RESTRICTION OF HAZARDOUS SUBSTANCES (RoHS)

Like the rest of the electronics industry, your products will transition to Restriction of Hazardous Substances (RoHS) compliance prior to the deadlines in 2006. At this time, there are significant reliability uncertainties around RoHS. Even if your product does not need to be compliant, the materials and processes that make up your product are changing.

“Doing nothing would double the field failure rate of the electronics” says one consumer electronics team

You and your team may not have the time or expertise to determine the areas of greatest risk and how best to manage the transition.

We can help!

RoHS Seminar  $1-2K

The seminar will be in the form of a brown bag lunch talk (or series of talks) just to get the team familiar with RoHS, what it is, how it will impact your organization, what you need to do to get started, and some of the possible risks involved.

We can do this via a web conference to save travel time and expense. The agenda for such a seminar would look something like this:

- Background, Definitions, Deadline Dates
- Areas of concern, and areas that seem to not be a problem
- Focus on range of specific significant changes in reliability risks (expanded version of above slide set with discussion)
- Supply Chain, BOM, and design issues to consider
- Product/component testing changes to consider

RoHS Assessment  $3-6K

Review product specifications and requirements. Then, select key individuals from each area within the organization that will be affected by the RoHS directives. Conduct a high level review on current products and processes.

We will assess capabilities and practices in many areas, including (but not limited to) the following:

- Major Suppliers
- Procurement
- Engineering

RoHS Manufacturing Audit  $3-6K

Whether you manufacture your product or contract to an outside firm, the manufacturing line must be audited to assure that the necessary steps have been taken during the transition to produce a reliable product. The steps involved are:

- Create a Checklist
- Perform Audit Against Checklist
- Perform Cross-Section Analysis of a Sample Coupon

RoHS Training  $3-6K

Put together and give a training course to educate key personnel within customer about the issues at hand.

We shall tailor our on-site training for RoHS awareness and challenges to meet your specific needs. Included shall be a brief overview of corporate-wide RoHS programs, policy and timelines; connections to customer and external sources for more information; and, specific design, materials and manufacturing related ‘areas of concern’.

Chemical Analysis  $4-6K

The majority of the components you use are from reputable component manufacturers that have been RoHS compliant for several years. Many others come from component manufacturers that will supply you with certificates of compliance, and we can help you review these. However, there will likely be a few components that fall into the category of uncertainty. For these, we will want to perform chemical analysis.

We shall help you identify the top 5-10 components for Chemical Analysis for each product and then manage the work with the chosen chemical analysis lab (we can help you find one or we can use one of your choice) to identify the chemical content in each component.

Design Review  $2-4K

The intent of the design view is to determine if your engineers applied what they learned during the training. Consider this “the final exam” for the RoHS training.

Verification HALT  $4-6K

HALT is an excellent tool to use to compare the old leaded version of the product with the new lead-free version. It can point out gross differences very quickly.

RoHS Qualification Test Plan  $5-10K

As part of writing the test plans, we will understand your products, shipping and operating environment and narrow down the issues to those that present a significant change in reliability risk. Then we will use our knowledge of industry activities, reported results, and recommendations to create a product-specific RoHS Test Plan for each of the three products. We will incorporate existing test and evaluation activities wherever possible and use other cost effect and efficient methods. Each test plan process shall consist of 3 areas:

1. Determine what needs to be characterized. Due to the changes from the RoHS transition, key failure mechanisms will need to be characterized to determine the best method to test for them.
2. Determine what needs to be done by your vendors. Your vendors will play a big part in this transition effort and the future reliability of your product will depend heavily on your vendors’ reliability.
3. Write test plans. Some areas of the test plans we shall likely cover are:

- Higher reflow temperatures
- Solderability and wetting
- Solder joint durability
- Adverse solder metallics
- Component pkg compatibility
- Shock loading
- Moisture ingestion (“popcorning”)
- More aggressive fluxes
- Tin whiskers
- PCB FR4 construction
- Solder voids due to inter-metallic contamination