

## Liquid photoimageable solder mask ( KSM-S6188)

KSM-S6188 is two-component , screen printing , high precision , lye-development solder mask ink. It is applicable to double-sided board and multi-layer board for making thin and intensive circuit. It has good screen printing adaptability and good surfacing. The post cured film provides excellent adhesion , resistance to chemicals and heat.

KSM-S6188G series 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 widely accepted.

Spray Tin	Fill with ink in the hole	Chemical plating Aurum	Chemical plating Tin	The smallest solder-dam
◎	△	○	△	4mil

KSM-S6188 versicolor series solder mask ink has a variety of colors to choose , good color stability , good screen printing adaptability and high resistance to chemicals and heat. This liquid photoimageable solder mask possesses easy operation and is widely accepted.

Spray Tin	Fill with ink in the hole	Chemical plating Aurum	Chemical plating Tin	The smallest solder-dam
◎	△	○	△	4mil

KSM-S6188 K series solder mask ink is dedicated to both tamponade also printing process , making Chemical-plating Aurum board , thin solder-dam board. It has good resistance to chemical-plating Aurum (electroless Aurum plating), good tamponade effect , full , flat ,no dehiscence , light transmission ,taphole break , good light sensitivity. This ink has small under-cut and can make 2mil solder-dam. It is applicable to double-sided board and multi-layer board , having high integrated performance.

Spray Tin	Fill with ink in the hole	Chemical plating Aurum	Chemical plating Tin	The smallest solder-dam
◎	◎	◎	△	2mil

KSM-S6188 H series is KSM-S6188 K series' upgrade product. It has outstanding performance of thermal shock, resistance to chemicals and solvent , tamponade effect and other physical and chemical properties.

Spray Tin	Fill with ink in the hole	Chemical plating Aurum	Chemical plating Tin	The smallest solder-dam
◎	◎	◎	○	2mil

KSM-S6188 E series is low halogen environmental protection solder mask ink. The halogen content is below 600ppm. The ink has bright and stable color, good screen printing adaptability and high resistance to chemicals and heat , easy operation and environmental protection.

Spray Tin	Fill with ink in the hole	Chemical plating Aurum	Chemical plating Tin	The smallest solder-dam
◎	◎	◎	○	3mil

KSM-S6188 tamponade series solder mask ink is dedicated to Aluminum slice , which has high solid content, good flow performance , low curing shrinkage and good compatibility with other series of KSM-S6188. The ink in the hole is full, flat, no dehiscence , light transmission and taphole break.

Spray Tin	Fill with ink in the hole	OSP	Chemical plating Aurum	Chemical plating Tin
◎	◎	◎	◎	○

P.S. : “◎”ascendancy , “○”good , “△”general

## 1. Type of ink

Type of Base	Color	Type of Base	Color
KSM-S6188 G series , Type of hardener: KSM-18/KSM-18 A1			
KSM-S6188 G2	Medium green (incline to yellow)	KSM-S6188 G3	Deep green (incline to blue)
KSM-S6188 G5	Deep green (incline to yellow )	KSM-S6188 G6	Medium green (incline to yellow)
KSM-S6188 G9	Light green (incline to blue)	KSM-S6188 GA	Medium green and matt (incline to yellow)
KSM-S6188 GB	Medium green and matt (incline to blue)	KSM-S6188 GC	Light green and matt (incline to blue)
KSM-S6188 versicolor series , Type of hardener: KSM-18/KSM-18 A1			
KSM-S6188 BL	blue	KSM-S6188 BLD	Deep blue
KSM-S6188 BK	Black	KSM-S6188 BKM	Black and matt
KSM-S6188 R	Red	KSM-S6188 Y	Yellow
KSM-S6188 W	White	KSM-S6188 WD	Deep white
KSM-S6188 K series , Type of hardener: KSM-18 A6/KSM-18 HA30			
KSM-S6188 KG22	Medium green (incline to yellow)	KSM-S6188 KG25	Deep green (incline to yellow)
KSM-S6188 KG26	Medium green (incline to yellow)	KSM-S6188 KG29	Light green (incline to yellow)
KSM-S6188 H series , Type of hardener: KSM-18 HA30			
KSM-S6188 HG35	Deep green (incline to yellow)	KSM-S6188 HG39	Light green (incline to yellow)
KSM-S6188 HBL2	Light blue and matt	KSM-S6188 HBL3	Light blue
KSM-S6188 E low halogen series , Type of hardener: KSM-18 EA/KSM-18 EH1			
KSM-S6188 EG5	Low halogen deep green (incline to blue)	KSM-S6188 EG9	Low halogen light green (incline to blue)
KSM-S6188 EHW	Low halogen white	KSM-S6188 EBL	Low halogen light blue
KSM-S6188 tamponade series , Type of hardener: KSM-18 A1/KSM-18 EH1			
KSM-S6188 GS	Light green (incline to blue)	KSM-S6188 EHBS	Low halogen light blue
KSM-S6188 EHGS	Low halogen light green (incline to blue)		

## 2. Properties of Ink

Items	Features	Notes
Color	Green, Blue, Yellow, Red, Black, White	About 50 types
Fineness	$\leq 8\mu\text{m}$	0 ~25 $\mu\text{m}$ Fineness gauge
Mix ratio	Base/Hardener=3:1	Weight ratio
Solid content after mixing	$75 \pm 3\%$	
	$82 \pm 3\%$	tamponade series
Viscosity after mixing (25°C)	$200 \pm 30 \text{ dPa} \cdot \text{s}$	VT-04F, Bright surface ink
	$300 \pm 50 \text{ dPa} \cdot \text{s}$	VT-04F, matt and tamponade series
Density after mixing (25°C)	1.30 ~1.50 g/ml	
Pot life after mixing	24 hour	Store below 25°C in dark
Environment standard	In compliance with RoHs directives	SGS testing
Halogen content	$\leq 600\text{ppm}$	Only KSM-S6188 E series
Pre-baking limit	75°C , 70 min	
Exposure energy	300 ~600 mJ/cm <sup>2</sup>	The effective value through the polyester film
Package	Base :750g , Hardener :250 g	Conventional package
	Base :3kg , Hardener :1kg	According to customer requirements
Shelf life	6 months since the date of manufacture	Store below 25°C in dark

## 3. Properties of the film (after post cured)

Items	Features	Notes
Pencil hardness	$\geq 6\text{H}$	Pencil harder
Solvent resistance	Good	25°C, C <sub>2</sub> H <sub>5</sub> OH , 20min
Acid resistance	Good	25°C, 10vol%H <sub>2</sub> SO <sub>4</sub> ,20min
Alkali resistance	Good	25°C, 10vol%NaOH ,20min
Insulation resistance	$\geq 1.0 \times 10^{12} \Omega$	
Resistance to molten solder	288°C × 10seconds × 3times OK	
Resistance to flame	UL94V-0	Certified number:UL-E189612

### 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 or DPM 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.

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## Directions of use

### Working procedure

Procedure	Content	
(1) Mixing	Mixing a small amount 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 $120 \pm 20$ ps if printed by hand. And it is adjusted to $180 \pm 20$ ps if printed by machine. The viscosity of ink mixed above is measured at $25^{\circ}\text{C}$ . 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 : $72 \sim 76^{\circ}\text{C}$ , 15 ~18min Second side : $72 \sim 76^{\circ}\text{C}$ , 30 ~35min 2. Double sides printing simultaneously : $72 \sim 76^{\circ}\text{C}$ , 30 ~50min	
(5) Exposure	$300 \sim 500 \text{ mJ/cm}^2$ , Black ink : $600 \sim 750 \text{ mJ/cm}^2$ (the effective value through the polyester film)	
(6) Developing	Developing solution : $0.8 \sim 1.2\text{wt}\% \text{Na}_2\text{CO}_3$ or $\text{K}_2\text{CO}_3$ aqueous solution Developing solution temperature : $28 \sim 32^{\circ}\text{C}$	
	KSM-S6188G 、 versicolor series	KSM-S6188K、 H、 E series
	Spray pressure : $1.5 \sim 2.5 \text{ kg/cm}^2$	Spray pressure : $2.0 \sim 3.0 \text{ kg/cm}^2$
	Developing time : 35 ~50 seconds	Developing time : 60 ~90 seconds
(7) Post cure	Spray Tin board : $150^{\circ}\text{C} \times (60 \sim 120) \text{ min}$ Chemical-plating Aurum board: $150^{\circ}\text{C} \times (45 \sim 55) \text{ min}$ Thick copper plate , boards printed with black ink and boards filled with ink in the hole should be post-baked in subsection: $75^{\circ}\text{C} \times (60 \sim 120) \text{ min} + 100^{\circ}\text{C} \times 30 \text{ min} + 150^{\circ}\text{C} \times (60 \sim 90) \text{ min}$	