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JOINT INDUSTRY STANDARD

Marking, Symbols, and Labels of Leaded and Lead-Free Terminal Finished Materials Used in Electronic Assembly

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Please use the Standard Improvement Form shown at the end of this document.

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Foreword

Directive 2011/65/EU supersedes 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 2 Directive”, 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 Pb for those markets as described in Section 5 (Marking/Labeling Categories) and Section 8 (Marking and/or Labeling of Pb-Containing Components, PCBs, and PCB Assemblies).

This standard supersedes JESD97 and IPC-1066.

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(From JEDEC Board Ballot JCB-15-55, formulated under the cognizance of the JC-14.4 Subcommittee on Quality Processes and Methods.)

1 Scope

This standard applies to components and assemblies that contain Pb-free and Pb-containing solders and finishes. This standard 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 standard also applies to 2nd level terminal materials for bumped die that are used for direct board attach.

This standard applies to boards/assemblies, to identify the type of Pb-free or Pb-containing solder used. This standard documents a method for identifying board surface finishes and Printed Circuit Board (PCB) resin systems. This standard 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, IPC-1066, or previous versions of this standard 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 standard. However internal PCBs and PCBAs are covered by this standard. Labeling of retail packages containing electronic products is also outside the scope of this standard. Markings under this standard do not denote EU RoHS compliance, or any other regional substance restriction legislation addressing lead content.

1.1 Purpose

This standard 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.

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2 Reference Documents

2.1 IPC

URL: www.ipc.org

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*

2.1.1 Additional Reference Materials Not Found in This Document

ANSI

URL: www.ansi.org/
ANSI 17-1981 Character Set for Optical Character Recognition (OCR-A)

GEIA
SAE-GEIA-STD-0005-1 Performance Standards for Aerospace and High Performance Electronic Systems Containing Lead-free Solder

SAE-GEIA-STD-0005-2 Standard for Mitigating the Effects of Tin Whiskers in Aerospace and High Performance Electronic Systems

SAE-GEIA-STD-0005-3 Performance Testing for Aerospace High Performance Electronic Interconnects Containing Pb-free Solder and Finishes

European Standards
NBN EN 50581 (2012) Cenelec EU RoHS Recast CE Mark Technical Document Standard

2.2 JEDEC

URL: www.jedec.org

JESD88 JEDEC *Dictionary of Terms for Solid State Technology*

2.3 IEC

URL: www.iec.ch

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

2.4 European Parliament

URL: http://ec.europa.eu/environment/waste/weee/index_en.htm

Directive 2011/65/EU of the European Parliament and of the Council on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment.

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