Electronic
Technical Data Sheet
BALVER ZINN SOLDER
SN100CL® SnCu0.7Ni
SN100CLe® (+) SnNi

BALVER ZINN®

General Information

BALVER ZINN SOLDER SN100CL® and CLe® (+) are lead-free* alloys, specially developed for the LFHASL process. **SN100CL®** is chemically identical to **SN100C** (L stands for levelling). This alloy was rated by the NASA consortia as the most reliable lead-free* alloy for wave soldering. **BALVER ZINN SOLDER SN100CL** is a nickel-stabilized tin copper eutectic, containing a small amount of germanium to reduce oxidation of the solder. For many years **BALVER ZINN** has been a market leader in the printed circuit board industry. **SN100CL®** has successfully been in production of lead-free printed circuit boards. Existing vertical and horizontal hot air levelling machines can be used or adapted for the lead-free process. Another outstanding property is the bright and shiny appearance of the pre-tinned boards compared to conventional tin lead boards. **BALVER ZINN SOLDER SN100CL®** exceeds all other lead-free* alloys for lowest copper dissolution to allow profitable mass production.
The specific properties of **BALVER ZINN SOLDER SN100CL®** give outstanding co planarity and solderability for HASL production of PCBs.

***BALVER ZINN SOLDER SN100CL® / CIe® (+)** does not contain hazardous substances beyond the limits prescribed by EU Directive 2011/65/EU (“RoHS II”)

Technical information and Data Sheets can be found on our website (www.BALVERZINN.com). You can also obtain all information and documents directly from **BALVER ZINN**.

BALVER ZINN Production Programme

The **BALVER ZINN** production programme also includes solder pastes, flux and solder wires. Beside the **SN100CL** product family, **BALVER ZINN** offers additional unpatented and patented solder alloys for wave soldering, reflow and rework.

General Process Information

- Very good solderability even after a year in storage.
- LFHASL boards can be cleaned with alkaline solutions after misprinting solder paste.
- **SN100CL®** surface dissolve is slower in wave soldering than immersion tin.
- Solder paste spread is better than other lead-free surfaces.
- **SN100CL®** HASL boards can be combined with SAC alloys (results from NASA consortia).
- **SN100CL®** HASL boards are suitable for a lead process (the melting point of **SN100CL®** is lower than pure tin).

Process Conditions for hot air levelling

- Pre tinning of printed circuit boards with the HASL process in vertical and horizontal machines.
- Process temperature: 255 – 280°C
- Dipping time 1.5 – 5.0 sec (related to thickness and thermal mass)
- First filling of the machine with **BALVER ZINN SOLDER SN100CL®**
- Refilling only with **BALVER ZINN SOLDER SN100CIe® (+)** (we recommend in some applications the use of **SN100CLe®**)

It is recommended to exchange a partial of solder, if the copper content exceeds approx. 1.2%.
In some machines it is practice to remove copper with the so-called “screen-spoon”.

Information on Patent Situation

BALVER ZINN SOLDER SN100CL® is protected by patents. **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 **SN100CLe®** is also offered with license fees in order to avoid possible patent infringements

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Physical properties of SN100CL® / SN100CLe® in comparison with tin-lead

	SN100CL SnCu0,7Ni	Sn63Pb37
Melting point °C	227	183
Specific Gravity g/cm³	7.4	8.4

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	

*Other dimensions available on request

Composition of the Alloy

Element	SN100CL® SnCu0.7NiGe in weight-%	SN100CLe® SnNiGe in weight-%	SN100CLe® (+) SnNi0.15Ge in weight-%	Critical values in working solder bath*
Sn	Remainder	Remainder	Remainder	Remainder
Cu	0.6 – 0.7	max. 0.2	max. 0.2	< 0.4 > 1.15
Ge	0.005 – 0.007	0.005 – 0.007	0.005 – 0.007	> 0.1
Ni	0.04 – 0.06	0.04 – 0.06	0.13 – 0.17	< 0.01 > 0.1
Ag	max. 0.05	max. 0.05	max. 0.05	> 0.1
Al	max. 0.001	max. 0.001	max. 0.001	> 0.002
As	max. 0.03	max. 0.03	max. 0.03	> 0.03
Au	max. 0.03	max. 0.03	max. 0.03	n. i.
Bi	max. 0.03	max. 0.03	max. 0.03	> 0.1
Cd	max. 0.002	max. 0.002	max. 0.002	> 0.002
Fe	max. 0.02	max. 0.02	max. 0.02	> 0.03
In	max. 0.03	max. 0.03	max. 0.03	n. i.
Pb	max. 0.05	max. 0.05	max. 0.05	> 0.1 (RoHS)
Sb	max. 0.05	max. 0.05	max. 0.05	> 0.05
Zn	max. 0.001	max. 0.001	max. 0.001	> 0.005

*Max. solder bath impurities are not standardized, but are based on practical experience.

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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