9. The ink is easy to remove when the temperature and time of post-baking is deficient. It will reduce the resistance to plating aurum and molten solder when the post-baking time is over 2.5 hours. Experiments need to be carried out to set proper conditions of spraying tin and plating aurum.
10. Experiment whether the ink can afford attack of the process of wave crest solder when the flux is rosin.
11. Taphole boards are baked in subsection : 75℃×60~120 min+100℃×30 min+150×60 min。
12. Please set proper post-baking tine of solder resist to suit for printing marking ink. Deficient or over hardening can reduce the feature of ink.
13. Condition of chemical-plating aurum : A. use 36T screen for printing. B. The sensitization of exposure energy is 10 to 12 step. C. Under-cut is controlled below 1 mil after developing or the film will easily be

attacked by the liquid medicine in the process of chemical-plating aurum.

D. The film need to cure through the UV bump again if the exposure is not enough .

E. Chemical-plate aurum or tin first and then print marking ink. or excess hardening will reduce the resistance to chemical properties.