

Tyco Electronics

Material Declaration Strategy

Updated February 2008

Background Information



- The EU Restriction on Hazardous Substances (RoHS) - Directive 2002/95/EC) and other legislation/initiatives ban the use of certain substances and/or require disclosure of certain substances to aid in the recycling or disposal of electrical and electronic equipment
- Many TE customers are demanding additional information (typically Material Declarations) in order to have a greater degree of assurance that TE products comply with this legislation
- There is currently no legislation nor industry standard that requires or defines what a material disclosure should include
- Tyco Electronics faces a tremendous number of inconsistent demands from customers in terms of scope, content, type, and format for material disclosures.

Note that this presentation presents current issues and strategies; these are subject to change

What is required for RoHS Compliance?



- By definition, RoHS compliant products do not contain concentrations of the RoHS substances in excess of:
 - 0.1% by weight of Lead, Mercury, Hexavalent Chromium, PBB, PBDE and 0.01% for Cadmium per homogenous material - a substance or mixture of substances with uniform composition (such as solders, resins, platings, etc.) that cannot be mechanically separated
 - Certain exemptions also apply to some TE products (not a complete list)
 - Lead as an alloying element in steel (0.35%), aluminum (0.4%), and copper (4.0%)
 - Lead in solder for telecom infrastructure equipment and servers (5 of 6)
 - Lead in compliant pin connector systems (pressfit connects)
 - Cadmium in electrical contacts
- Since max concentration values apply to homogeneous materials:
 - If all homogeneous materials in a product are compliant, the product itself is RoHS compliant. Material levels at an end item level (or sub assembly) are not useful (sufficient) to determine RoHS compliance

What Documentation is Required?



- From the UK DTI RoHS Guidance Doc of July 2004:
 - “The UK intends to accept self-declaration as the basis of the compliance regime.” (this appears to be the position of other Member States as well)
 - “There is no prescribed method to demonstrate compliance but producers may consider the following suggestions:”
 - **“Producers of EEE could obtain an assurance from their suppliers that any materials, components, assemblies or equipment, do not contain more than the permitted level of any of the six restricted substances**”
 - **OR**
 - **“A variety of material declarations for suppliers are being developed by industry**”

Additional Issues



- Due to the lack of clarity in current RoHS legislation and the absence of industry standards, many companies have developed their own definitions and requirements for RoHS compliance and reporting
- Many customers are requesting Material Declarations (a document that discloses the ppm levels of substances in a product) to “verify” RoHS compliance (as noted this is NOT required by legislation)
 - **Some customers are requesting Material Declarations of only the six RoHS restricted substances**
 - **Some customers are requesting disclosure far beyond RoHS banned substances**
 - list may be similar to that proposed by Joint Industry Guide
 - **A limited number of customers are requesting 100% material disclosure. This level of information is typically not available as it is considered proprietary by many TE suppliers (e.g. polymers)**
- Some customers are requesting laboratory “testing” to determine material content (again NOT legislated)
 - **Testing is technically infeasible at component/assembly level**
 - **Testing is financially impractical across all TE products**

TE Position and Strategy



- TE cannot respond to the many unique requests and formats for compliance reporting across our customer base and product portfolio
- TE will continue to monitor and provide recommendations as appropriate to Technical Advisory Committees (TAC) defining RoHS legislation
- TE will continue to work with standard bodies and industry consortia (e.g. JEDEC, JEITA, IPC, NEMI, EICTA, etc.) to develop and implement industry standards to facilitate compliance and information sharing
- TE has developed a Phased approach to address many of these issues in a systematic fashion – this strategy is defined in the next several slides

TE Strategy for Compliance and Reporting



- Phase I – Ensure TE products are RoHS compliant and provide on-line access to Statements of Compliance including China information
 - *note that this Phase is complete for most TE products*
- Phase II – Gather material content and report in a standard format Material Declaration covering RoHS and other “substances of concern” on selected products as requested.
 - “Substances of Concern” to Conform to Joint Industry Guide (JIG) – Material Composition Declaration Levels A and B
 - Reporting format to conform to IPC 175x and will include electronic transmittal using industry standards such as RosettaNet, PDX, etc.

Phase II – Gather Material Declaration Information on “Substances of Concern”



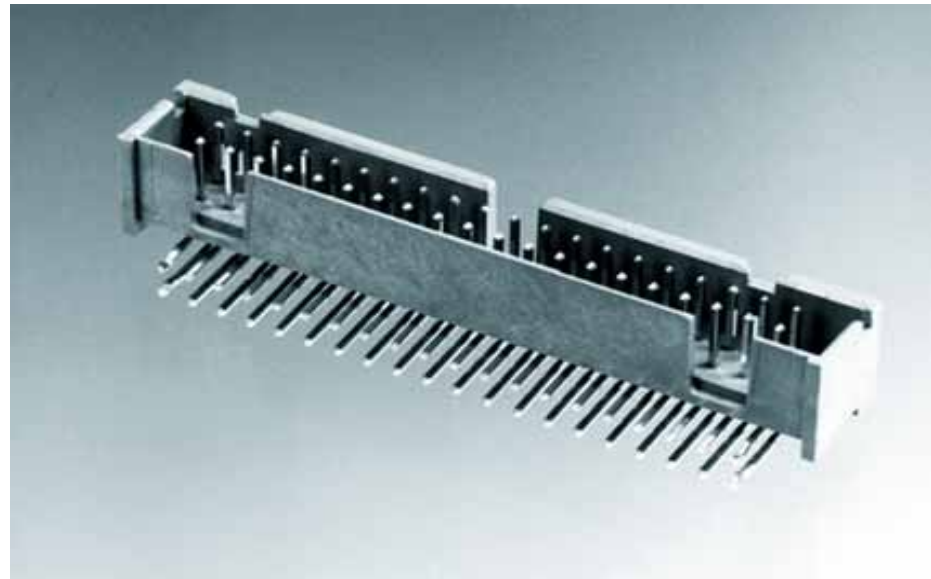
- In addition to RoHS Statement of Compliance – suppliers to provide TE with specific ppm levels (above certain threshold limits) on raw materials and components supplied to TE
 - Information largely complete for metal and resin suppliers
 - Component information collection well underway
- Store substance information in TE Hazardous Material database at a TE part number level
- Based on BOM, calculate ppm values from raw materials thru assembly and report at end item level (example to follow)
- Provide reporting as required by industry/customer in standard format
 - mid 2008 (limited availability currently)

Example of Structure and Reporting

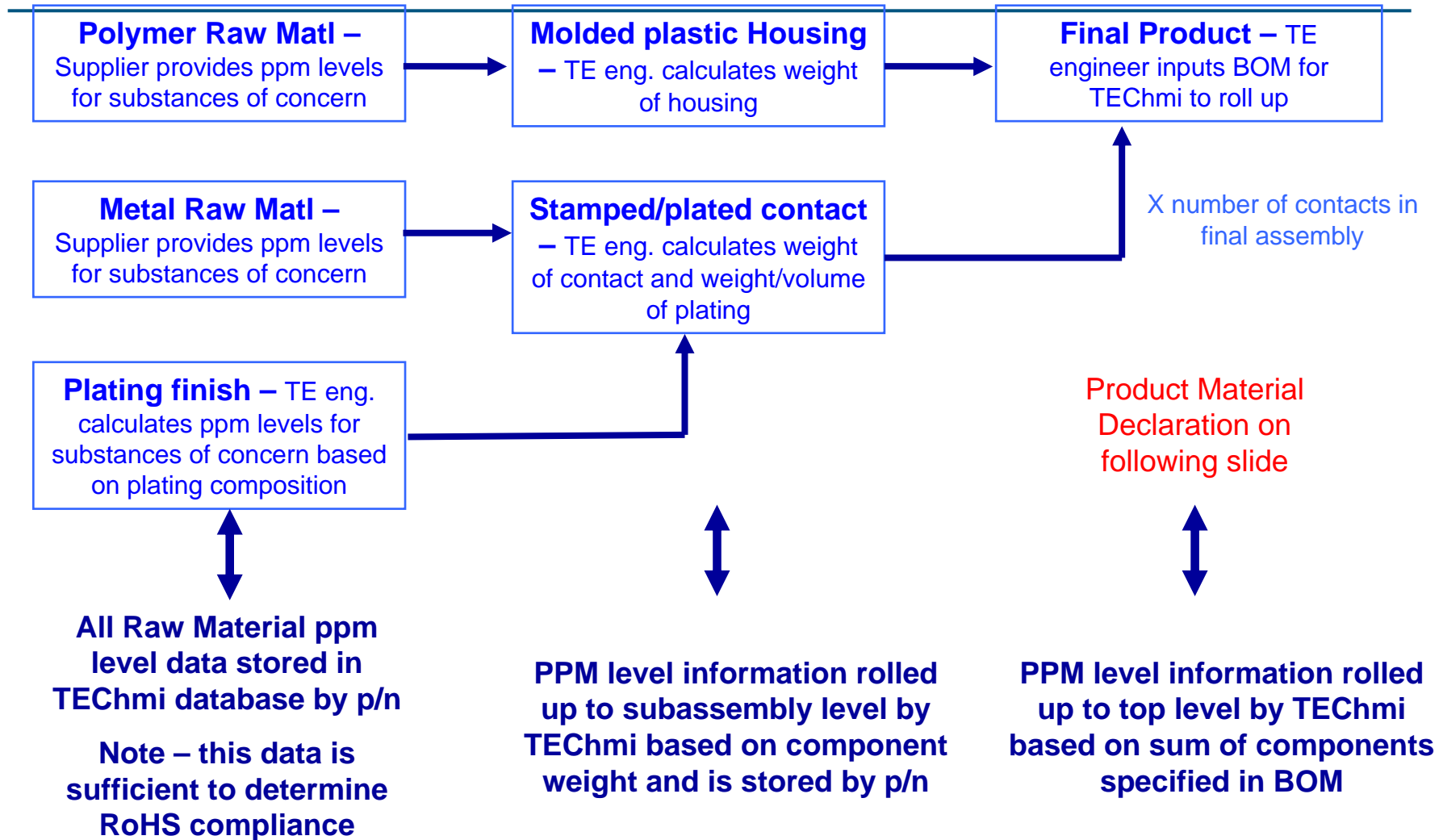


- Typical connector product consists of -
 - Plastic housing
 - Metal contacts
 - Plating

Low Profile Header shown is used in following example



Process Map of Roll-up (example product)



Example of Final Report (future will be IPC format)



Substance Listing: Low Profile Hdr

CAS Number	Grams	PPM	Percent	Description
7439-89-6	.0008	326	.03%	Iron and iron compounds
7440-36-0	.0001	32	.00%	Antimony (metallic)
1309-64-4	.0806	33336	3.33%	Antimony Trioxide
7440-66-6	.0024	979	.10%	Zinc
7440-31-5	.0498	20613	2.06%	Tin
7440-38-2	.0003	121	.01%	Arsenic
Other	1.5312	633242	63.32%	Substances not on the list of materials of concern
7723-14-0	.0028	1142	.11%	Red Phosphorus
7440-57-5	.0030	1236	.12%	Gold
7440-50-8	.7352	304038	30.40%	Copper
7439-97-6	.0000	1	.00%	Mercury
7440-41-7	.0000	3	.00%	Beryllium
7440-48-4	.0008	326	.03%	Cobalt
7440-43-9	.0001	32	.00%	Cadmium
7440-02-0	.0099	4112	.41%	Nickel
7439-92-1	.0009	363	.04%	Lead
7439-96-5	.0002	65	.01%	Manganese
7440-47-3	.0001	32	.00%	Chromium
Total Weight	2.4181			

Note that "other" reflects substances not currently identified as "Substances of Concern" by Proposed Joint Industry Guide for Material Declaration. TE has no plans (or mechanism) to provide a further breakdown of this information as is considered proprietary by many component/material suppliers

The above information is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. This information does not in any way modify existing purchase specifications or existing contractual or other agreement terms between Tyco Electronics Corporation (or its affiliated companies) and its customers.

Summary



- Priority of TE is to assure compliance to RoHS requirement: Complete for majority of products
 - Verified compliance of all materials and components used in TE products
 - TE compliance status is included in product information (e.g. E-catalog), product labels, and on-line Statements of Compliance are available
- Material Declarations are being addressed in parallel but due to the significant resource challenge, as well as lack of industry standard, will not be available routinely upon request until mid- 2008
 - Systems currently being developed/procured to gather and report this information
 - Standardizing on Joint Industry Guide – Material Composition Declaration both for materials/substances to report (Levels A and B) and IPC 175x as report format
 - Electronic interchange (e.g. RosettaNet) will also be supported