

Gold, tin or OSP?

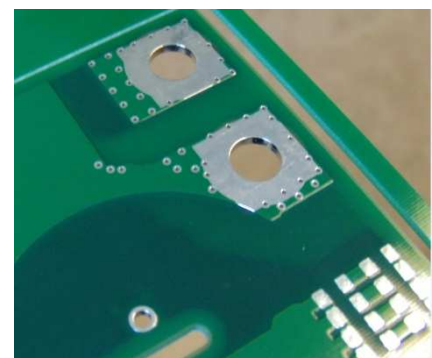
Which final finish is the best, cheapest and environmental friendly?

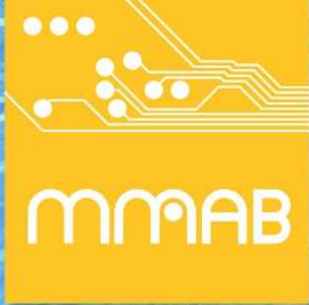
The final finish is the end surface treatment of for example solderable pads on the printed circuit board. A wide range is offered; gold, hot tin, organic coating, immersion tin and immersion silver. We will limit us to the most common ones which are gold, hot air solder and OSP. It is hard to say which final finish is the best one. A lot of parameters affects the soldering result, such as pcb layout, number of soldering cycles as well as storage time. However we will try to sort out which final finish is the most suitable depending on application.

ENIG – Electroless Nickel Immersion Gold. ENIG, also called imm gold is the most used final finish world wide within electronics. ENIG works perfect together with all types of components and solder joints, also for some bonding. Gold is a precious metal within the Conflict Minerals scope. The final finish is difficult to recycle and the ENIG-process is complex with toxic chemicals and require special process control. Soldering are made to the nickel layer as the thin gold layer is dissolved in the solder joint. Small but potential risc for black pad, oxidation and solderability problems. In general very good solderability and up to 2-3 soldering cycles. Shelf life up to 12 months, even though 6 months is recommended.



HASL – Hot Air Solder Levelling. HASL, also called HAL are commonly used in Europe, but rarely used in Asia. Tin, Nickel and other metals required for the HASL alloy, require mining and tin is within the Conflict Minerals scope. The finish is difficult to recycle. The HASL-process means a noisy working environment with air pollution. The hot tin coating require flux which is water cleaned. A thick and uneven coating can be a disadvantage for fine pitch and μ BGA, as well as for small fiducials and open vias under components. Very thin HASL coating can cause grow through of the intermetallic layer, which can cause solderability problems. In general HASL have very good solderability. Shelf life is 12 months, even though 6 months is recommended. In special cases boards can be soldered even after 18-24 months in stock.

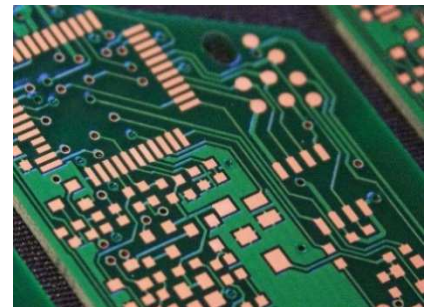




Technical Update

#8 2018

OSP – Organic Solderability Preservatives. OSP is a final finish widely spread and dominate pcb industry in Asia. Still not often used in Europe. The water based azole compound coats the copper as a thin final finish with a copper shiny appearance. No metals, high temperature or hazardous substances are required for OSP. It is basically the most environmental friendly final finish on the market with good working environment. OSP can be reworked and the processing time is short. Number of soldering cycles are limiting. 1-2 soldering cycles is possible and shelf life is limited to 3 months, even though there are cases where 6-12 months still provides good solderability. Soldering are made directly to the copper surface, which gives superior solder joint strength.



Final finish	Thickness	Shelf life	Environmental effects	Cost
ENIG	0,05+3 μm	6-12 months	High impact	High
HASL	1-25 μm	12 months	Medium impact	Medium
OSP	<0,2 μm	3-6 months	Low impact	Low



Summertime at MMAB

Soon we will have summer vacation and this year sales and market will be closed week 29 and 30. Our production in Sweden will be closed week 29-32. Our logistics department and production partners in China are working as usual.

More information about our products can be found at www.mmab-pcb.com

MMAB Group, Sweden +46 40 64 24 600, sales@mmab-pcb.se

Hungary +36 30 658 22 60, sales.hungary@mmab-pcb.com

Czech Republic +420 601 151 377, sales.czech@mmab-pcb.com

Finland +358 44 320 4588, sales.fi@mmab-pcb.com