TECHNICAL DATASHEET

STANNOL
When it's about soldering

STANNOL® Solder SN100C™

Lead-free alloy for electronics

SN100C

PRODUCT FEATURES

- **micro-alloyed, eutectic alloy (melting point at 227 °C)**
- **reduced dissolution rate in comparison with SnCu0.7 alloy**
- **reduced dross formation in comparison with SnCu0.7 alloy**
- **reduced tendency for bridging and icicle formation**
- **shiny solder joints**
- **does not contain any silver – cost-optimized solution**

PRODUCT DESCRIPTION

SN100C is a silver-free, micro-alloyed solder which has been developed and patented* by the Japanese company Nihon Superior. The micro-alloyed addition of nickel reduces the copper enrichment in the solder bath and guaranties a more stable process. The second micro-alloyed element germanium reduces the dross formation and thus helps to save resources and protect the environment. The nickel inside the solder results in a more refined intermetallic layer which increases the long-term stability of the solder joints. Apart from that the alloy shows very good wetting behaviour and a much lower tendency for bridge formation. This helps to reduce the defect rate and increases quality.

* NIHON SUPERIOR patent: German (DE) patent number 69918758; Europe patent number 0985486

APPLICATION

The SN100C can be used with the same parameter settings on your soldering process 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 **SN100C** 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 process control and soldering method, there are still two aspects to take into account for the use of SN100C. The germanium content will decrease while the solder is in use. This results in increasing dross formation, if the level of germanium is less than 20 ppm. In this case we recommend the addition of our anti-oxidation additive S-Sn99Ge1 to restore the germanium content back to the required value.

Despite the reduced dissolution rate of SN100C, the copper content in the solder bath can also increase to critical values. In this case, we recommend to use the alloy SN100Ce with reduced copper content as refill solder. As a part or our customer support we offer you to use our analysis service for checking the composition of your solder bath on a regular base. Of course you will receive support from our laboratory and our application engineers for all technical questions.

PHYSICAL AND MECHANICAL CHARACTERISTICS OF SN100C

CHARACTERISTICS	SN100C
Melting point, °C	227
Density, g/cm3	7.4
Tensile strength, MPa 10 mm/min at 25 °C	32
Elongation at break, %	48
Electrical conductivity, µΩm	13
Specific melting heat, J/g	61

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.

PURITY

As for S-Sn99Cu1 according to DIN EN 61190-1-3 and ISO 9453:2006, with micro-alloying additives <0.1%.

DELIVERY FORM

- Wire (solid and flux cored)
- Triangular bars
- Kilobars
- Ingots with hanger hole
- Pellets (approx. Ø 5 mm x 30-35 mm)

NOTE

Read through the safety data sheet and note safety precautions before first use.

The values mentioned above are typical values, but do not represent any specification. The data sheet is provided for your information. Our verbal and written technical advice is not binding, whether it originates from the company or from any of our commercial agents – also in relation to any property rights of third parties – and does not absolve our customers from their own checking of our products for their suitability for the intended processes and purposes. Nevertheless, if liability on our part becomes possible, we only pay compensation to the same extent as for quality defects.

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