

SN100SB

RoHS Compliant Lead Free Solder Alloy
(Sn/Cu0.6/Sb0.2/Ni0.04)

DESCRIPTION

SN100SB is manufactured under carefully controlled conditions from virgin, high purity metals to provide assemblers with a cost effective replacement for Tin / Lead solder.

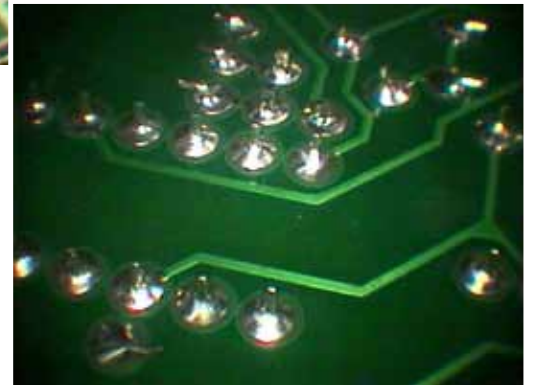
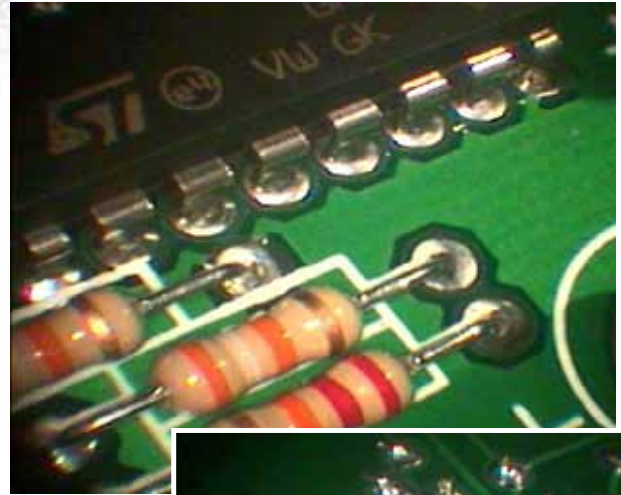
SN100SB incorporates the dross-inhibiting technology used in the manufacture of "Nitro-Flo" high purity Tin / Lead solder.

SN100SB is suitable for use in wave soldering equipment and Hot Air Levellers, modified to be compatible with lead free solder at 260 to 270°C.

The **SN100SB** alloy has been developed to offer a superior RoHS compliant lead-free solder with improved performance and appearance.

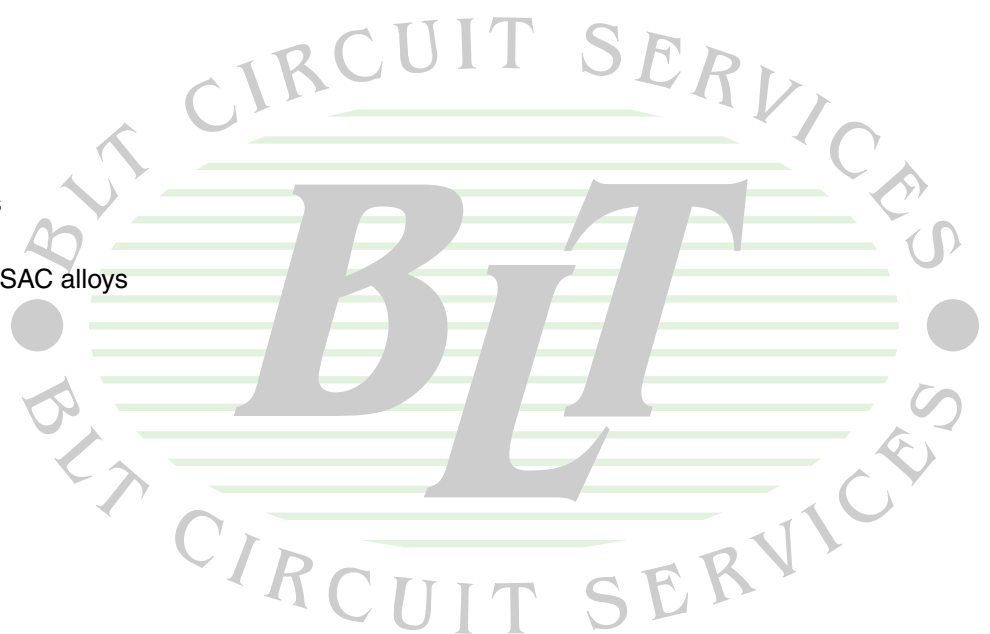
SN100SB contains small amounts of performance enhancing dopants which provide a more refined grain structure to the solder.

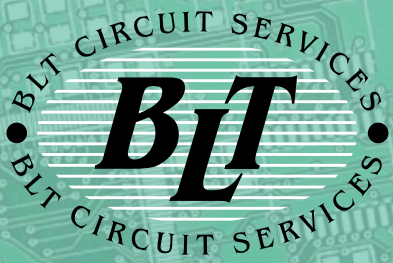
SN100SB is not only brighter and shinier than typical tin-silver-copper alloys, but has been engineered to be more resistant to failures caused by thermal cycling, thermal shock, and vibration while significantly improving solder wetting and flow.



BENEFITS

- High reliability grain refined alloy
- Fast soldering and good wetting
- Bright and shiny solder joints
- Low drossing
- Excellent flow for wave soldering
- Compatible with all flux types
- Low copper dissolution rates
- Low bridging compared to other alloys
- Excellent wetting/capillary
- Competitive pricing compared to high SAC alloys





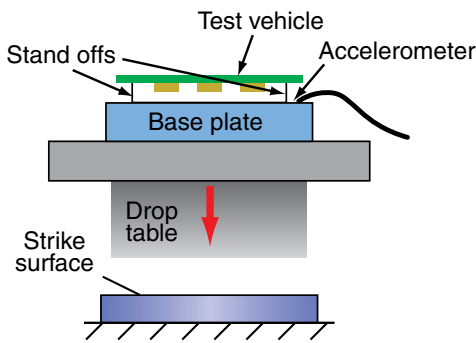
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SUPPORT DATA & TEST RESULTS

Drop Testing for BGA

1 metre drop test for Micro BGA using SN100SB 3mm balls and then tested to JESD22-B111 for reliability.



Shear test results on 1206 chip component before and after thermal cycling

	SN100SB	Sn/Cu
0 Cycles	6.4kg	6.1kg
1000 Cycles	6.5kg	6.0kg

Temperature Requirements

Application	Temperature
Wave Soldering	265 ±5°C
Hand Soldering	370 - 425°C

Typical Analysis

Sn	99.0%	Zn	0.001%
Sb	0.22%	Cd	0.001%
Cu	0.60%	Al	0.0005%
Fe	0.001%	Ni	0.04%
As	0.001%	Ag	0.075%
Bi	0.05%	Pb	0.01%
P	0.004%	S	0.0001%

Flux Compatibility

SN100SB is compatible with all major electronic grade fluxes on the market, including low residue, no-clean and VOC Free fluxes. Recommended BLT fluxes include: 10-75-30-R, 10-75-40 VOC free, 35-92, 35-92-35 No Residue, 34-41, 34-41-30 No Clean.

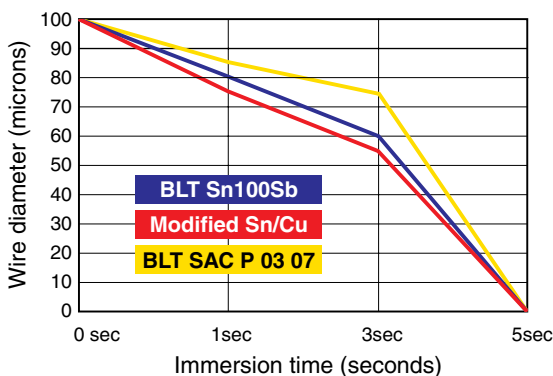
Handling Procedures

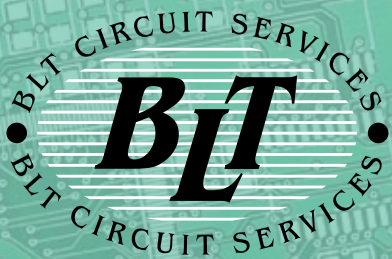
No special handling procedures are required for handling SN100SB products.

Test results	SN100SB	Sn/Cu
First failure	96	56
Median failure	196	122

Copper Dissolution Comparison

Erosion of copper over time in 3 solder alloys @400°C





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Physical Properties - Tensile Strength

		Strain Rate (s ⁻¹)									
		0.1		0.0333		0.01		0.000667		0.000333	
		Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.
BLT SAC P/03/07	E (Mpa)	2939.32	738.53	5110.74	1274.38	8380.44	2777.15	12348.91	2537.77	9082.65	3509.91
	σ _{0.2y} (MPa)	41.81	10.15	29.61	7.26	28.06	6.77	27.37	6.98	20.74	5.87
	σ _{max} (MPa)	50.76	13.16	38.01	9.8	35.24	8.3	34.07	8.27	24.35	5.41
BLT SN100SB	E (Mpa)	3700.81	936.51	4880.94	994.85	8671.98	1840.75	11978.98	2705.86	11532.36	1541.37
	σ _{0.2y} (MPa)	59.29	7.59	42.81	7.47	37.02	10.19	34.47	8.97	35.72	5.03
	σ _{max} (MPa)	69.86	8.68	56.12	11.47	48.21	11.24	41.03	8.55	41.21	6.34
Modified Tin/Copper	E (Mpa)	3369.1	727.35	7052.03	1059.62	9317.61	2275.43	9708.68	2520.62	8253.19	1707.85
	σ _{0.2y} (MPa)	52.48	11.63	41.06	8.74	40.76	10.25	32.49	4.6	32.94	6.6
	σ _{max} (MPa)	61.53	13.27	50.76	7.44	48.08	11.67	39.91	4.87	36.87	6.18

Physical testing carried out by a UK research institution.

Hardness

	BLT SN100SB	Modified Tin/Copper	BLT SAC P/03/07
Average	11.870	11.155	10.870
S.D.	0.961413	0.89117	0.739915

Hardness results are in HV using a 1 kilo load.

Safety Information

Use with adequate ventilation and proper personal protective equipment.

Refer to separate Material Safety Data sheet before use.

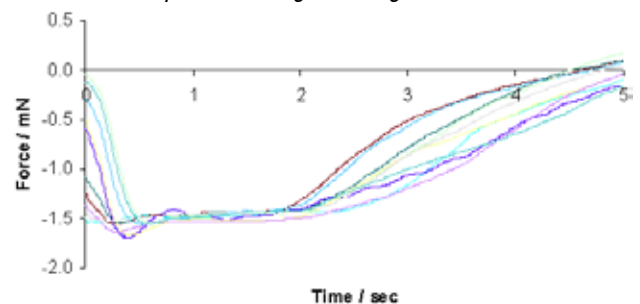
Do not dispose of any hazardous materials in non approved containers.

Warranty

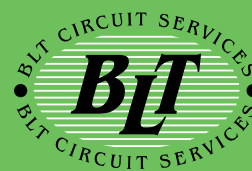
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Wetting

Graph of Wetting Force against Time



Wetting curves of BLT SN100SB



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