ALPHA® OM-550 HRL1

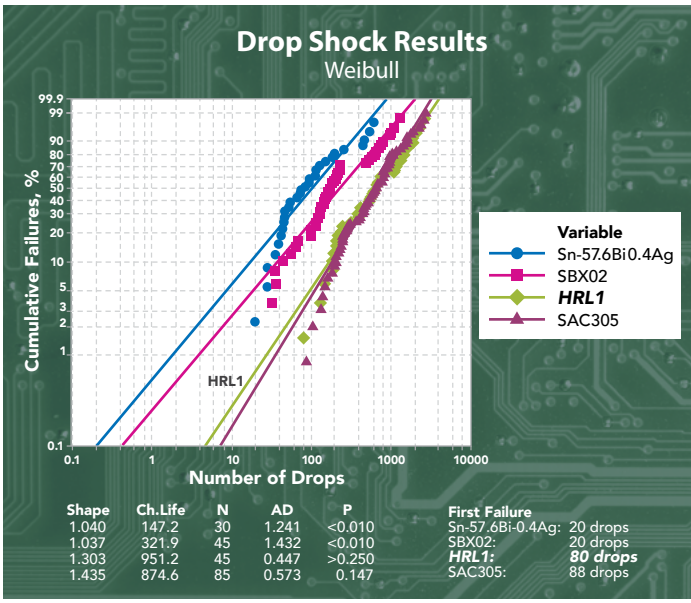
Non-Eutectic, Low Temperature, Solder Paste for Assemblies with Temperature Sensitive Substrates, Components, and High Warpage Chips

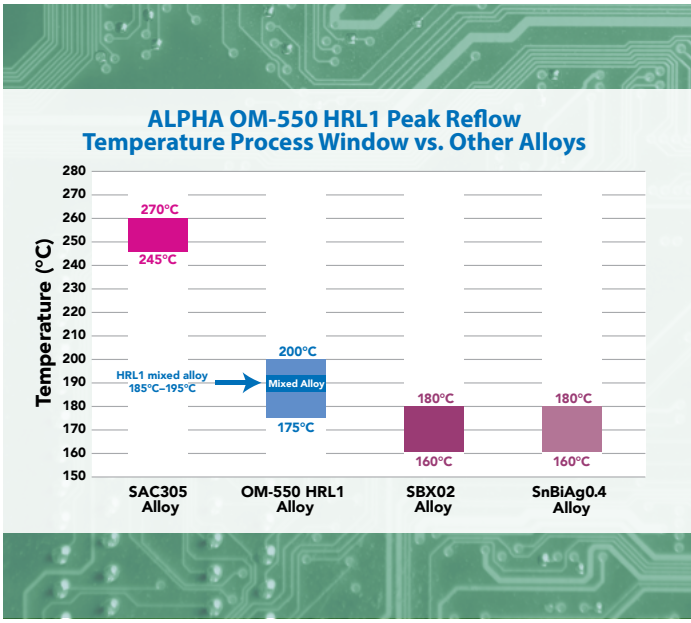
Revolutionizing Low Temperature Solder Reliability

ALPHA OM-550 HRL1 is a high reliability, low temperature solder paste designed to increase production yield and reduce component warpage. The ALPHA HRL1 alloy has a melting point significantly lower than SAC 305 and was designed to exhibit improved drop shock and thermal cycling performance. A minimum peak temperature of only 185°C vs 245°C reduces energy consumption in the SMT process.

Improved Reliability

- ALPHA OM-550 HRL1 mechanical reliability is comparable to SAC305 and significantly improved over other low temperature solders.
- Drop shock performance in SAC mixed alloy joints increased by 100% compared to other SnBi alloys.
- Thermal cycling reliability in SAC mixed alloy joints improved by 20%.
- HRL1 alloy shows best compatibility with SAC alloy vs. other low temperature SnBi alloys.





KEY FEATURES

- Long Stencil Life: Tested up to 12 hours of continuous printing.
- Good Voiding on various packages: BGAs, MLFs, DPAK & NWO defects.
- Low temp reflow eliminates Head-in-Pillow & NWO defect.
- Air & N2 reflow capable.
- Compatible with SAC305 components.

alpha HALOGEN HALOGEN-FREE SOLUTIONS

* Zero-Halogen is defined as no halogen intentionally added to the formulation.

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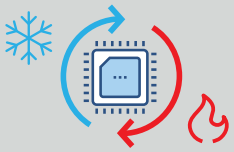


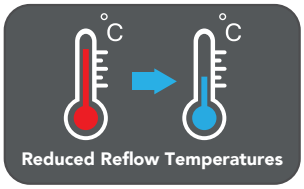
ALPHA OM-550 HRL1 exhibits the lowest drop in shear strength after thermal cycling. The HRL1 alloy loses less shear strength than SAC305 for both mixed alloy joints and joints with HRL1 alone.

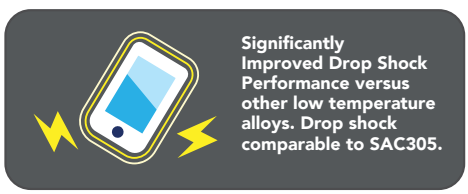
REDUCTION IN SHEAR STRENGTH % AFTER THERMAL CYCLING

NO. CYCLES	CVP-390 SAC305 T4	CVP-390 SAC305 T5	OM-535 SBX02 T4	**OM-550** HRL1 T4	**OM-550** HRL1 T5
500	43.3%	45.3%	3.8%	5.4%	13.5%
1000	67.6%	71.3%	32.3%	16.2%	25.6%
1500	74.1%	78.7%	62.0%	34.7%	44.4%
2000	80.0%	84.6%	68.4%	50.1%	52.4%
2500	80.1%	82.8%	76.5%	58.7%	54.5%

PERFORMANCE SUMMARY

PROCESS BENEFITS	PROPERTIES	PERFORMANCE CAPABILITIES
Print Process Window	Fine Feature Print Definition	180 micron using 4 mil stencil 250 micron using 5 mil stencil
	Tack/Stencil Life	Over 12 hours stencil life
	Print Speed Range	25–150mm/s (1–6 in.sec)
Reflow Process Yield	Reflow Environment	Air and Nitrogen
	Resistance to Voids	Meets IPC 7095 Class III Requirements
	Random Solder Balls	Passes in preferred category
	Head-in-Pillow	High Resistance to Head-in-Pillow Defects
	Non Wet Open (NWO)	High Resistance to NWO Defects
	Residue Profile	Pin Testable
	Coalescence	Coalesces down to 170 microns
	Flux Residue Cosmetics	Clear
Electrical Reliability	SIR	IPC SIR J-STD-004B and Bellcore SIR
	J-STD-004B Classification	ROL0 (Halide-Free)
Environmental	Halogen Content	Zero-Halogen





MacDermid Alpha ELECTRONICS SOLUTIONS

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For more information, contact us at Assembly@MacDermidAlpha.com