



*The Institute for
Interconnecting
and Packaging
Electronic Circuits*

IPC-CA-821

General Requirements for Thermally Conductive Adhesives

IPC-CA-821

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

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- Show relationship to DFM & DFE
- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feed back system on use and problems for future improvement

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- Inhibit innovation
- Increase time-to-market
- Keep people out
- Increase cycle time
- Tell you how to make something
- Contain anything that cannot be defended with data

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The material in this standard was developed by the SMT Mounting Adhesives Task Group (5-11c) of the Assembly Processes Committee (5-10) of the Institute for Interconnecting and Packaging Electronic Circuits.



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Assembly Processes Committee of the Institute for Interconnecting
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Users of this standard are encouraged to participate in the
development of future revisions.

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Acknowledgment

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Mounting Adhesives Task Group of the Assembly Processes Committee are shown below, it is not possible to include all of those who assisted in

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General Requirements for Thermally Conductive Adhesives

1.0 SCOPE

This document covers requirements and test methods for paste type dielectric adhesives used to bond components in place and for their long term properties as a part of the printed wiring board.

1.1 Purpose This standard defines dielectric thermally conductive adhesives through specification of test methods and inspection criteria.

1.2 Adhesive Classification

1.2.1 Permanent Removal of the component is not intended.

1.2.2 Removable Reduced strength to allow component removal.

1.2.3 Self-shimming To maintain dielectric spacing.

2.0 APPLICABLE DOCUMENTS

The following documents, of the issue currently in effect, form a part of this specification to the extent specified herein.

2.1 Institute for Interconnecting and Packaging Electronic Circuits (IPC)¹

IPC-T-50 Terms & Definitions for Interconnecting and Packaging Electronic Circuits

IPC-TM-650² Test Methods Manual

2.3.10 Flammability of Printed Wiring Laminate

2.4.42.1 High Temperature Mechanical Strength Retention of Adhesives

2.4.51 Self Shimming Thermally Conductive Adhesives

2.6.1 Fungus Resistance, Printed Wiring Materials

2.6.3.1 Moisture and Insulation Resistance

2.6.14 Resistance to Electromigration, Polymer Solder Masks

2.2 Government³

2.2.1 Military³

MIL-STD-116 Methods of Preservation

MIL-STD-129 Marking for Shipping and Storage

MIL-STD-45662 Calibration Requirements

2.3 American Society for Testing and Materials (ASTM)⁴

ASTM-D-149 Test methods for Dielectric Breakdown Voltage and Dielectric Strength of Solid Insulating Materials at Commercial Power Frequencies

ASTM-D-150 Test methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Insulating Materials

ASTM-C-177 Standard Test Method for Steady-State Heat Flux Measurements and Thermal Properties by Means of the Guarded-Hot-Plate Apparatus

ASTM-D-257 Test methods for A-C Resistance or Conductance of Insulating Materials

ASTM-C-518 Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

ASTM-E-595 Standard Test Method for Total Mass Loss and Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment

ASTM-D-1002 Standard Test Method for Strength Properties of Adhesives in Shear by Tension Loading (Metal to Metal)

ASTM-D-1210 Test for Fineness of Grind of Adhesives

ASTM-D-2556 Standard Test Method for Apparent Viscosity of Adhesives Having Shear-Rate-Dependent Flow Properties

ASTM-D-3386 Standard Test Method for Coefficient of Linear Thermal Expansion of Electrical Insulating Materials

3.0 REQUIREMENTS

3.1 Terms and Definitions The definition of terms shall be in accordance with IPC-T-50, except as defined below.

1. Publications are available from IPC, 2215 Sanders Road, Northbrook, IL 60062-6135.

2. For convenience, applicable test methods from IPC-TM-650 are reprinted in the back of this standard.

3. To obtain documents, write Standardization Documents Order Desk, Building 40, 700 Robbins Avenue, Philadelphia, PA 19111-5091.

4. Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1481.