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*The Institute for  
Interconnecting  
and Packaging  
Electronic Circuits*

# IPC-D-322

## Guidelines for Selecting Printed Wiring Board Sizes Using Standard Panel Sizes

**IPC-D-322**

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# Guidelines for Selecting Printed Wiring Board Sizes Using Standard Panel Sizes

## 1.0 SCOPE

**1.1 Purpose** This specification defines guidelines for choosing sizes of printed wiring boards, using standard fabrication panel sizes.

**1.2 Recommendation** While this document should be helpful in establishing areas of concern in choosing a PWB size, the designer should consult with the manufacturer to verify that his capabilities, and restrictions, are similar to those used in this document.

**1.3 Clarifications** This document makes an assumption that the designer is free to choose any size board desired. This freedom is not true often due to the particular needs of the product being designed. However, an understanding of the principles in this guidelines can be of use to the designer because it affords an overview of manufacturing requirements to the design "community."

It should also be noted that the limits listed in this document are appraisals of what is generally available at most companies, using normal techniques. Under special conditions, using special tooling and equipment, many things are possible that far exceed what is normally done. These special designs are usually not desirable because of cost or reduced producibility.

The main emphasis of this document is toward rigid materials commonly available. Flexible and/or special materials often are available in differing sizes and may not apply to this analysis.

## 2.0 APPLICABLE DOCUMENTS

### 2.1 IPC

**IPC-T-50**—Terms and Definitions

### 2.2 Other References

**IPC-D-300**—Dimensions and Tolerances

**IPC-D-320**—End Product Specification for Single- and Double-Sided Printed Boards

**IPC-ML-910**—Design and End Product Specification for Rigid Multilayer Printed Boards

**MIL-STD-275**—Printed Wiring for Electronic Equipment

## 3.0 TERMS AND DEFINITIONS

**3.1** The definitions of all other terms used herein shall be as specified in IPC-T-50.

**3.2 Board Array** An arrangement containing one or more printed wiring boards for the purpose of processing through assembly. Ultimately the individual boards are separated from the array for final system use.

## 4.0 CONSIDERATIONS

Throughout the process, there are certain restrictions that affect the producibility of printed wiring boards. These restrictions occur at the following points.

**4.1 Laminate Material** The largest size panel processed economically is a function of sheet laminate common in the market place. This dictates that recommended guidelines for panel sizes should be a submultiple of these common sheet sizes which currently are:

- 914 mm x 1219 mm (36" x 48")
- 1219 mm x 1829 mm (48" x 72")
- 1219 mm x 3858 mm (48" x 144")
- 1219 mm x 1067 mm (48" x 42")
- 914 mm x 1067 mm (36" x 42")

\*Primarily for multilayer boards

Other choices imply cost penalties in wasted material, due to excess trim.

Restrictions in material usage apply equally to the fabricator using "mass lamination techniques," either in-house or at a laminate supplier.

Within some regions (Europe, Far East), other sheet sizes are commonly available. These sizes would allow further choices of products designed to be produced in those areas. Some of these common sizes are:

- 1000 mm x 1000 mm (39.4" x 39.4")
- 1000 mm x 1200 mm (39.4" x 47.2")
- 1055 mm x 1165 mm (41.5" x 45.9")

On dense circuits, where dimensional stability is important, orientation of the grain direction will have effects on part stability. The long dimension of the finished board should be parallel with the fill direction of the laminate sheet.

**4.2 Primary Panel Size** Factors of equipment, material, and human engineering do not presently accommodate full-size sheets. A panel size smaller than the full-size sheet, but