

Electronic **BALVER ZINN**[®]

Technical Data Sheet

BALVER ZINN SOLDER

SN100CV[®] SnBi1.5Cu0.7NiGe

SN100Cve[®] SnBi1.5NiGe

General Information

BALVER ZINN SOLDER SN100CV[®] (SnBi1.5Cu0.7NiGe) is a patented version of the worldwide well-known solder SN100C[®] with the addition of bismuth.

SN100CV[®] is like SN100C[®] a nickel-stabilized tin-copper solder, containing a small amount of germanium to reduce oxidation. The tensile strength of **SN100CV[®]** is approx. 30% higher compared to SN100C[®] and reaches even higher values than SAC305 because of the presence of bismuth. **SN100CV[®]** is a silver- and lead-free* solder for high reliability applications. Compared with SN100C[®], **SN100CV[®]** causes less copper dissolution that allows very stable processes and easy solder bath management.

BALVER ZINN SOLDER SN100CV[®] is an invention of **NIHON SUPERIOR[®]** with patent number JP 5872114. **BALVER ZINN** is worldwide the first licensee and offers **SN100CV[®]** as bar, cored wire and solder paste.

***BALVER ZINN SOLDER SN100CV[®]** does not contain hazardous substances beyond the limits prescribed by EU Directive 2011/65/EU ("RoHS II")

BALVER ZINN Production Programme

The **BALVER ZINN** production programme also includes solder pastes, flux and solder wires. Beside the **SN100C[®]** product family, **BALVER ZINN** offers additional unpatented and patented solder alloys for wave soldering, reflow and rework.

General Process Information

- With copper content of more than 0.85%, significantly more soldering defects occur (bridging!). To avoid these, **BALVER ZINN** offers complimentary solder bath analyses. When soldering any printed circuit board - except those with a nickel/gold finish – **SN100Cve[®]** should be used for bath top-up to ensure constant process conditions.
- The copper tin crystals precipitating at a copper content of more than 0.9% (intermetallic joints), have a grinding effect and, due to the low density of the solder, accumulate on the bottom of the solder bath. They **cannot** be removed from the solder surface by a perforated spoon.
- Due to its special stabilization, **SN100CV[®]** affects pots and pumps far less than tin silver copper solders. In special cases SN100C can be used in soldering machines with plain stainless steel pots. In order to reduce solder losses as dross, nitrogen protection is recommended.
- **BALVER ZINN** conducts complimentary, regular solder bath analyses to determine the customer-specific bath top-up schedule and avoid problems caused by excessive impurities.

Process Conditions for Wave Soldering

- Solder bath temperature 260 – 270°C. Please note that it is not the solder temperature but the temperature measured on the components, which determines the level of thermal stress subjected to the component.
- Before entering the wave, the printed circuit boards should be about 10 – 20°C warmer than for tin-lead applications (Sn63Pb37). 110 – 135°C, measured on the top surface, are usual conditions. Here, the old rule applies: "Do not try to use the wave for preheating"!
- The contact time in the wave has to be increased due to slower wetting in comparison with tin lead (Sn63Pb37).

Information on Patent Situation

BALVER ZINN SOLDER SN100CV[®] is protected by patent JP 5872114. **BALVER ZINN** normally offers this alloy with prepaid license fees to protect customers from patent infringements. Since the composition of the solder joint is also covered by patents, the lead-free tin copper solder **SN100Cve[®]** is also offered with license fees in order to avoid possible patent infringements.

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Physical properties of SN100CV® / SN100CVe® in comparison with SAC305

	SN100CV® SnBi1.5Cu0.7NiGe	SAC305 Sn3Ag0.5Cu
Melting range °C	221 – 225	217 – 219
Tensile strength MPa	52	48
0.2% Proof stress MPa	39	41
Young's modulus GPa	55	51
Linear expansion coefficient ppm/K	24	23

Delivery sizes

Format		L Mm	W mm	H mm
Ingots*	1 kg	325	28	15
	4 kg	300	50	40
Ingots with hole	3,7 kg	540	50	20
	6 kg	570	48	35
Bar		400x10x10		
Pellet		12 x 25		
Wire**, solid, on reel		Ø 1.0 – 6.0		

*Other dimensions available on request

**Tolerance range: Ø ≤ 2mm ± 0.05; Ø > 2mm ± 0.1

Composition of the Alloy

Element	SN100CV® SnBi1.5Cu0.7NiGe in weight-%	SN100CVe® SnBi1.5NiGe in weight-%
Sn	Remainder	Remainder
Bi	1.4 – 1.6	1.4 – 1.6
Cu	0.6 – 0.7	max. 0.2
Ge	0.005 – 0.009	0.005 – 0.009
Ni	0.04 – 0.06	0.04 – 0.06
Ag	max. 0.05	max. 0.05
Al	max. 0.001	max. 0.001
As	max. 0.03	max. 0.03
Au	max. 0.03	max. 0.03
Cd	max. 0.002	max. 0.002
Fe	max. 0.02	max. 0.02
In	max. 0.03	max. 0.03
Pb	max. 0.05	max. 0.05
Sb	max. 0.05	max. 0.05
Zn	max. 0.001	max. 0.001

Storage Conditions / Durability

Dry storage at room temperature / minimum 2 years

Safety Advice

Before use please refer to the appropriate Safety Data Sheet.

Although the information in this data sheet is considered accurate, the measured values do not represent assured properties or delivery specifications. Because of the wide range of potential materials and applications, and with respect to possible protective rights and third parties, Balver Zinn Josef Jost GmbH & Co. KG **cannot** accept any liability.

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