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General Review of Lead Free Solder Options

APC International has completed our evaluation of Lead Free Solder options. We are looking to replace the standard Sn62 lead based solder for RoHS Compliance Requirements.

I have reviewed the basic literature available for lead free solders and consulted with Experts from Alpha Metals and Indium Corp. Out of this, I selected the following products to evaluate for Lead Free Solder options.

*SN96 (Sn96/Ag4.0): Melt ~ 220C
*Alpha Lead-Free (Sn96/Ag3.5/Cu0.5): Melt ~ 220C
*Indium 241 (Sn95.5/Ag3.8/Cu0.7): Melt ~ 220C
*Indium 282 (Bi57/Sn42/Ag1.0): Melt ~ 140C

Sn96, Alpha Lead-Free and Indium 241 will be considered equivalent and the group will generally be called Standard Lead-Free Solder or Sn96 Solder. Indium 282 will be called Low-Temp Lead Free Solder or Bi Solder.

The Sn96 solders have been used for many years for higher temperature piezo applications. It is now becoming the standard lead-free solder. The melt temperature is a little higher than Sn62, but it has the best overall properties. The addition of Cu in the Sn96 solder alloy seems to help with wet out and strength of the solder joint. In General, Sn96 should be considered the standard Lead-Free Solder replacement for Sn62 Lead based Solder.

The Low-Temp Lead Free Solder (Bi Solder) is an option for some application. The Lower melt temperature is a plus, but the Bi has some concerns. The Bi cannot be exposed to Lead. The exposure to lead will seriously affect the melt temperature and quality of the joint. The MSDS for Bi should be reviewed in insure proper handling and use. The Bi Solder should only be used after a technical review of the application.

We have tested all of the above listed solders and all are acceptable for RoHS Compliance.

Date Prepared: March 14, 2006
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