



## Final Finish Alternatives

Westak provides alternative final finish processes that offer improved board integrity, dimensional stability and final assembly reliability advantages for fine-pitch, BGA, surface mount and plated through hole boards. These new alternatives to HASL offer a planar surface for better component placement as well as numerous other advantages. Westak has been able to overcome many limitations of the HASL process while maintaining and improving printed circuit board manufacturability and the quality of surface mount printed circuit boards.

	HASL	OSP	NiAu	Silver	Wh. Tin
<b>SMT</b>	Dome	Flat	Flat	Flat	Flat
<b>Solderability (as received)</b>	Good	Good	Good	Good	Good
<b>Thermal Cycle (times)</b>	>2	>2	>2	>2	>2
<b>Shelf Life</b>	Long	Medium	Long	Medium	Medium
<b>Handling</b>	Normal	Critical	Normal	Critical	Normal
<b>Exposed copper</b>	No	Yes	No	No	No
<b>Thin Board Finish</b>	No	Yes	Yes	Yes	Yes
<b>Contact Applications</b>	No	No	Yes	No	No
<b>Waste Treatment &amp; Safety</b>	Poor	Good	Fair	Fair	Fair
<b>Process Control</b>	Poor	Fair/Poor	Fair	Fair	Fair
<b>Process Cost</b>	Medium	Low	High	Medium	Med/Low

## Application

	HASL	OSP	NiAu*	Silver	Wh. Tin
<b>Fine Pitch SMT</b>	No	Yes	Yes	Yes	Yes
<b>BGA &amp; <math>\mu</math>BGA</b>	No	Yes	Yes	Yes	Yes
<b>Flip Chip</b>	No	Yes	Yes	Yes	Yes
<b>Wire Bonding</b>	NO	NO	Yes**	Yes	NO
<b>Contact/Connector</b>	Normal	Critical	Normal	Critical	Normal
<b>Exposed copper</b>	No	No	Yes	No	No
<b>High Reliability</b>	High	Medium	High	Med/High	Medium

\*Immersion Process

\*\*Available Ni/Pd/Au