SOLDER SN100CV (SnBi1,5Cu0,7)

Lead-free alloy for electronics

DESCRIPTION

SN100CV is a silver-free, micro-alloyed solder developed and patented by the Japanese company Nihon Superior (German (DE) patent number 60211068917.7).

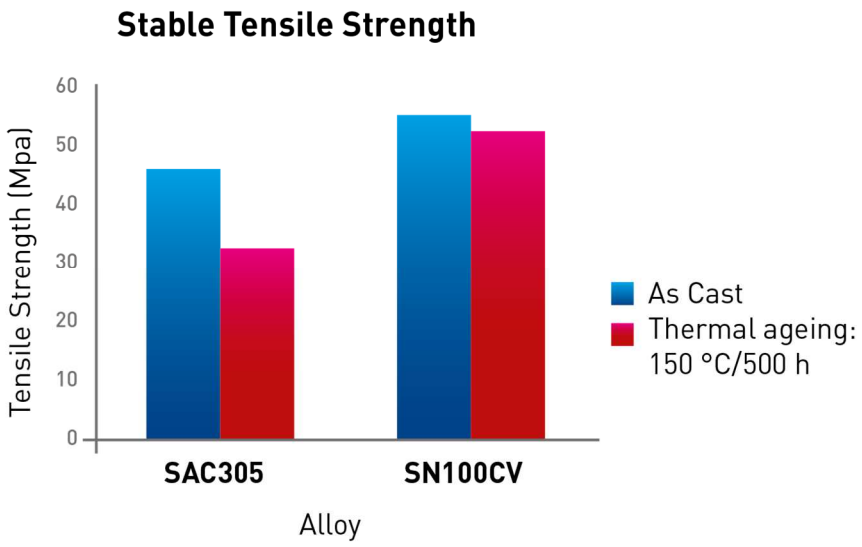
Bismuth in the alloy contributes to sustained mechanical strength and long-term reliability. The micro-alloyed addition of nickel reduces copper enrichment in the solder bath and guarantees a more stable process. The nickel content also leads to a more refined intermetallic layer, which increases the long-term stability of the solder joints. A second micro-alloyed element, germanium, minimizes dross formation and thus contributes to resource efficiency and environmental protection.

The alloy exhibits very good wetting behavior and a significantly lower tendency toward bridge formation. This helps to reduce defect rates and improves overall quality.

CHARACTERISTICS

The product offers the following advantages:

- **solid solution strengthening**
- **micro-alloyed**
- **reduced dissolution rate in comparison with S-Sn99.3Cu0.7 alloy**
- **reduced dross formation in comparison with S-Sn99.3Cu0.7 alloy**
- **reduced tendency for bridging and icicle formation**
- **shiny solder joints**
- **silver-free – cost-optimized solution**



SN100CV maintains a high and stable tensile strength, demonstrating superior long-term stability even in comparison to SAC305.

APPLICATION

SN100CV can be used with the same parameter settings on soldering processes as any other lead-free alloy based on SnCu or SnCuAg. When changing from lead containing to lead-free alloys, adjustments of the temperature profiles must be made.

The characteristics of the resulting solder joints are comparable with or better than Sn/Pb solder joints in all respects. The physical properties are not changed by the micro-alloyed additives.

The differences between lead-free standard solders and SN100CV are:

- **solidification of the solder joint creates finer grain structures, resulting in shiny solder joint surfaces**
- **reduced dissolution rate of copper - less copper is removed from the PCB and added to the solder bath**
- **reduced dross formation**

Depending on the level of process control and the soldering method used, two aspects must be considered when working with SN100CV. During operation, the germanium content in the solder gradually decreases. If the germanium level falls below 20 ppm, dross formation will increase. In such cases, we recommend adding our anti-oxidation additive **S-Sn99Ge1** to restore the germanium content to the required level.

Despite the reduced dissolution rate of SN100CV, the copper content in the solder bath may also rise to critical levels over time. In this situation, we recommend using the alloy **SN100CVe**, which has a reduced copper content, as refill solder.

As part of our customer support, we offer an **analysis service** to regularly check the composition of your solder bath. Our laboratory and application engineers are also available to support you with any technical questions.

PHYSICAL PROPERTIES AND DATA

	SN100CV	SAC305
Melting point, °C	221-225	217-220
Density, g/cm³	7.4	7.4
Tensile strength, MPa	52	48
Elongation %	33	33
0.2 % Proof Stress, MPa	39	41
Young's Modulus, GPa	55	51
Coefficient of Thermal Expansion, ppm/K	24	23
Resistivity, µΩm	0.14	0.14

RECOMMENDED OPERATING CONDITIONS

Wave soldering and selective soldering systems. The recommended operating conditions are the same as for lead-free SnCu alloys as the melting point remains the same.

SUPPLY FORMS

- wire (solid and flux cored)
- triangular bars
- kilobars
- ingots with hanger hole
- pellets (approx. Ø 5 mm x 30-35 mm)

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HEALTH AND SAFETY

Read the safety data sheet carefully before use and observe the safety precautions described.

DISCLAIMER

The above values are typical and represent no form of specification. The Data Sheet serves for information purposes. Any verbal or written advise is not binding for the company, whether such information originates from the company offices or from a sales representative. This is also in respect of any protection rights of third parties, and does not release the customer from the responsibility of verifying the products of the company for suitability of use for the intended process or purpose. Should any liability on the part of the company arise, the company will only indemnify for loss or damage to the same extent as for defects in quality.

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