THE INSTITUTE FOR

INTERCONNECTING

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ELECTRONIC CIRCUITS

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Handbook and Guide to the Requirements for Soldered Electrical and Electronic Assemblies to Supplement ANSI/J-STD-001B

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A standard developed by the Institute for Interconnecting and Packaging Electronic Circuits

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Table of Contents

Figures

Tables

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PREAMBLE/FOREWORD

This handbook is a companion reference to J-STD-001B. With the present transition from prescriptive ''how to'' specifications to performance-based standards, much of the tutorial information that was provided in J-STD-001A was removed. The intent of this handbook is to capture this ''how to'' information and give more background for the specification limits and how they were derived. In addition, other supporting information is provided to give a broader understanding of the process considerations needed for the production of acceptable hardware. The target reader of this handbook is a process or manufacturing engineer.

FORMAT

The section and paragraph numbers in this handbook refer and correspond to the section and paragraph numbers in J-STD-001B, although subparagraph numbers may not correspond exactly. There are no appendices in this handbook. Information concerning the appendices in J-STD-001B is either addressed in the body of this handbook or, in the case of Appendix D, covered more thoroughly in another document. An appendices guide is included at the end of 13.0, which links the topics discussed in the appendices of J-STD-001B to the appropriate supplemental information.

Where used verbatim, J-STD-001B specification text is identified by small case capital letters, with must and shall annotated in bold. For the purposes of the handbook, a capitalized ''Standard'' in the handbook text refers to J-STD-001B. It should also be noted that any references in the handbook text (not text taken from the Standard) refer to sections, tables, and figures in the handbook (see Example 1). References in the handbook text to sections, tables, and figures in the Standard will be followed by ''of the Standard'' (see Example 2). References in the text taken verbatim from the Standard reference sections, tables, and figures in the Standard, unless otherwise noted.

Example 1:

For more information on lead trimming, see 5.2.0.5.

Example 2:

For more information on defects, see Table 11-1 of the Standard.

Endnotes are included at the end of some sections to list references included in that section. Acronyms are used throughout the handbook and are defined in the Acronym Index at the end of the handbook.

1.0 SCOPE

The Standard sets forth practices and requirements for the assembly, soldering processes, soldered connections, cleaning, coating/encapsulation, rework, and verification of soldered electrical and electronic assemblies. Practices are accepted industry methods and are provided in the Standard for guidance only; they are not mandatory. Requirements are mandatory conditions essential for producing acceptable products in accordance with the Standard. The Standard does not apply to non-electrical soldering.

1.1 Purpose The Standard describes materials, methods, and verification criteria that, when applied as recommended or required, will produce quality soldered electrical and electronic assemblies. The intent of the Standard is to implement control over processes rather than depending on end-item inspection to determine product quality. The Standard does not exclude any acceptable process used to make the electrical connections, as long as the methods used will produce completed solder joints conforming to the acceptability requirements of the Standard.

1.2 Classification J-STD-001B RECOGNIZES THAT ELECTRICAL AND ELECTRONIC ASSEMBLIES ARE SUBJECT TO CLASSIFICATIONS BY INTENDED END-ITEM USE. THREE GENERAL END-PRODUCT CLASSES HAVE BEEN ESTABLISHED TO REFLECT DIFFERENCES IN PRODUCIBILITY, COMPLEXITY, FUNCTIONAL PERFORMANCE REQUIREMENTS, AND VERIFICATION (INSPECTION/TEST) FREQUENCY. IT SHOULD BE RECOGNIZED THAT THERE MAY BE OVERLAPS OF EQUIPMENT BETWEEN CLASSES.

THE USER (the individual, organization, company, or agency responsible for the procurement of electrical/electronic hardware, having the authority to define the class of equipment and any variation or restrictions to the requirements of this Standard) AND MANUFACTURER (the individual, organization, or company responsible for the procurement of material and components, as well as all assembly processes and verification operations necessary to ensure full compliance of assemblies to the Standard) **MUST** AGREE ON THE CLASS TO WHICH THE PRODUCT BELONGS.