

## **iNEMI Halogen Free Project**

### **Request for Participation**

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Dear colleagues

I'm writing to personally invite each of you to participate in a new iNEMI project I'm sponsoring to investigate the technical viability of halogen-free printed circuit board materials. The Design Phase has just begun and is scheduled to run through this September.

#### **Opportunities for Participation**

Steve Tisdale (Intel) and Roger Krabbenhoft (Planar/IBM) are leading this first phase of the project to review prior work, assess current supply chain capability, scope testing needed, and identify candidate materials and test vehicles. Steve's team is identifying key performance gaps and defining the test plan and Roger's team is identifying candidate materials. In parallel to this iNEMI technical program we will recommend that these same candidate materials be the subject of a health and safety study being considered by the USEPA. We have also worked closely with HDPUG to ensure that any HF activities they may undertake are complimentary to this iNEMI activity. This Fall we will commence Phase 2 of this project where the focus will be to execute the test plan developed in Phase 1.

#### **Why do this?**

Although the use of brominated epoxies for electronic applications is not regulated, the BFR topic is emerging as a hot button. Since certain types of BFRs have been proven to be toxicologically significant and/or shown to give rise to harmful combustion byproducts (particularly under sub-optimal pyrolysis conditions) some would argue that a Precautionary approach should be taken to restrict the use other BFRs, including the use of brominated epoxies for circuit board applications. However, the absence of conclusive scientific evidence to support or refute this assertion has created confusion in the marketplace. As a result, a growing number of public, institutional, and corporate procurement groups have begun to identify the general use of BFRs as a potential risk area and have started to list BFR-free or Halogen-free (HF) electronics as a checkbox item on RFQs. Companies without HF electronic product offerings may begin to lose business over this in advance of possible regulatory requirements. Some of these alternative HF dielectric materials may also offer other tangible benefits that are of interest, such as the potential for higher signal integrity performance.

#### **Why do this now?**

We are all heads-down on RoHS compliance activities and strapped for resources. Our companies and suppliers are suffering from "environmental issue" fatigue. However this issue may well be the next one that electronics manufacturers have to deal with after RoHS. Consortia activity, like this iNEMI project and others that have come before it, are appropriate means for companies to pool resources and work precompetitively to establish industry standards and supply chain capability and capacity. But these efforts take time and commencement must occur prior to the development of legal requirements in order to establish safe, cost effective, and reliable industry solutions. It has been through these sorts of activities and the ensuing standards development process that industry has demonstrated the due diligence and collective responsibility that is necessary to avert regulation.

## **Project Scope**

The purpose of this project is to address existing technical gaps and other factors that are currently limiting widespread supply chain capability necessary for HF printed circuit boards to become a viable alternative to FR4 for IT and other complex products. The focus of this project is limited to the study of HF circuit board laminate materials, with the understanding that this is just one consideration for a completely halogen-free PCBA solution. HF electronic components (e.g. HF BGAs, etc) and HF cables/connectors are beyond the scope of this investigation. The work product will consist of a written summary of critical technical gaps identified, results and critical analysis of tests designed to address these gaps, and recommendations for further investigation and potential standards development. A Statement of Work (with schedule) and Project Statement is posted on the iNEMI website at [http://www.inemi.org/cms/projects/ese/halogen\\_free.html](http://www.inemi.org/cms/projects/ese/halogen_free.html).

## **iNEMI membership requirements**

Participants do not have to be iNEMI members, however membership is highly encouraged. Members will receive full access to meeting minutes, planning documents, test results, analyses, etc. while non-member information access is limited to data directly related to specific materials or services provided. For membership details please see <http://www.inemi.org/cms/join/> or contact iNEMI directly. Travel is not required for participation in this project. Meetings will be held via teleconference. Expected participant time commitment is approximately one man-month per year over eighteen months.

Please contact me if you would like to participate in this project, or just need more info to decide. We are looking for folks at this time who would like to help us identify critical testing that is needed and select key representative materials that we should evaluate. Hoping that you will decide to join us.

Thanks

Mark

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