

PRODUCT PROFILE

ELECTROLOY LEAD FREE BAR

Product Name

Product Code

SOLDER BAR – LEAD FREE ALLOY – Sn96.5/Ag3.0/Cu0.5

LF- 307B

**– LEAD FREE ALLOY – Sn97.0/Ag3.0
(TOP UP ALLOY)**

LF- 314B

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assure legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. No warranty of fitness for a particular purpose is made. Properties are typical and not to be used as specifications.

DOC CATEGORY: 3

PF – LF-307B – 18022009 – REV.A – Page 1 of 4



. China . Malaysia . Singapore

Solder Connections

PRODUCT INFORMATION

Electroloy has entered into an agreement with Iowa State University Research Foundation Inc. of US patent no: 5,527,628 issued on 06 July 2006 to be able to offer the patented lead free Sn-Ag-Cu wave solder alloy. Electroloy Product number LF-307B. This is a RoHS compliance solder bar which is able to meet and fulfill International & Environmental requirements.

LF-307B Pb-Free solder is a general purpose low dross solder alloy of high purity Sn, Ag & Cu, process via Electroloy's proprietary purification method. This alloy combination is favored by the electronic industry to replace the conventional Pb bearing solders.

LF-307B alloy combinations conform & exceed the impurities requirements of major international standards. These are the desired LF-307B bar qualities:-

- Good mechanical strength & electrical conductivity.
- Cost competitive.
- Low melting point.
- Low dross.

CHEMICAL COMPOSITION OF ALLOY

The composition of Electroloy's LF-307B & LF-314B lead free bar is strictly controlled to the following specification: -

<u>ELEMENT</u>	<u>LF-307 SPECIFICATION</u>	<u>LF-314 SPECIFICATION (TOP UP ALLOY)</u>	<u>J-STD-006B*</u>
TIN	REMAINDER	REMAINDER	REMAINDER
LEAD	MAX.0.050 %	MAX.0.050 %	MAX.0.070 %
ALUMINIUM	MAX 0.005 %	MAX 0.005 %	MAX.0.005 %
ANTIMONY	MAX 0.050 %	MAX 0.050 %	MAX.0.200 %
ARSENIC	MAX 0.030 %	MAX 0.030 %	MAX.0.030 %
BISMUTH	MAX 0.050 %	MAX 0.050 %	MAX.0.100 %
COPPER	0.4 – 0.6 %	MAX 0.080 %	-
IRON	MAX 0.010 %	MAX 0.010 %	MAX.0.020 %
ZINC	MAX 0.003 %	MAX 0.003 %	MAX.0.003 %
CADMIUM	MAX 0.002 %	MAX 0.002 %	MAX.0.002 %
SILVER	2.8–3.2 %	2.8–3.2 %	-
NICKEL	MAX 0.010 %	MAX 0.010 %	MAX 0.010%
INDIUM	MAX 0.050 %	MAX 0.050 %	MAX.0.100 %
GOLD	MAX 0.050 %	MAX 0.050 %	MAX.0.050 %

* IPC J-STD-006B Amendment 1

COMPARISON BETWEEN LF- 307B and Sn63/Pb37

Comparison of LF-307B with Sn63/Pb37 on mechanical characteristics

Characteristics	LF-307B	Sn63/Pb37
Alloy composition	Sn96.5/Ag3.0/Cu0.5	Sn63/Pb37
Specific gravity	7.4	8.4
Solidus temperature (°C)	217	183
Liquidus temperature (°C)	219	EUTECTIC
Tensile strength (MPa)	35	42
Electrical Resistivity ($\mu\Omega$ -cm)	13	14.5
Elongation (%)	38	25

PRODUCT APPLICATION

LF-307B lead free solder has proven to perform well in automated wave soldering, selective soldering, and static solder pots.

In the LF-307B solder bath, copper tends to dissolve into the solder from the boards and component leads. If the copper content of the solder bath exceeds 0.85%, it is likely to cause an increase in the incidence of bridges, icicles, and other defects.

In order to maintain the copper level within the permissible limit in the solder bath, Electroloy recommends the LF-314B top-up alloy. The LF-314B has a lower copper content than the LF-307B to ensure that the copper content in the solder pot stays below the critical level of 0.85%.

Verification of copper content is easy with the free Solder Pot Analysis offered by Electroloy. The statistical analysis of your LF-307B solder pot will help you monitor the copper level over time & make critical decision to achieve good production yield with our LF-307B bars.

- **Wave soldering**

Recommended Process Parameter Setting

Recommended Process Setting	
PROCESS PARAMETERS	LF-307B
Pot Temperature	245°C - 255°C
Top Side Preheat	100-130°C
Conveyer Speed	1.0m – 1.5m/min.
Contact Time	2.5s – 3.5s

- **Dip Soldering**

The LF-307B bars are also suitable to be used in high temperature dip thinning of fine copper wire in component Manufacturing.

PHYSICAL APPEARANCE

The LF-307B exhibit a shiny appearance & uniform silver grey in color. The brand & alloy code is embossed onto the surface of each bar. Each bar is approximately 700 – 900 grams in weight. The physical dimension is about 330mm X 20mm X 13mm.

PACKAGING

The LF-307B lead free bars are pack into “Green “carton boxes of 20kg each. Each box contain the following traceable information:

1. The Supplier
2. Grade
3. Product Code / Type
4. Lot Number
5. Weight per Box

DELIVERY

Each shipment shall be accompanied with a Certificate of Analysis for each lot, which indicates the impurity level of each element according to LF-307 Specification.

STORAGE AND SHELF LIFE

Electroloy’s LF-307B lead free bars have no limited shelf life when handled properly. Storage must be in a dry & non-corrosive environment.

To minimize the bars from further oxidation, ensure that the packaging is not damaged.

The solder surface may lose its shine & appear a dull shade of light yellow. This is a surface phenomenon & is not detrimental to product functionality & performance.

HEALTH AND SAFETY

Refer to the MSDS for guidance on safety and health issues.