



PRODUCT BULLETIN BAR SOLDER

Purity Improves Process

Qualiteks' lead free solder SN100^e is manufactured from tin, copper, and cobalt processed to create a solder that exceeds the most common purity specification requirements. The lead-free solder alloy is Sn99.5/Cu0.5/Co. It is RoHS compliant. The melting point is 228°C approx. and the recommended operating temperatures are between 260-270°C.

Versatile Uses

SN100° is specially designed for use in all wave soldering and tin and dip soldering applications. It is primarily used in printed circuit board assembly operations common to the electronics market.

Less Dross and Re-Work

This alloy provides brighter, shinier, less grainy solder joints when compared to (SAC 305) Sn96.5/Ag3.0/Cu0.5 alloy. It is much less expensive. Less solder is consumed compared to tin lead solder because the weight per cubic inch of the solder is lower. The lower viscosity improves the fluidity, which in turn improves the LF solder's wetting capability and reduces necessary re-work including bridging, icicling, cobwebbing and flagging. High purity LF solder is environmentally friendly, and generates less dross compared to all other "virgin grade" solders. Less dross generation results in more soldered joints per pound of solder and greater cost-effectiveness through less waste. Generated dross has less solder content for minimal solder loss, more efficient product usage, and greater economy.

Qualitek's manufacturing process assures batch-to batch consistency for predictable solder performance.

Certified

Certificates of Conformance and Analysis are automatically provided with each shipment.

Qualiteks SN100^e solders meet or exceed the rigid requirements of Specification J-STD-006.



Independent Testing

Thermal Shock

 $-10 \text{ to } +100^{\circ}\text{C} > 1000 \text{ cycles}$

Temperature/Humidity

 $85^{\circ}\text{C}/85\%$ RH with Bias >500 hrs.

No Tin Whiskers observed

Density

7.4q/cm3

Tension Testing

Tensile Strength = 28 MPa

Yield Strength = 21 MPa

Elongation-at-break=27%

Wetting Balance Test

Max. Wetting Force = 0.31 mN/mm at 265°C

Time to Max. Wetting Force = 0.25 seconds

Specific Heat Capacity

Specific Heat Capacity = 295J/kg.K

Thermal Conductivity and Diffusivity Tests Thermal Conductivity = 81.75 W/m.K at 25°C

Thermal Diffusivity = 3.817×10^{-5} m²/s at 25°C

Coefficient of Thermal Expansion

Coefficient of thermal expansion, $a_r = 22x10^{-6}$ mm/mm $^{\circ}$ C in range of 25-200 $^{\circ}$ C

Electric Resistivity

Electrical Resisistivity

Electrical Resistivity = 0.123 $\mu\Omega$ -m at 25°C

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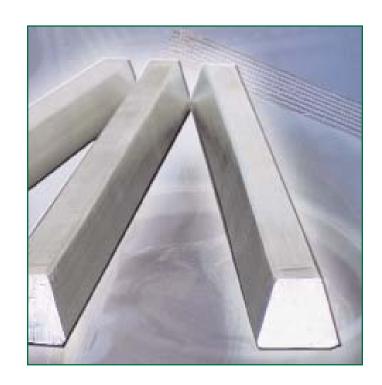
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Alloy SN100° Sn99.5/Cu0.5/Co

Alloy	J-STD-006C	Specs Typ	ical Analysis
Sn	99.5000 (<u>+</u> 0.5)	99.3-99.7	99.6000
Αs	0.0300	0.0035(max)	0.0015
S b	0.200	0.0250 (max)	0.0150
Αu	0.0500	0.0002 (max)	0.0002
Fe	0.0200	0.0050 (max)	0.0030
Ni	0.0100	0.0060 (max)	0.0030
Bi	0.1000	0.0100 (max)	0.0040
Al	0.0050	0.0010 (max)	0.0001
Cu	0.5000 (<u>+</u> 0.1)	0.5000 (<u>+</u> 0.1)	0.5000
Ag	0.1000	0.0010 (max)	0.0001
Zn	0.0030	0.0010 (max)	0.0005
C d	0.0020	0.0010 (max)	0.0005
In	0.1000	0.0100 (max)	0.0050
Рb	0.070	0.0500 (max)	0.0250
Со	N/A	<0.1000	<0.1000



Sn63/Pb37 alloy Temp:	°F °C
Cu conc. (wt.%) at beginning of level off (saturation) point	

Temp:

Cu conc. (wt.%) at beginning of level off (saturation) point
Cu dissolution rate as % increase of Cu in solder pot

Copper Loading Capacity of Solder

Cu dissolution rate as % increase of Cu in solder pot

99.5Sn/Cu0.5/Co lead-free alloy

	0.21 0.001	0.4 0.002	0.44 0.0022	0.46 0.0023	
°F °C	490 254	500 260	510 265	520 271	530 276
	0.7	0.8	0.824	0.887	1.01

500

260

0.002

520

271

0.0021

0.0037

480

248

0.0017

440

226

0.0014

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