



# **inEMI**

International Electronics Manufacturing Initiative

## **Establishing Common Industry Position for High Rel Pb-free Conversion**

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Advancing manufacturing technology

# Situation Analysis

- **High Rel. segments have less influence on supply base than in past (due to growth of consumer electronics).**
- **Availability of SnPb BGAs is tenuous at best and will only degrade over time.**
- **No clear Game Plan for Pb-Free conversion for High Rel. segments.**
- **Many dates have been proposed by individual OEMs:**
  - 2008
  - 2010
  - 2012
  - Never
- **No broad understanding of remaining knowledge gaps for high Rel Pb-free.**
- **Supply Base is confused and frustrated by this situation.**

# Value of Creating Common Position

- **Understand remaining knowledge gaps**
- **Understand and coordinate work to close gaps**
- **Communicate clear position to supply base**
- **Get support from supply base to help close gaps**
- **Help supply base create business case based on volume and time line.**
- **Update position as new knowledge is gained along the way.**
- **Since there is no regulatory deadline, specific product transitions will be based on business case.**

# Proposed Effort

- **Define list of key knowledge gaps for High Rel. Pb-free**
  - **Reliability**
  - **Manufacturing**
- **Create matrix of work underway to close gaps**
  - **Consider existing sources of data**
  - **Consider all industry/university cooperative efforts**
- **Create timeline for completion.**
- **Focus is on industry readiness rather than specific product transitions.**

# Pb-free Reliability Concerns

- **Effect of aging on solder joint ATC reliability (bulk solder microstructure)**
- **Pb-free Failure distributions**
- **Laminates for complex board**
- **Proliferation of alloys and their impact on reliability**
- **Surface finish compatibility**
- **Common mechanical test requirements & combined environment (e.g. HALT)**

# Pb-free Manufacturing Concerns

- **Cu dissolution for PTH rework**
- **Surface mount rework (BGAs)**
- **Survivability of temp. sensitive components (to higher processing temps.) for both wave and surface mount**
- **Wave solder hole fill**



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## **Framework for Solution Discussions**

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# BGA Availability Solution Discussions

- **Focus on industry segments rather than specific company needs.**
- **What are the alternatives to achieve more secure Sn-Pb BGA availability?**
- **Are there business opportunities created by these alternatives?**
- **What is industry support for alternatives?**

# Proposed Process

- **Review/modify list of ideas that came out of discussions.**
- **Prioritize list based on:**
  - **Which firms will participate**
  - **Risk profile**
  - **ROI**
- **Establish action plan for next steps.**



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