IPC-CA-821

THE INSTITUTE FOR INTERCONNECTING AND PACKAGING ELECTRONIC CIRCUITS

General Requirements for Thermally Conductive Adhesives

Developed by the SMT Mounting Adhesives Task Group of the Assembly Processes Committee of the Institute for Interconnecting and Packaging Electronic Circuits

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

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Table of Contents

Tables

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-650[2] 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 Government[3]

2.2.1 Military[3]

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 19111-5094.
4. Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.