



## E-Qual 97TSC LEAD FREE SOLDER ALLOY (Senju Patent No: JP 3027441)

- Licence Paid Product
- An all-round lead free alternative
- Proven in production use for electronics manufacturing
- Good solderability

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### Applications

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E-Qual 97TSC alloy is designed to be substituted for tin/lead alloys in electronics assembly soldering operations. Some adjustment to equipment settings will be required but the resulting soldered joints will perform as well as tin/lead solder joints in most respects.

E-Qual 97TSC alloy eliminates the handling and waste management hazards due to lead, for operators using conventional lead-containing alloys. Where lead has also been eliminated from other coating and soldering processes in PCB and component manufacture, the use of E-Qual 97TSC will ensure that RoHS compliant lead-free assemblies are produced.

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### Recommended Operating Conditions

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E-Qual 97TSC is an alloy of composition 96.5% tin/3.0 % silver/0.5% copper. Although many solutions have been proposed to meet the requirements for a lead free alloy to replace standard tin-lead solders, E-Qual 97TSC offers significant benefits to users.

Temperature profiles designed for tin/lead alloys will need to be revised accordingly to cater for the melting point of E-Qual 97TSC being 35°C higher than that of tin/lead eutectic alloy, though the superheat needed has been found to be less than that required for tin-lead.

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### Technical Specification

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Test data indicate that the physical and mechanical properties and wetting behaviour of E-Qual 97TSC alloy are comparable to those of tin/lead eutectic or near eutectic alloys, and in most cases considerably improved over other lead-free alloys.

#### Alloy Composition:

Element	Typical Content %	Maximum Content %
Zn	0.0005	0.001
Al	0.0002	0.001
Cd	0.0003	0.001
Au	0.0005	0.001
Ni	<0.001	0.005
Fe	0.004	0.008
As	0.005	0.01
In	0.004	0.01
Pb	0.02	0.05
Sb	0.02	0.05
Bi	0.002	0.01
Cu	0.5 ± 0.1	
Ag	3.0 ± 0.2	
Sn	Remainder	

Physical and mechanical properties of E-Qual 97TSC alloy compared to other lead-free alloys and Sn63Pb37

<b>Property</b>	<b>E-Qual 97TSC</b>	<b>Sn63 Pb37</b>	<b>Sn96.5 Ag3.5</b>	<b>Sn99.3 Cu0.7</b>
Melting Point °C	217 - 218	183	221	227
Brinell hardness, HB	14.1	17	15	-
Density, g mm <sup>3</sup>	7.4	8.4	7.5	7.3

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### **Manufacturing Control**

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All E-Qual 97TSC bar solders are made with fully traceable batches of virgin metals within a Quality Management System that has been approved to BS EN ISO9001 2000 and Environmental Management System approved to BS EN140001. Samples are retained from every batch of solder for a minimum three year period.

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### **Availability**

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<b>STYLE</b>	<b>NOM. WEIGHT</b>	<b>DIMENSIONS</b>	<b>PACKING</b>
Bar	1kg	300 x 32 x 12mm	20kg Carton
Autofeed Ingot	4kg	500 x 45 x 33mm	Ingot
Chunks	-	-	15kg Carton

Please contact us with any specific non standard bar or ingot size to check on availability.

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