



**samtec**

**Update**  
1st Quarter 2005

# ***Lead Free Information***

- For the latest information regarding our lead free products go to: <http://www.samtec.com/>
- Click on RoHS Compliant logo in lower left hand corner.



**New**

# ***Lead Free Information***

- **Driving force**
- **Legislation**
- **Technical aspects**
- **Samtec's approach**
- **Useful References**

# ***Lead Free Information***

- ***Driving force:***
  - Legislation
  - Environmentally conscious manufacturing
  - Customer requests
  - Market related benefit
  - Recycling and end of life treatment concerns of hazardous material use

# ***Lead Free Information***

- ***Legislation:***

## **USA (North America)**

- No pending federal legislation
- Discussion at the state (provincial) and municipal levels
- IPC has produced and published a lead-free Technology Roadmap! [www.ipc.org](http://www.ipc.org)

# ***Lead Free Information***

## ***• Legislation:***

### **Japan**

- JEITA (Japan Electronics and Information Technology Industries Association)  
[www.jeita.or.jp](http://www.jeita.or.jp)
- Complete line up of lead-free terminal components by the end of 2003
- Line up of all components by the end of 2004
- Complete lead elimination from products by the end of 2005

# ***Lead Free Information***

- ***Legislation:***

## **Europe**

The **WEEE** (Waste from Electrical and Electronic Equipment) and **RoHS** (Restriction of Hazardous Substances) [www.lead-free.org](http://www.lead-free.org) confirmed (13.03.2003) that any product, of the affected categories, sold in the European market will have to be RoHS compliant by July 1, 2006.

# ***Lead Free Soldering***

- ***Technical aspect:***

SnPb solder materials have been used and perfected for decades. Practically all components, printed circuit board materials and process materials are adapted to technologies based on solders containing lead and their parameters!

**What are the alternatives?**

# ***Lead Free Soldering***

- ***Technical aspect:***
  - **Alternative elements which may be combined with tin (Sn) are:**
    - » Silver (Ag)
    - » Zinc (Zn)
    - » Antimony (Sb)
    - » Copper (Cu)
    - » Bismuth (Bi)
    - » Gold (Au)
    - » Cadmium (Cd)

# ***Lead Free Soldering***

- ***Technical aspect:***

- **Most favored alloys used are:**

- » Reflow soldering: SnAgCu, SnAg and SnZnBi
- » Wave soldering: SnAgCu, SnCu and SnAg
- » Hand soldering: SnAgCu, SnAg and SnCu

- **SnAgCu is the most cost effective and suitable solution – here are the recommended compositions:**

- » Soldertec: Sn(3.4 to 4.1)Ag(0.45 to 0.9)Cu
- » JEITA: Sn3.0Ag0.5Cu
- » NEMI: Sn3.9Ag0.6Cu

# ***Lead Free Soldering***

- ***Technical aspect:***

- Melting point of 96.3Sn3.2Ag0.5Cu is 217 C  
Peak reflow (paste) temperature will change!

215 C – 235 C  250 C – 260 C

- Those alloys which have no melting range but a near-eutectic composition are preferable. Alloys with solidification ranges have the ability to develop intermetallic phases and crystals in the solder which can weaken the solder joint.

# ***Lead Free Soldering***

- ***Samtec's approach:***

- **Body:**

- » No Change needed!
    - » Standard Vectra E-130i (LCP) Zenite 6130 will work!

- **Plating:**

- » Standard Gold plating will not be effected! However, Samtec's current tin plating needs to be changed to Matte Tin if used during lead-free reflow process. Standard tin plating can be used in all wave solder application.

# ***Lead Free Information***



- **RoHS Compliance & **
  - Nearly all Samtec contact and pin materials are RoHS compliant, although some may contain small quantities of lead within the 4.0% by weight exemption allow by the RoHS directive.

**[www.samtec.com](http://www.samtec.com)**

- Please click on  or use:  
[www.samtec.com/lead-free](http://www.samtec.com/lead-free) for all  
your lead-free/RoHS compliant  
related questions.

**[www.samtec.com](http://www.samtec.com)**



- **What will you find on the website?**
  - **RoHS, WEEE & ELV**
    - » Requirements
    - » Samtec compliance
  - **Material Declaration Program**
  - **Lead-free Processing Information**
    - » Wave vs. Reflow
    - » Insulators & Plating specifications
  - **Related Test Reports**
    - » Matte Tin plating
    - » Whisker growth (TBA)

# ***Lead Free Information***

## ***Useful References:***

[www.nemi.org](http://www.nemi.org)

[www.icer.org.uk](http://www.icer.org.uk)

[www.eia.org](http://www.eia.org)

[www.ncms.org](http://www.ncms.org)

[www.smartgroup.org](http://www.smartgroup.org)

[www.tintechnology.biz](http://www.tintechnology.biz)

[www.intellectuk.org/](http://www.intellectuk.org/)



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