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**Sectional Design Standard for**  
**Rigid Organic Printed Boards**

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*A standard developed by IPC*

*Association Connecting Electronics Industries*



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IPC-2222A

# Sectional Design Standard for Rigid Organic Printed Boards

Developed by the IPC-2221/2222 Task Group (D-31B) of the Rigid  
Printed Board Committee (D-30) of IPC

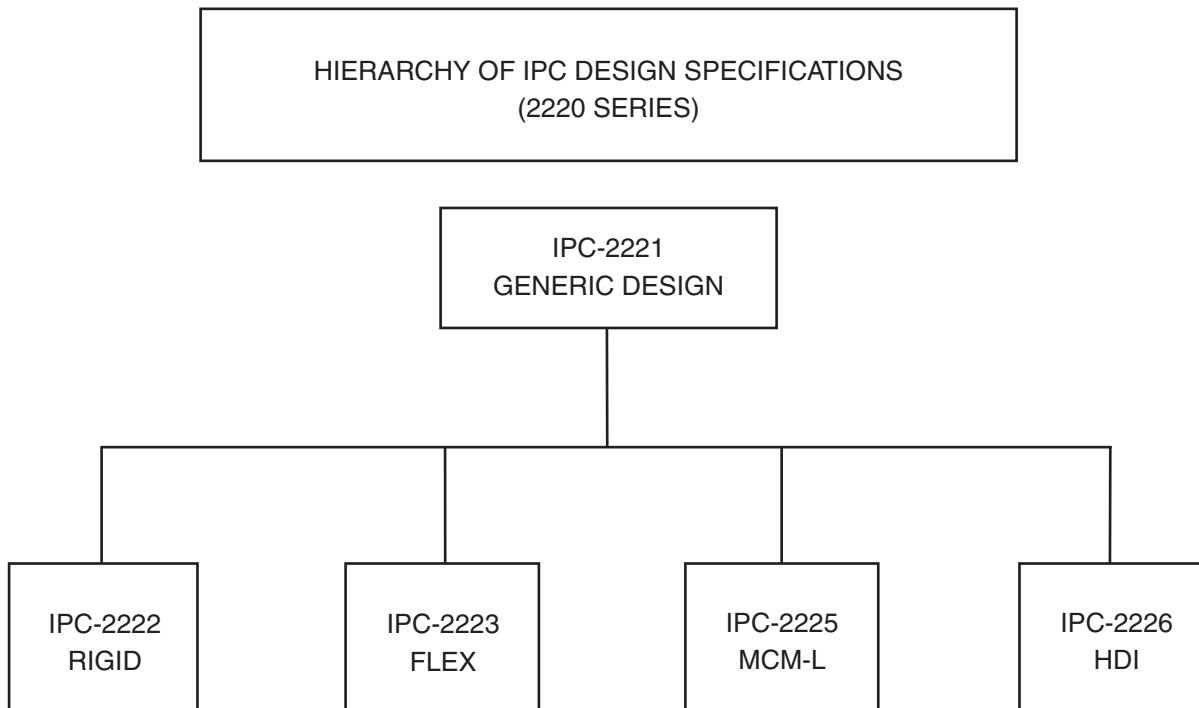
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Users of this publication are encouraged to participate in the  
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**Contact:**

IPC  
3000 Lakeside Drive, Suite 309S  
Bannockburn, Illinois  
60015-1249  
Tel 847 615.7100  
Fax 847 615.7105



## FOREWORD

This standard is intended to provide information on the detailed requirements for organic rigid printed board design. All aspects and details of the design requirements are addressed to the extent that they can be applied to the unique requirements of those designs that use organic rigid (reinforced) materials or organic materials in combination with inorganic materials (metal, glass, ceramic, etc.) to provide the structure for mounting and interconnecting electronic, electromechanical, and mechanical components.

The information contained herein is intended to supplement generic engineering considerations and design requirements identified in IPC-2221. When coupled with the engineering design input, the complete disclosure should facilitate the appropriate selection process of the materials and the detailed organic rigid structure fabrication technology necessary to meet the engineering design objectives.

The selected component mounting and interconnecting technology for the printed board should be commensurate with the requirements provided and the specific focus of this sectional document.

IPC's documentation strategy is to provide distinct documents that focus on specific aspect of electronic packaging issues. In this regard document sets are used to provide the total information related to a particular electronic packaging topic. A document set is identified by a four digit number that ends in zero (0).

Included in the set is the generic information which is contained in the first document of the set and identified by the four digit set number. The generic standard is supplemented by one or many sectional documents each of which provide specific focus on one aspect of the topic or the technology selected. The designer of the printed board, needs as a minimum, the generic, the sectional of the chosen technology, the generic engineering considerations, and the engineering description of the final product.

Failure to have all information available prior to starting a design may result in a product that is difficult to manufacture or exceeds the cost predictions or expectations of the printed board.

As technology changes, specific focus standards will be updated, or new focus standards added to the document set. The IPC invites input on the effectiveness of the documentation and encourages user response through completion of "Suggestions for Improvement" forms located at the end of each document

## Acknowledgment

Any document involving a complex technology draws material from a vast number of sources. While the principal members of the IPC-2221/2222 Task Group (D-31b) of the Rigid Printed Board Committee (D-30) are shown below, it is not possible to include all of those who assisted in the evolution of this standard. To each of them, the members of IPC extend their gratitude.

---

### Rigid Printed Board Committee

Chair  
Vicka White  
Honeywell Inc. Air Transport Systems

Vice-Chair  
Debora Obitz  
Trace Laboratories - East

### IPC-2221/2222 Task Group

Chair  
Gary Ferrari  
FTG Circuits

Vice-Chair  
Cliff Maddox  
Boeing Company

### Technical Liaisons of the IPC Board of Directors

Peter Bigelow  
IMI Inc.

Sammy Yi  
Aptina Imaging Corporation

---

### IPC-2221/2222 Task Group

Veronika Anderson, PerkinElmer Optoelectronics  
Lance Auer, Raytheon Missile Systems  
Robert F. Bagsby, Rockwell Collins  
Wendi Boger, DDi Corp  
Gerald Leslie Bogert, Bechtel Plant Machinery, Inc.  
Scott Bowles, Hallmark Circuits Inc.  
Elaine Brown, Lockheed Martin Systems Integration  
Mark Buechner, BAE Systems  
Byron Case, L-3 Communications  
Denise Chevalier, Amphenol Printed Circuits, Inc.  
Christine Coapman, Delphi Electronics and Safety  
David J. Corbett, Defense Supply Center Columbus  
William C. Dieffenbacher, BAE Systems Platform Solutions  
C. Don Dupriest, Lockheed Martin Missiles and Fire Control  
Patricia S. Dupuis, Raytheon Company  
Theodore Edwards, Dynaco Corp.  
Timothy Estes, Conductor Analysis Technologies, Inc.  
Lionel Fullwood, WKK Distribution Ltd.  
Mahendra Gandhi, Northrop Grumman Aerospace Systems  
Tom Gardenour, Amphenol Printed Circuits, Inc.

Matt H. Garrett, Phonon Corporation  
Hue Green, Lockheed Martin Space Systems Company  
Michael Green, Lockheed Martin Space Systems Company  
William A. Hazen, Raytheon Company  
Philip Henault, Raytheon Company  
Joseph E. Kane, BAE Systems Platform Solutions  
Thomas E. Kemp, Rockwell Collins  
Jeff Lewis, Holaday Circuits Inc.  
Anne Lomonte, Draeger Medical Systems, Inc.  
Michael G. Luke, Raytheon Company  
Chris Mahanna, Robisan Laboratory Inc.  
Kenneth Manning, Raytheon Company  
Tim McKliget, Holaday Circuits Inc.  
Peter Menez, L-3 Communications - Cincinnati Electronics  
Roger J. Miedico, Raytheon Company  
George Milad, Uyemura International Corp.  
Michael Miller, NSWC Crane  
Bob Neves, Microtek Laboratories  
Steven M. Nolan, Lockheed Martin Maritime Systems & Sensors  
Debora Obitz, Trace Laboratories - East  
Gerard O'Brien, Solderability Testing & Solutions, Inc.  
Jack C. Olson, Caterpillar Inc.  
J. Lee Parker, JLP

Stephen G. Pierce, SGP Ventures, Inc.  
Randy R. Reed, Viasystems Group, Inc.  
William L. Richards, NSWC Crane  
Steven Roy, Raytheon Company  
Joseph Schmidt, Raytheon Missile Systems  
Douglas Schueller, AbelConn, LLC  
Jeff Seekatz, Raytheon Company  
Russell S. Shepherd, Microtek Laboratories  
Lowell Sherman, Defense Supply Center Columbus  
Valerie St. Cyr, Teradyne Inc.  
James Stack, Endicott Interconnect Technologies Inc  
Birgitta Stocking, PerkinElmer Optoelectronics  
Dung Q. Tiet, Lockheed Martin Space Systems Company  
Bradley Toone, L-3 Communications  
James Wilson, Endicott Interconnect Technologies Inc  
Crystal E. Vanderpan, Underwriters Laboratories Inc.  
Vicka White, Honeywell Inc. Air Transport Systems  
Dewey Whittaker, Honeywell Inc. Air Transport Systems  
John Williams, Raytheon Company  
David Wolf, Conductor Analysis Technologies, Inc.

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# Sectional Design Standard for Rigid Organic Printed Boards

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## 1 SCOPE

This standard establishes the specific requirements for the design of rigid organic printed boards.

**1.1 Purpose** The requirements contained herein are intended to establish specific design details that **shall** be used in conjunction with IPC-2221 to produce designs intended to mount and attach components. The components may be through-hole, surface mount, fine pitch, ultra-fine pitch, array mounting or unpackaged bare die.

The organic materials may be homogeneous, reinforced, or used in combination with inorganic materials; the interconnections may be single, double, or multilayered. They may be any combination able to perform the physical, thermal, environmental, and electronic function.

**1.2 Document Hierarchy** Document hierarchy **shall** be in accordance with the generic standard IPC-2221.

**1.3 Presentation** Presentation **shall** be in accordance with the generic standard IPC-2221.

**1.4 Interpretation** Interpretation **shall** be in accordance with the generic standard IPC-2221.

**1.5 Definition of Terms** The definition of all terms used herein **shall** be in accordance with IPC-T-50 and as defined in 1.5.1.

**1.5.1 As Agreed Between User and Supplier (AABUS)** Indicates additional or alternate requirements to be decided between the user and the supplier in the procurement documentation. Examples include contractual requirements, modifications to purchase documentation and information on the drawing. Agreements can be used to define test methods, conditions, frequencies, categories or acceptance criteria within a test, if not already established.

**1.6 Classification of Products** Classification of products **shall** be in accordance with the generic standard IPC-2221 and as defined in 1.6.1.

**1.6.1 Printed Board Type** This standard provides design information for different printed board types. Printed board types are classified as:

Type 1 – Single-Sided Printed Board

Type 2 – Double-Sided Printed Board

Type 3 – Multilayer Printed Board without blind or buried vias

Type 4 – Multilayer Printed Board with blind and/or buried vias

Type 5 – Multilayer Metal Core Printed Board without blind or buried vias

Type 6 – Multilayer Metal Core Printed Board with blind and/or buried vias

**1.7 Applicability** The contents of this standard may not apply to certain leading edge technologies. Refer to IPC-2221 for additional information.

**1.8 Revision Level Changes** Changes that were incorporated in the current revision of this specification are indicated throughout by gray shading of the relevant subsection(s). Changes to a figure or table are indicated by gray shading of the Figure or Table header.