Materials Declaration

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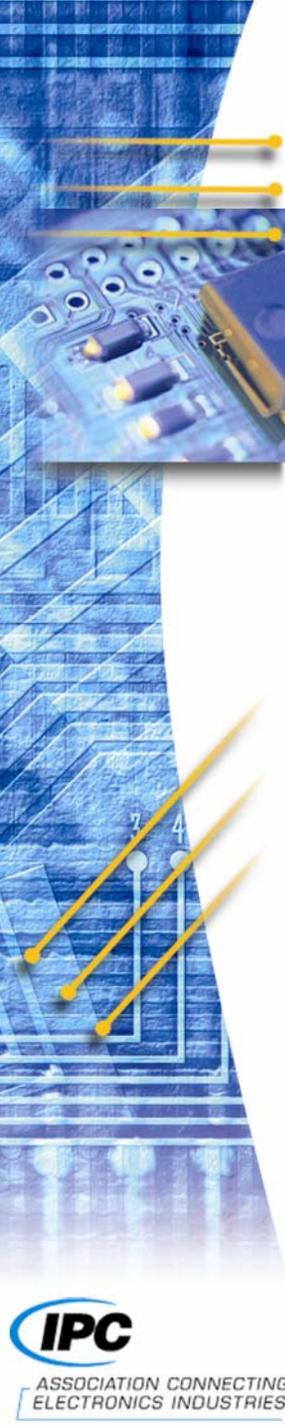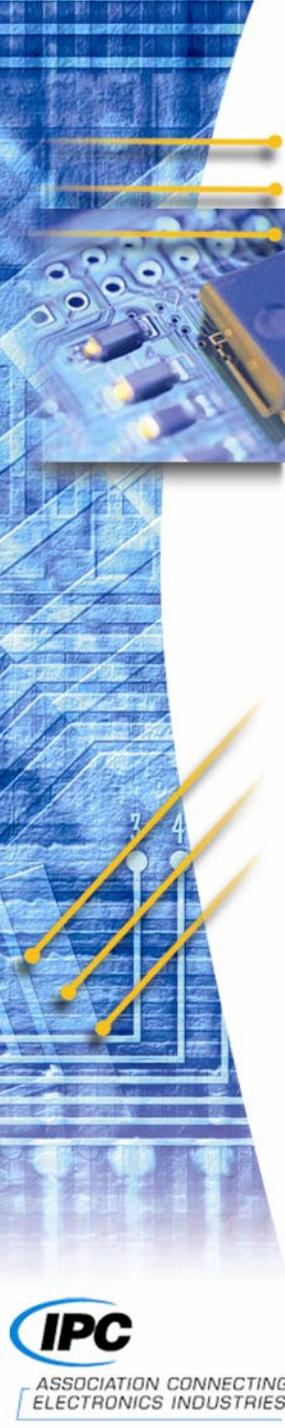
RoHS Compliance

Member States shall ensure that, from 1 July 2006, new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). National measures restricting or prohibiting the use of these substances in electrical and electronic equipment which were adopted in line with Community legislation before

→ No specifications about the RoHS compliance process/market surveillance are made.

UK DTI Recommended Steps for RoHS Compliance

- Prepare for self-declaration under 'due diligence'
- **Gain assurance from suppliers**
  - ➢ **In standard format suitable for auditing**
- Carry out analysis
  - ➢ To check accuracy of declarations
- Ensure traceability
  - ➢ Keep records and make use of part number changes
- Take (and be able to demonstrate) all 'reasonable steps'

Why Materials Declaration

- What is in your product?
- Are you in control of your supply chain?
- Are there any restricted substances in your components, parts and subparts?
- Are your products compliant with the European Union's Restriction of Hazardous Substances (RoHS) Directive and other global substance restrictions?

Why Materials Declaration Standards

- EU Restriction on Hazardous Substances (RoHS) and Waste Electronic and Electrical Equipment (WEEE) Directives
  - Elimination or reduction of materials
  - Recycling requirements
- End product producers are requiring that suppliers provide materials declarations
  - Indicate compliance with the requirements
  - Provide detailed materials content information
- Materials declarations formats and custom software are proliferating
- Multiple formats increase the burden on the supply chain

Many Organizations are Contributing to MCD Standardization

- IEC
  - TC3, TC93, TC111 (proposed)
  - 3/750/PAS (61906) DRAFT
- EIA/EICTA/JGPSSI
  - Joint Industry Guide
- RosettaNet
  - 2A10 and 2A13 PIPs
- NEMI
  - Material Declaration Project
  - Material Composition Data Exchange Project
- IPC
  - IPC-1752 (proposed)
- Other Industry organizations
  - ZVEI, NEDA, JEITA, etc.

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US TC 111 TAG
Proposed Hierarchy of Materials Declaration Standards

- IEC 3/750/DPAS (DRAFT)
  - ➤ Defines the high level requirements for materials declarations
- Joint Industry Guide (JIG) defines the specifics of what needs to be reported
  - ➤ Criteria for establishing reportable substances
  - ➤ List of reportable substances and thresholds
- IPC 1751/1752 (Draft Standard for Ballot)
  - ➤ Electronic data model
  - ➤ Standardized PDF-based form for human input
  - ➤ XML schema for automated data extraction and electronic data exchange

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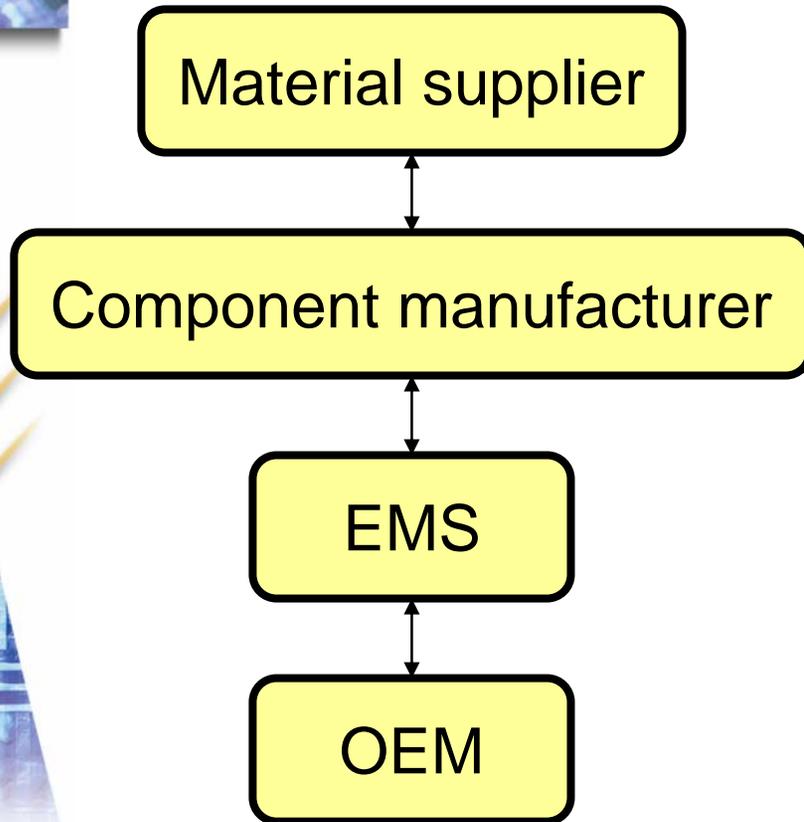ASSOCIATION CONNECTING
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International Standardization

IEC TC111

> US proposal incorporates proposed hierarchy of standards

> China and France also submitted broader proposals

> Ad Hoc Working Group Formed

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Supply Chain

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┌─────────────────────────┐
│     Material supplier    │
└─────────────────────────┘
            ↕
┌─────────────────────────┐
│  Component manufacturer  │
└─────────────────────────┘
            ↕
┌─────────────────────────┐
│           EMS            │
└─────────────────────────┘
            ↕
┌─────────────────────────┐
│           OEM            │
└─────────────────────────┘
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- Different:
  - Material Declaration Needs
  - Data Management Tools
  - Data Exchange Requirements
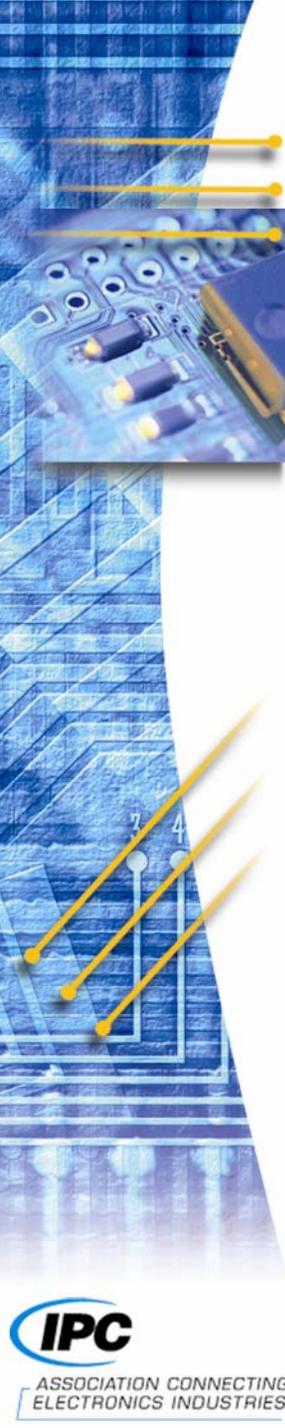
Business to Business

- B2B interactions are critical
- Many different data management solutions are used across the supply chain
- These data management solutions must work together

IPC Materials Declarations Standard

- Establish Electronic Data Formats to support the exchange of Materials Declaration information between trading partners in the Electronics industry.

- Leverage existing work
  - EIA/EICTA/JGPSSI Joint Industry Guide (JIG) – materials and substances to be disclosed by suppliers
  - iNEMI and Rosettanet - electronic data exchange methodologies and formats
  - Rosettanet - 2A10/2A13 Partner Interface Processes (PIPs) for Partner-to-Partner eBusiness exchange

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IPC Materials Declarations Standard

- Defined using a UML data model (IPC 1751)
- Underlying XML schema defined by UML Data Model
- Provide a pdf-based form version for human input that will conform to the XML schema and provide for automated data extraction
- Be aligned and consistent with the data models for Rosetta Net 2A10 and 2A13 PIPs (and new 2A15 under development)
- Be recommended to IEC as an international standard as soon as practical.

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Why UML->XML->PDF?

- UML (Unified Modeling Language) describes the data that needs to be captured
- UML tools can automate the creation of:
    - Relational Databases
    - Necessary Computer Programs
   - XML Schema which defines the 175x XML format

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Why UML->XML->PDF?

- XML provides an easily machine read data format which is compatible with many tools
- PDF is just one container for the XML
  - Presents the information in a human readably form
  - Allows manual data entry
  - Provides mechanism to digitally sign data

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175x Design Flow
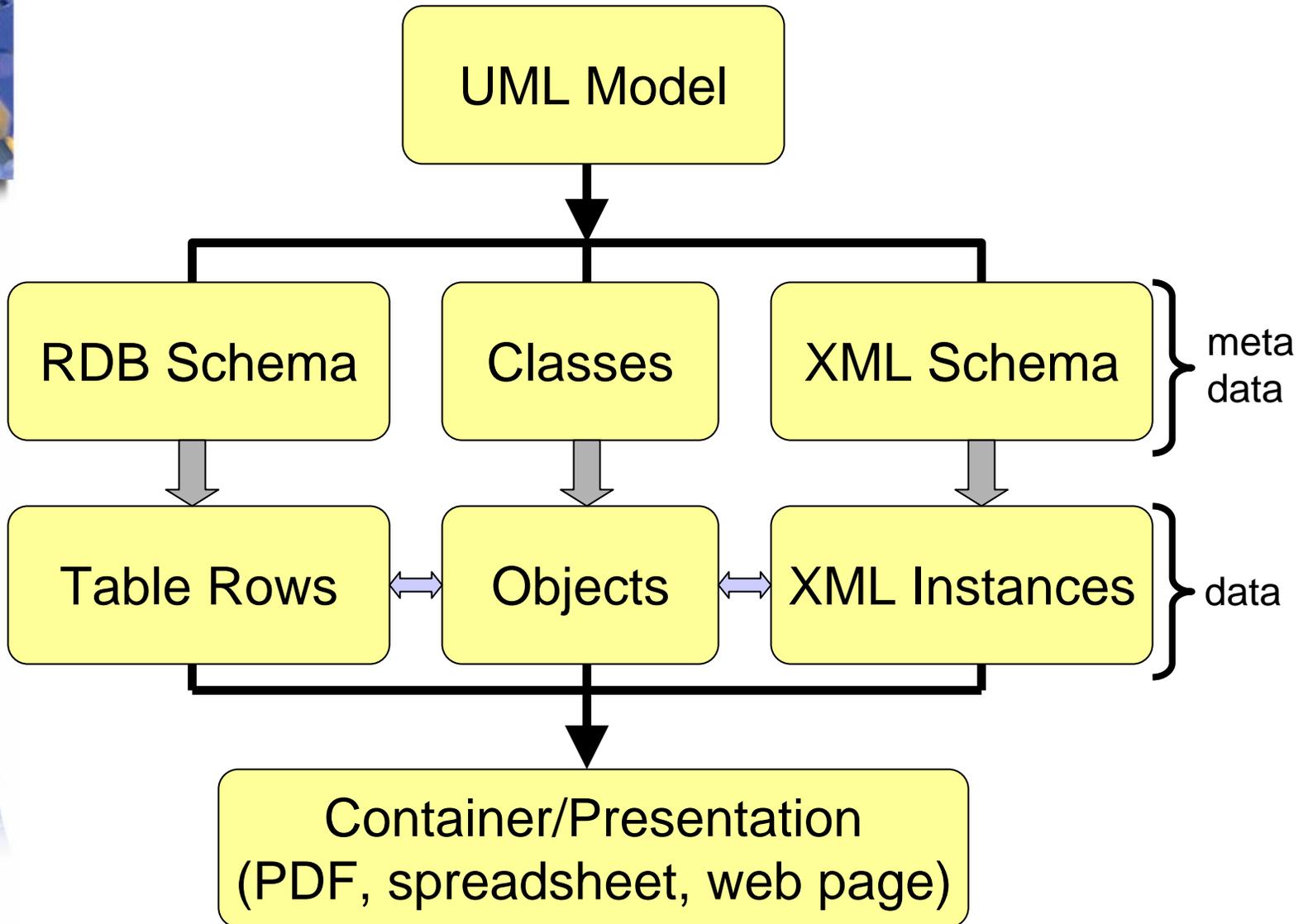
Data Format Interaction
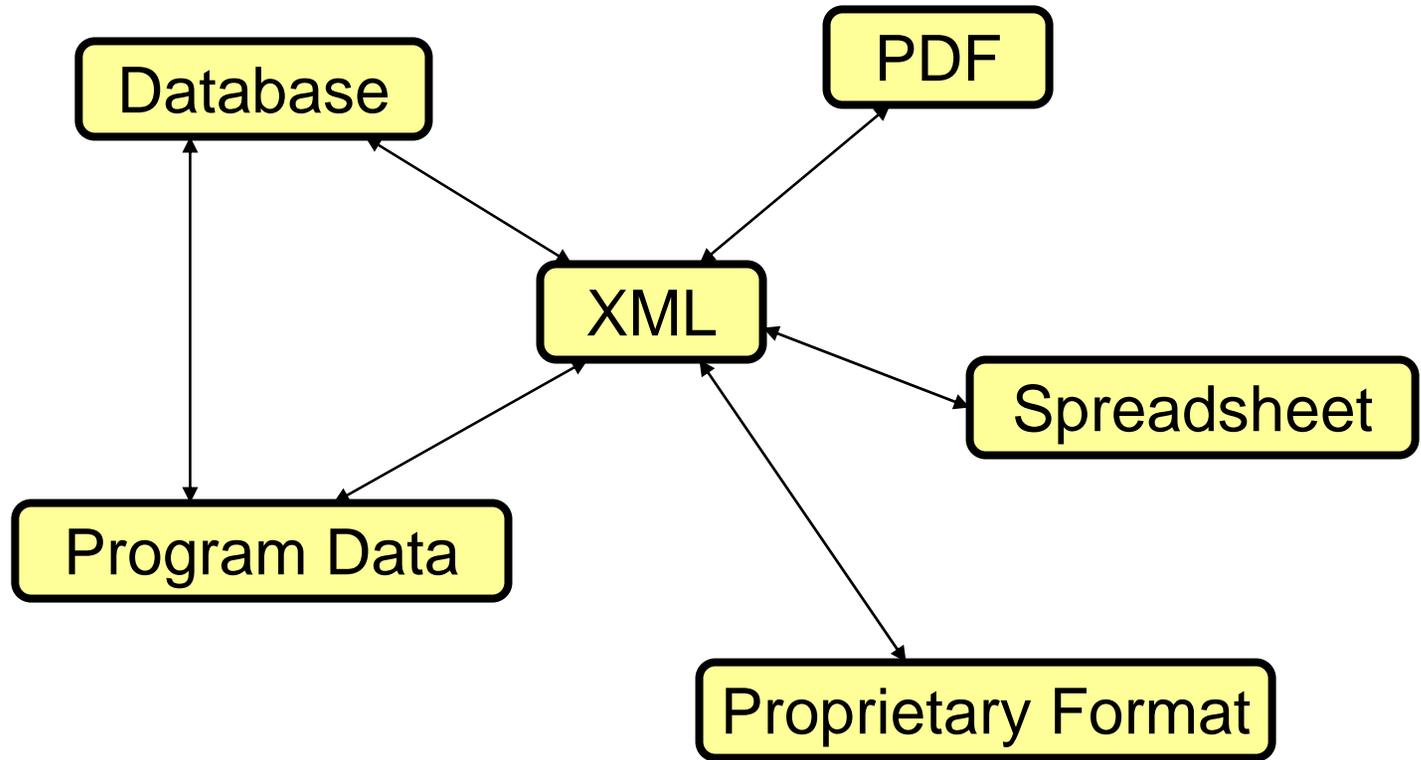
Adobe Portable Document Format (PDF) Implementation

- One format for the 175x XML data
- Estimated 500 million Adobe readers deployed
- The Adobe PDF reader is free to trading partners
- Large number of Independent Software Vendors (ISVs) supporting PDF
- Program platform stable and independent
- Platform supports manual entry
- Provides XML import/export to integrate with data management systems
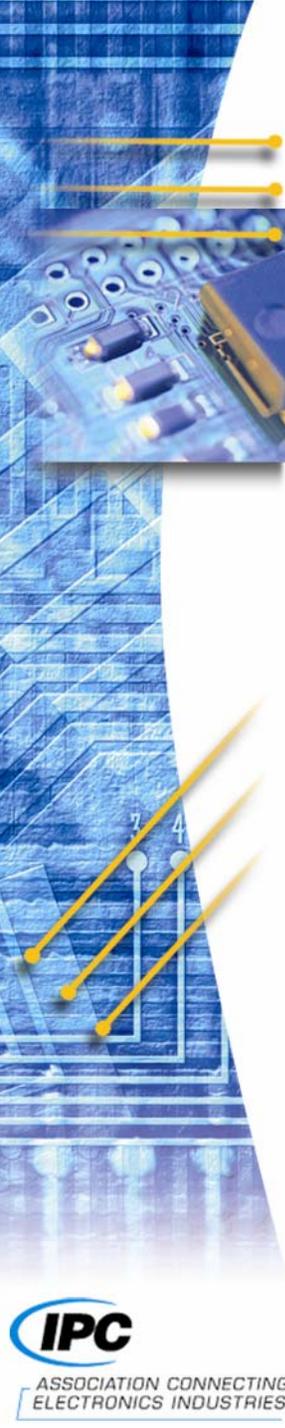
IPC 1750: a Family of Supplier Declaration Standards

- 1751 Generic Requirements
  - ➢ Establishes the principles and details for any declaration necessary between members of a supply chain
  - ➢ Contains general information about the supplier
  - ➢ Supplemented by sectional standards that define specific details for customer requested information
- 1752 Material and Substance Declaration
- Future Declaration Standards

IPC 1752
Material and Substance Declaration

1 Scope
2 Applicable Documents
3 Requirements
   3.1 Terms and Definitions
4 Levels of Declaration
   4.1 RoHS Yes/No Compliance
   4.2 RoHS/JIG Materials Content Disclosure
   4.3 Customer Specified Disclosure
5 Data Model
6 Business Processes
7 Description of the Form
8 Supplier Declaration Model
9 Legal Issues and Certification Statements
10 Audit Procedures
11 Verification Procedures

IPC 1752-1 Declaration Types

- **Class 1: RoHS only**
  - ➢ **Declare compliance / non compliance to RoHS**
    - ▪ RoHS Exemptions are available for declaration
- **Class 2: RoHS and Manufacturing Process information**
  - ➢ **Add Manufacturing info**
    - ▪ Lead Finish
    - ▪ MSL and reflow rating
- **Class 3: RoHS and JIG Substances**
  - ➢ **Add JEDEC JIG-101 information, Yes/No**
    - ▪ 15 Banned substances (Level A), RoHS at homogeneous level, remaining substances at part level
    - ▪ 9 Reportable substances (Level B) at part level
    - ▪ Page 4 available to add further substance reporting at part level
- **Class 4: RoHS, JIG and Manufacturing Information**
  - ➢ **Include all 3 declaration types**
- **Class 5 and 6**
  - ➢ **Like Class 3 and 4, but all substances reported at the homogenous material level**

Schedule of Activities

Obtain agreement from key constituents
(IPC, EIA /JEDEC (JIG), NEMI, RosettaNet)……   Complete

Develop draft data model and pdf form………………. Complete

Incorporate NEMI pilots feedback …………………… Complete

Two day meeting to prepare draft standard…………. Complete

Circulate Final Draft Standard (60 days)………………Complete

Resolve comments on Final Draft Standard…………. Ongoing

Circulate as Proposed Standard for Ballot
(30 days) ……………………………………………. Sept/05

Release…………………………………………………… 4th Q'05

Work with IEC TC111/TC91 for adoption……………. April/06

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IPC 1751/1752

- Final Draft for Ballot
- Download from at www.ipc.org/IPC-175X

Material Composition Declaration

© Copyright 2005. IPC, Bannockburn, Illinois. All rights reserved under both International and Pan-American copyright conventions.

This document is a declaration of the materials within the manufacturer parts listed. The parts must be declared compliant or non-compliant with RoHS (Restriction of the use of certain hazardous substances in electrical and electronic equiment) or as an unknown or obsolete part. Note: If the part is an assembly with lower level parts, the declaration encompasses all lower level materials.

DRAFT

Form Type		Declaration Type	

Request for Information

Request Date	Request Document ID	Internal Part Name	Internal Part Number	Contact Name	
Respond By Date	Company Name	Manufacturer Part Name	Manufacturer Part Number	Contact Title	Contact Phone
Company Unique ID	Unique ID Authority	Manufacturer Part Version	Manufacturer Effective Date	Contact Email	
Digital Signature of Requester		Manufacturing Site	My ID for the Manufacturer	Requester Comments	

Supplier Information

Response Date *	ResponseDocument ID	Contact Name *		Name of person certifying this declaration as true and correct *	
Company Name *		Contact Title	Contact Phone	CertifyingTitle	Certifying Phone
Company Unique ID	Unique ID Authority	Contact Email		Certifying Email	
Part Name	Part Number	Part Weight	Unit per Length/Area/Volume	URL for Additional Information	
Effective Date	Version	Manufacturing Site	Part Comments		
Alternative Recommended Part	Alternative Part Availability Date				

~~Manufacturing Information section intentionally ommitted.~~

Manufacturing Process Information

Terminal Plating / Grid Array Material		Terminal Base Alloy	J-STD-020 Moisture	Maximum Reflow Temp C	Maximum cycles for Reflow
Manufacturing Process Comments					

Summary

- PDF form technology is a very good match for Material Composition Declaration standards requirements
  - ➢ Provides an open standard based solution
  - ➢ Platform independent
  - ➢ No associated software costs for suppliers
  - ➢ Supports manual entry, as well as XML integration
  - ➢ Conforms to and produces RN 2A13 PIPs
  - ➢ Supports the uniform acquisition of data into an application with high-quality data
- IPC will support the development and maintenance of standard forms
  - ➢ Freely available from IPC website
  - ➢ Under revision control

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IPC Materials Declaration Handbook

- IPC 1065
- Builds on industry standards
- Intended to help companies, especially PCB manufacturers complete completing materials declarations
- Includes data gathering, calculations, and laboratory analysis methods