



# SN100C<sup>®</sup>

## Lead-Free Solder Alloy

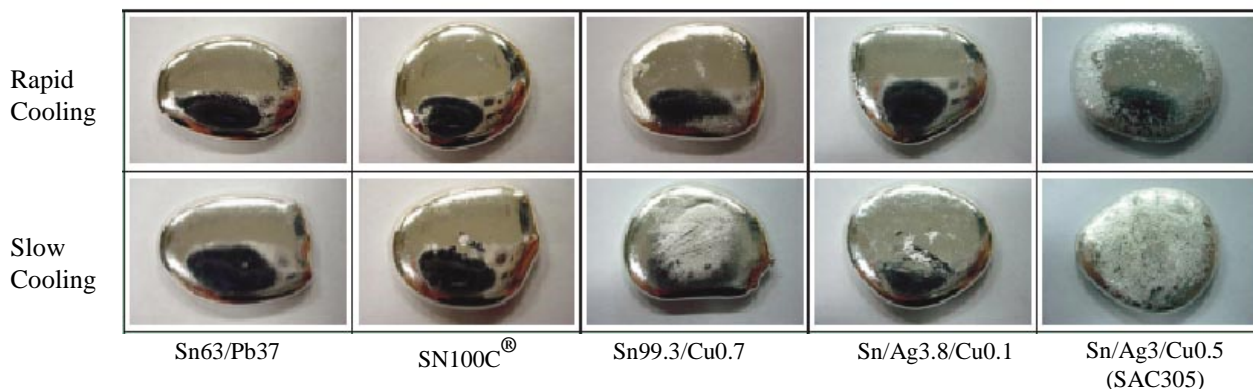
### Features:

- Bridge-Free Soldering
- Does Not Contain Silver or Bismuth
- Icicle-Free Soldering
- Slower Rate of Copper Erosion from Holes, Pads and Tracks
- Dross Rate Equal to or Lower than Tin-Lead
- Smooth, Bright Well-Formed Fillets
- Eutectic Alloy

### Description:

SN100C<sup>®</sup> is a lead-free solder alloy developed by Nihon Superior in Japan. SN100C<sup>®</sup> offers user-friendly properties and has been proven in commercial production since 1999. The addition of nickel improves the wetting and flow properties of the cost effective tin-copper eutectic. This makes it possible to achieve excellent results in wave soldering at process temperatures comparable to the tin-lead solder it replaces. Performance in wave soldering at least matches that of more expensive silver-containing alloys and the resulting joints are smoother and brighter. SN100C<sup>®</sup> is available in bar, solid and cored wire, and solder paste.

### Solder Surface Comparison:



### Alloy Composition:

Sn: Balance	Cu: 0.5-0.7	Ni: 0.04-0.07	Ge: 0.008-0.01
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### Typical Impurity Levels:

Ag: 0.05	Al: 0.002	As: 0.03	Au: 0.05
Bi: 0.03	Cd: 0.002	Fe: 0.02	In: 0.10
Pb: 0.05	Sb: 0.05	Zn: 0.002	

### Wave/Selective Soldering:

The main differences between wave soldering with Sn63/Pb37 tin-lead solder and SN100C<sup>®</sup> are:

- The “process window”; the difference between the process temperature and the melting point of the solder is smaller.
- At the recommended process temperatures the wetting of SN100C<sup>®</sup> is slower. Higher solder temperature can speed wetting. Higher temperature operation will not affect the SN100C alloy; however, thermal damage, increased copper dissolution and dross generation are possible and need to be considered.
- Operators need to ensure that the wave soldering machine is designed to keep board and solder temperatures within these ranges throughout the process. Use the recommended starting settings as listed below.

Preheat	Solder Wave/Fountain	Dwell Time
110°-115°C (230°-239°F)	260°-300°C (500°-572°F)	5 seconds minimum

### Handling and Storage:

- If this alloy is used in water soluble cored wire, the product will have a shelf life of 3 years. All other cored wire, solid wire, and bar solder products have an indefinite shelf life.
- Consult the MSDS for specific handling procedures.

### Safety:

- Use with adequate ventilation and proper personal protective equipment.
- Refer to the accompanying MSDS for any specific emergency information.
- Do not dispose of any hazardous materials in non-approved containers.

Material Property		SN100C <sup>®</sup>	Test method
Melting Temperature [°C]		Solidus 227	Ramp rate for different thermal analysis 20°/min
		Liquidus 227	
S.G.		7.4	S.G. measuring apparatus 25°
Specific Heat [J/Kg·K]		220	Estimated value
Thermal conductivity [J/m·s·K]		64	Estimated value
Vickers Hardness	Slow cooling	16.1	Cast onto aluminum plate
	Fast cooling	12.9	Cast onto insulating brick
Tensile strength [M·Pa]		32	10mm/min. (25°)
Elongation [%]		48	10mm/min. (25°)
Electrical resistance [μΩm]		0.13	For Terminal method (25°)
Coefficient of Thermal Expansion	30-80°C	1.33x10 <sup>-3</sup>	Conditions: Load:10.0grams, sample: Almina (20mm), Programmed temperature:10°/min.
	80-130°C	1.38x10 <sup>-3</sup>	
	130-180°C	1.46x10 <sup>-3</sup>	
Spread Factor %	240°C	77	JIS Z 3197
	250°C	77	
	260°C	78	
	280°C	78	
Copper erosion rate at 260°C		~ 2 minutes	Time for complete erosion of 0.18mmΦ wire
Thermal shock		>1,000 cycles	-40/+80° each 1hr
Electromigration		>1,000 hrs	40° 95%RH & 85° 85%RH
Whiskers		>1,000 hrs	50°

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 AIM IS ISO9001:2008 & ISO14001:2004 CERTIFIED

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