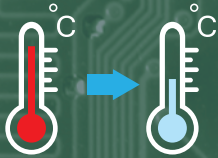


# ALPHA® OM-550, NON-EUTECTIC, LOW TEMPERATURE, SOLDER PASTE FOR ASSEMBLIES WITH TEMPERATURE SENSITIVE SUBSTRATES, COMPONENTS, AND HIGH WARPAGE CHIPS



Reduced Reflow Temperatures

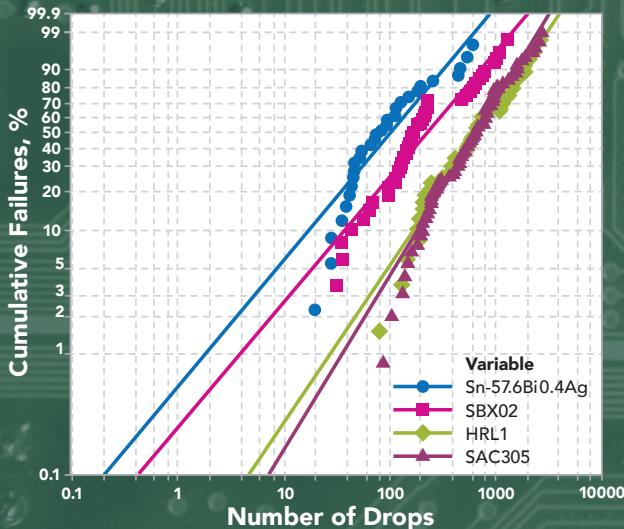


Eliminate component warpage



Significantly Improved Drop Shock Performance versus other low temperature alloys. Drop shock comparable to SAC305.

## Drop Shock Results Weibull



Shape	Ch.Life	N	AD	P
1.040	147.2	30	1.241	<0.010
1.037	321.9	45	1.432	<0.010
1.303	951.2	45	0.447	>0.250
1.435	874.6	85	0.573	0.147

First Failure	Number of Drops
Sn-57.6Bi-0.4Ag:	20 drops
SBX02:	20 drops
HRL1:	80 drops
SAC305:	88 drops

## Revolutionizing Low Temperature Soldering

- ALPHA® OM-550 HRL1 is a high reliability, low-temp solder paste. The alloy in this paste has a melting point significantly lower than SAC305.
- A minimum peak temp of only 185°C vs. 245°C reduces energy consumption in the SMT process.
- Designed to increase production yield and reduce component warpage.

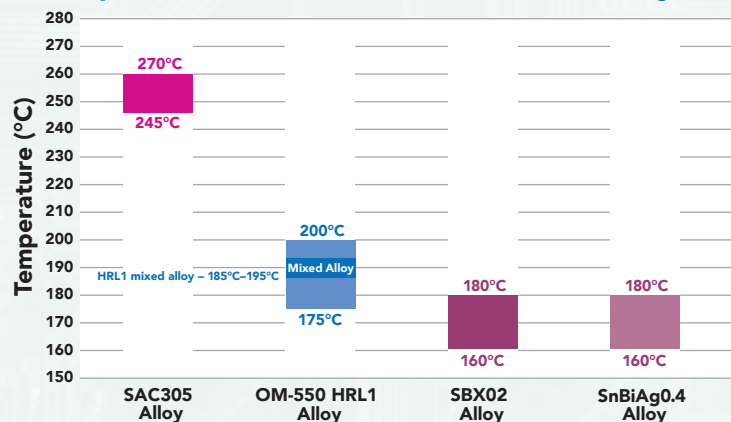
## Improved Reliability vs. Low Temp Alloys

- Joints formed with ALPHA® OM-550, HRL1 have improved mechanical reliability over other low temperature alloys.
- Drop shock performance in mixed alloy joints increased by 100% compared to other SnBi alloys.
- Thermal cycling reliability in mixed alloy joints improved by 20%.
- HRL1 alloy shows best compatibility with SAC alloy vs. other low temperature SnBi alloys.

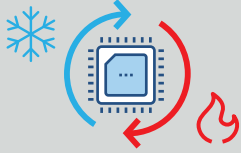
## ALPHA® OM-550 HRL1 Offers Many Benefits

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

## ALPHA® OM-550 HRL1 Peak Reflow Temperature Process Window vs. Other Alloys



# ALPHA® OM-550, NON-EUTECTIC, LOW TEMPERATURE, SOLDER PASTE FOR ASSEMBLIES WITH TEMPERATURE SENSITIVE SUBSTRATES, COMPONENTS, AND HIGH WARPAGE CHIPS



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 BENEFIT	PROPERTY	PERFORMANCE CAPABILITY
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 N2
	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
Electrical Reliability	Flux Residue Cosmetics	Clear
	SIR	IPC SIR (ohm) J-STD-004B 3.4.1.4 and Bellcore SIR
Environmental	J-STD-004B Classification	ROLO (Halide-Free)
	Halogen Content	Zero Halogen



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

For more information about ALPHA® OM-550 HRL1 Non-Eutectic, Low Temperature, Pin Testable, Solder Paste, please contact your Alpha Representative.



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