GEA Mission

The Global Electronics Association promotes industry growth and strengthens supply chain resilience.

About IPC Standards by Global Electronics Association

IPC standards and publications by Global Electronics Association are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for their particular need. Existence of such standards and publications shall not in any respect preclude any entity from manufacturing or selling products not conforming to such standards and publications, nor shall the existence of such standards and publications preclude their voluntary use.

IPC standards and publications by Global Electronics Association are approved by committees without regard to whether the standards or publications may involve patents on articles, materials or processes. By such action, Global Electronics Association does not assume any liability to any patent owner, nor does Global Electronics Association assume any obligation whatsoever to parties adopting a standard or publication. Users are wholly responsible for protecting themselves against all claims of liabilities for patent infringement.

Global Electronics Association Position Statement on Specification Revision Change

The use and implementation of IPC standards and publications by Global Electronics Association are voluntary and part of a relationship entered into by customer and supplier. When a standard or publication is revised or amended, the use of the latest revision or amendment as part of an existing relationship is not automatic unless required by the contract. Global Electronics Association recommends the use of the latest revision or amendment.

Standards Improvement Recommendations

Global Electronics Association welcomes comments for improvements to any standard in its library. All comments will be provided to the appropriate committee.

If a change to technical content is requested, data to support the request is recommended. Technical comments to include new technologies or make changes to published requirements should be accompanied by technical data to support the request. This information will be used by the committee to resolve the comment.

To submit your comments, visit the Status of Standardization page at www.electronics.org/status.

IPC-4204C

Flexible Metal-Clad Dielectrics for Use in Fabrication of Flexible Printed Boards

If a conflict occurs between the English language and translated versions of this document, the English version will take precedence.

Developed by the IPC-4204C D-13 Flex Materials Subcommittee of the D-10 Flexible Circuits General Committee of Global Electronics Association.

Supersedes:
IPC-4204B – September 2018

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

Contact:

Global Electronics Association
3000 Lakeside Drive, Suite 105N
Bannockburn, Illinois
60015-1249
Tel 847 615.7100
Fax 847 615.7105

Table of Contents

Tables

Flexible Metal-Clad Dielectrics for Use in Fabrication of Flexible Printed Boards

1 SCOPE

This standard establishes the classification system, the qualification and quality conformance requirements for flexible metal-clad dielectric materials to be used for the fabrication of flexible printed boards.

1.1 Purpose The purpose of this standard is to classify and characterize based materials for use in flex and rigid-flex boards for electronic applications. It is to be used for procurement and quality assurance activities.

1.2 Classification System The system described in 1.2.1 through 1.2.2.7 identifies flexible metal-clad dielectrics.

1.2.1 Nonspecific Designation A nonspecific designation is intended for use by ***designers*** on master drawings to designate their material choice. At the end of this standard is a series of material specification sheets identified by specification sheet numbers. Each sheet outlines engineering and performance data for a flexible metal-clad dielectrics, indicating base material type, adhesive type and method of reinforcement.

Example of nonspecific designation:

IPC-4204/1, *where "1" refers to the specification sheet detailing copper-clad polyimide dielectric with acrylic adhesive.* If further material specification details (such as dielectric, adhesive or copper thicknesses) are required, they should be high- lighted in cross sectional views or notes on the master drawing.

1.2.2 Specific Designation The specific designation should be in the form shown in the following example, and is intended for use on material purchase orders by ***fabricators*** (see 6.1). The specific designation should not be used by designers on master drawings to indicate their material selection, as the designation is lengthy and requires fabricator level knowledge in making the detailed selections.

NOTE: The alpha character "Z" replaces and is entirely equivalent to the alpha character "O" (ref: Table 1-5) in the original release (prior revision) of this IPC standard. This interchange of characters within the designation will help alleviate confusion from using both the alpha character "O" and the digit "0" from the original release of this IPC standard. Legacy designs that utilize a designation and material description from the original release of this IPC standard [alpha character "O" (from Table 1-5)] may continue to be used. Supplier material certifications will reflect the current IPC standard's revision, and accordingly, the alpha character "Z" in the designation.

Example of specific designation:

IPC-4204/1 – E1E2M2/2 CU-W7-1P/1P

Where:

IPC-4204/1 *– Nonspecific Designation (see 1.2.1) specifying copper-clad dielectric with acrylic adhesive*

E *– Base Dielectric Type Designation (see 1.2.2.1) specifying polyimide*

1 *– Reinforcement Method Designation (see 1.2.2.2) specifying non-reinforced*

E *– Reinforcement Type Designation (see 1.2.2.3) specifying non-reinforced film*

2 *– Base Dielectric Thickness Designation (see 1.2.2.4) specifying 50µm [1968 µin]*

M *– Adhesive Type Designation (see 1.2.2.5) specifying acrylic adhesive*

2/2 *– Adhesive Thickness Designation (see 1.2.2.6) specifying 50 µm both sides (Not used for adhesiveless product)*

CU-W7-1P/1P *– Metal Cladding Designation (see 1.2.2.7) specifying wrought rolled annealed copper, 35 µm both sides with no treatment*

1.2.2.1 Base Material Type The type of dielectric material **shall** be specified per Table 1-1.

