



**Metallic Resources**



# SAC305 Lead-Free Electrolytic Wave Solder Product Bulletin

## Purity Improves Process

Metallic Resources' SAC305 lead free solder alloy is manufactured from electrolytically processed tin and other elements to create solder so pure it far exceeds the most common specifications. It has been independently tested to meet all restrictions on hazardous substances. It is RoHS compliant. The specific alloy is Sn96.5/Ag3.0/Cu0.5. Variations on the tin/copper, tin/silver and tin/silver/copper combination alloys are also available, depending upon customer requirements. Standard packaging is 25-pound boxes containing cast bars. Also available are SAC305 nuggets, ingots, or feeder bars.

## Versatile and Reliable

Metallic Resources' high purity SAC305 electrolytic alloy has been specially formulated and designed for use in all wave soldering, and tin and dip soldering applications. It is ideally suited for the assembly of printed circuit boards utilizing existing or new equipment found in the electronics market.

## Higher Yield, Less Waste

Manufactured using an electrolytic process, Metallic Resources' SAC305 lead free solder is lower in viscosity, which improves the fluidity. Greater fluidity improves the solder's wetting capability for better through hole fill, and reduces necessary re-work including bridging, icling, cobwebbing and flagging. High purity electrolytic solder is environmentally friendly, and generates less dross compared to other "virgin grade" lead free alloys. Less dross results in a greater number of joints per pound of solder consumed and greater cost effectiveness. Energy savings, extended pot life, reduced thermal stress, and reduced potential of contamination are all benefits derived from the electrolytic manufacturing process.

The electrolytic manufacturing process assures batch-to-batch consistency for predictable performance in the solder pot. The process removes most metallic and non-metallic impurities often found in "virgin metals" to provide a purer solder alloy. This purity results in a smaller crystalline structure which exhibits a shinier, more brilliant solder appearance when compared to other SAC305 alloys.



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## Exceeds Industry Standards

Lead Free SAC305 bar solder conforms to the requirements of IPC Specification J-STD-006, meets or exceeds ASTM-32, and is approved for military usage. It complies with Directive 2011/65/EU and Directive 2015/863/EU Restriction of Hazardous Substances (RoHS 2 and 3). Certificates of Conformance and Analysis are automatically provided with each shipment.

## Physical Properties

<b>Melting Point</b>	217°C
<b>Density</b>	7.4 g/cm <sup>3</sup>
<b>Operating Temperature</b>	250-275°C
<b>Tensile Strength</b>	52 M Pa
<b>Tensile Elongation</b>	27%
<b>Thermal Conductivity</b>	64 J/m <sup>2</sup> ·K
<b>Electrical Resistivity</b>	0.000015 Ohm-cm
<b>Thermal Shock -10 to +100°C</b>	> 1000 cycles

<b>Technical Specifications</b>		
	<b>SAC305 MRI Specification</b>	<b>J-STD-006 Alloy Specification</b>
<b>Sn</b>	96.5000 ± 0.5	96.5000 ± 0.5
<b>As</b>	.0035 (max)	.0300 (max)
<b>Sb</b>	.0250 (max)	.2000 (max)
<b>Au</b>	.0020 (max)	.0500 (max)
<b>Fe</b>	.0080 (max)	.0200 (max)
<b>Ni</b>	.0080 (max)	.0100 (max)
<b>Bi</b>	.0120 (max)	.1000 (max)
<b>Al</b>	.0010 (max)	.0050 (max)
<b>Cu</b>	.5000 ± 0.1	.5000 ± 0.1
<b>Ag</b>	3.000 ± 0.2	3.000 ± 0.2
<b>Zn</b>	.0010 (max)	.0030 (max)
<b>Cd</b>	.0010 (max)	.0020 (max)
<b>In</b>	.0200 (max)	.1000 (max)
<b>Pb</b>	.0500 (max)	.0700 (max)



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