

SN100C Lead-Free Solder Alloy Comparison

SN100C is a lead-free solder alloy developed by Nihon Superior in Japan that is comprised of Sn-Cu-Ni+Ge. SN100C offers user-friendly properties and has been proven in the commercial production of over 400 million assemblies since 1999. Since the development of SN100C, several “competitive” alloys have been developed to combat its dominance in the market. As the below comparison illustrates, however, SN100C offers several advantages that make it the highest throughput and lowest cost-of-ownership lead-free solder alloy available today.

	SN100C™	SACX™	K100™	Cobalt 995™	SAC305	Sn99.3/Cu0.7
Bright and Shiny Joints	Yes	No	No	No	No	No
Smooth appearance without shrink cavities or “hot tears”.	Yes	No	No	No	No	No
All constituent elements easily controlled and stable	Yes	Yes	Yes	No	Yes	Yes
Contains silver, which increases costs	No	Yes	No	No	Yes	No
Contains bismuth, which can be a reliability concern	No	Yes	No	No	No	No
Eutectic alloy	Yes	No	No	No	No	Yes
Resists bridging and icycling	Yes	No	No	No	No	No
Low aggressiveness to existing soldering equipment	Yes	No	No	No	No	No
Does not erode copper from holes, pads and tracks	Yes	No	No	No	No	No
Slow, even growth of the intermetallic layer at the solder/substrate interface	Yes	No	No	No	No	No
Thermal fatigue resistance and creep strength better than tin-lead	Yes	?	?	?	Yes	No
Compatible with other lead-free alloys	Yes	?	?	?	?	?
Available in bar, wire, and paste form	Yes	No	No	No	Yes	Yes
Also proven to perform well in selective and dip soldering	Yes	No	No	No	No	No
Superior flow for hand soldering	Yes	No	No	No	No	No
Wave Soldering Temperature (°C)	265	260	265	265	255	270
Widely available and used in mass production since 1999.	Yes	No	No	No	No	No
Multiple non-unionized factories in North America to ensure supply	Yes	No	No	No	No	No
Number of companies in North America that offer the alloy	2	1	1	1	(unlimited)	(unlimited)