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Marking and Labeling of Components, PCBs and PCBAs to Identify Lead(Pb), Pb-Free and Other Attributes

A joint standard developed by the Marking, Symbols and Labels for Identification of Assemblies, Components and Devices Task Group (4-34b) and JEDEC Committee JC14.4 Quality Processes and Methods

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Users of this publication are encouraged to participate in the development of future revisions.

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IPC/JEDEC FOREWORD

Directive 2002/95/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment, commonly referred to as the ''RoHS Directive[1]'', and other legislation are driving the electronics industry towards the use of lead free (Pb-free) solders and components with Pb-free 2nd level interconnect terminal finishes and materials.

There are different Pb-free solders being used for the various soldering operations in electronics. Each of these solders may require different processing temperatures for assembly, rework, and repair. Some means of communicating the identity of the Pb-free or Pb-containing solder must be provided so that those performing assembly, rework and repair are aware of the temperature capabilities and limitations of these solders, and are able to distinguish between Pb-free and Pb-containing solders.

Marking of components and/or labeling their shipping containers are needed to identify and distinguish Pb-containing and Pb-free 2nd level interconnect terminal finishes and materials. Labeling electronic assemblies using Pb-free solder materials will facilitate end-of-life recycling of electronic equipment. This standard sets forth minimum requirements and includes options for the provision of additional information.

This paradigm shift to Pb-free electronics has created a need for identification of traditional Pb-containing coatings, finishes and solders. This standard can be utilized to identify the presence of lead (Pb) for those markets as described in Clauses 5 (Marking/Labeling Categories) and 8 (Marking and/or Labeling of Pb-Containing Components, PCBs, and PCB Assemblies). This standard supersedes JESD97 and IPC-1066.

1. The RoHS Directive itself is not a law; rather, it is a direction to the European Union Member States to implement their own laws embodying the requirements of the Directive. These laws were required to be in effect as of July 1, 2006.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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IEC-PAS 62588 was submitted by IPC/JEDEC and has been processed by IEC technical committee 91: Electronics assembly technology.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
91/767/PAS	91/783/RVD

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Marking and Labeling of Components, PCBs and PCBAs to Identify Lead (Pb), Pb-Free and Other Attributes

1 SCOPE

This document applies to components and assemblies that contain Pb-free and Pb-containing solders and finishes. This document describes the marking of components and the labeling of their shipping containers to identify their 2nd level terminal finish or material, and applies to components that are intended to be attached to boards or assemblies with solder or mechanical clamping or are press fit. This document also applies to 2nd level terminal materials for bumped die that are used for direct board attach.

This document applies to boards/assemblies, to identify the type of Pb-free or Pb-containing solder used. This document documents a method for identifying board surface finishes and Printed Circuit Board (PCB) resin systems. This document applies to PCB base materials and for marking the type of conformal coating utilized on Printed Circuit Board Assemblies (PCBAs). Material and their containers previously marked or labeled according to JESD 97 or IPC-1066 need not be remarked unless agreed upon by the supplier and customer.

Labeling of exterior surfaces of finished articles, such as computers, printers, servers, and the like, is outside the scope of this document. However internal PCBs and PCBAs are covered by this document. Labeling of retail packages containing electronic products is also outside the scope of this document.

1.1 Purpose This document provides a marking and labeling system that aids in assembly, rework, repair and recycling and provides for the identification of:

(1) those assemblies that are assembled with Pb-containing or Pb-free solder;

(2) components that have Pb-containing or Pb-Free 2nd level interconnect terminal finishes and materials;

(3) the maximum component temperature not to be exceeded during assembly or rework processing;

(4) the base materials used in the PCB construction, including those PCBs that use halogen-free resin;

(5) the surface finish of PCBs; and

(6) the conformal coating on PCBAs.

2 REFERENCE DOCUMENTS

2.1 IPC[1]

IPC-T-50 Terms and Definitions for Interconnecting and Packaging Electronic Circuits

IPC-CC-830 Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies (Conformal Coating)

IPC-4101 Specification for Base Materials for Rigid and Multilayer Printed Boards

2.2 JEDEC[2]

JESD88 JEDEC Dictionary of Terms for Solid State Technology

2.3 IEC[3]

IEC 61249-2-21 Materials for printed boards and other interconnecting structures - Part 2-21: Reinforced base materials, clad and unclad - Nonhalogenated epoxide woven E-glass reinforced laminated sheets of defined flammability (vertical burning test), copper-clad.

2.4 European Parliament[4]

Directive 2002/95/EC of the European Parliament and of the Council on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment.

2.5 ANSI[5]

ANSI 17-1981 Character Set for Optical Character Recognition (OCR-A)

1. www.ipc.org
2. www.jedec.org
3. www.iec.ch
4. www.europa.eu.int/eur-lex/en/index.html
5. www.ansi.org