



**SPEED SPREAD Electronic Materials Co., Ltd.**

# **PCBA APPLICATION**



# COMPANY PROFILE

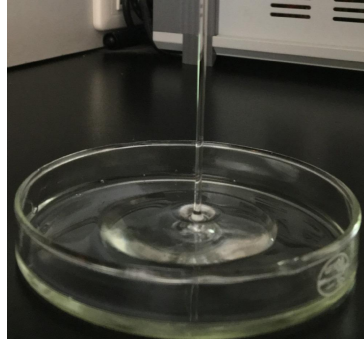
The company is located in Qiaotou Town, Dongguan City, Guangdong Province, China and has 10000 square courtyard in the workshop, obtain qualification certificates: ISO9001, ISO140001, IATF16949, UL, high-tech enterprises. We have a professional R&D team to meet the diverse needs of customers, as well as professional instruments including materials/thermal/electrical properties/reliability testing equipment to ensure product quality.

# Form of Thermal Conductive Materials

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Powder



Liquid



Block-Shaped



Fibrous



Grease



Piece



Thin-Film

# Thermal Conductive Materials

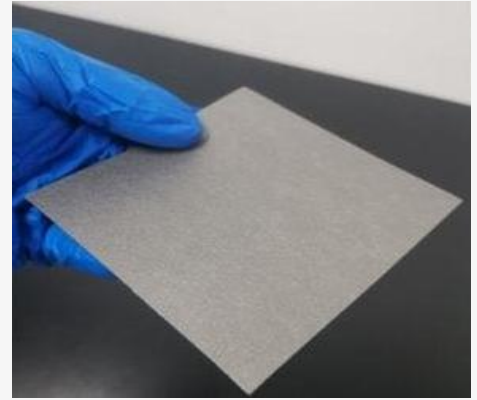
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At present, the Thermal Conductive Materials on the market are generally divided into four major categories, as shown in the right figure.

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Wave Absorbing Materials



Phase Change Materials



Thermal Insulation Materials



Carbon Fiber Materials

# Thermal Conductive Materials Plus

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Why do PCBA need Thermal Conductive Materials?



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## Reason 1

Heat dissipation is needed to extend the lifespan

## Reason 2

Insulation is required.

## Reason 3

Flame retardancy is required.

## Reason 4

It needs to be adhesive.

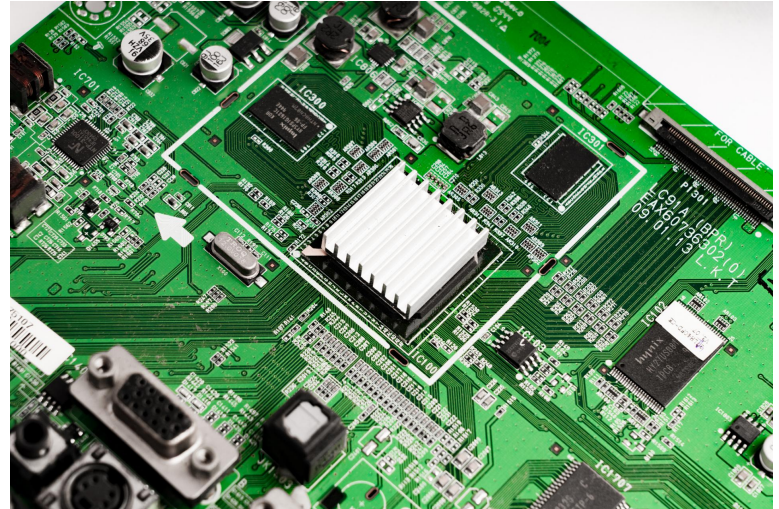


# Thermal Insulation Materials

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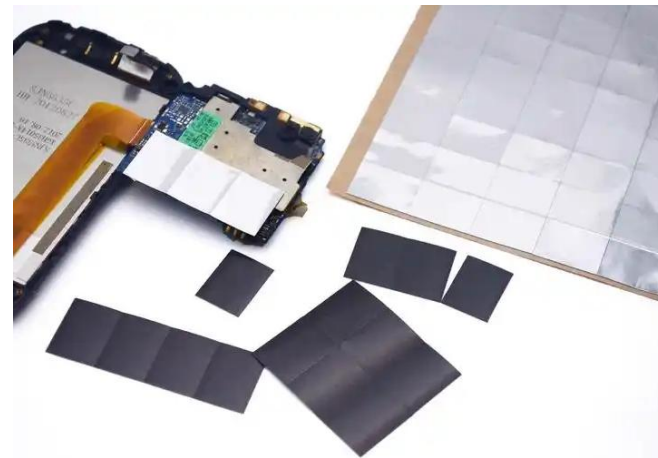
Thermal Conductive Insulating Materials are special materials that possess both excellent thermal conductivity and superior electrical insulation performance.

- 1.High Thermal Conductivity
- 2.Excellent Electrical Insulation
- 3.Thermal Management and Reliability
  - High temperature resistance
- 4.Mechanical and Chemical Properties
  - Flexibility
  - Corrosion resistance



# Wave Absorbing Materials

Wave Absorbing Materials in PCBA is mainly used to suppress electromagnetic interference (EMI), reduce signal reflection/crosstalk, and optimize the performance of high-frequency circuits



## Why Choose Absorbing Materials Instead of Traditional Metal Shielding Covers?

Method	Advantage	Limitation
Metal Shielding Cover	Strong Shielding Effectiveness (>60dB)	Adding Weight is Costly and Difficult to Dissipate Heat
Wave Absorbing Material	Lightweight and Locally Applicable to Improve Signal Integrity	Weak effect on low frequencies (<1GHz)

# Phase Change Materials

Phase Change Materials manages temperature through the phase change process of absorbing or releasing heat (such as solid-liquid phase change), and is mainly used in PCBA for transient heat dissipation of high heat flux density components and temperature equilibrium control.



## Advantages of Phase Change Materials VS Traditional Heat Dissipation Solutions

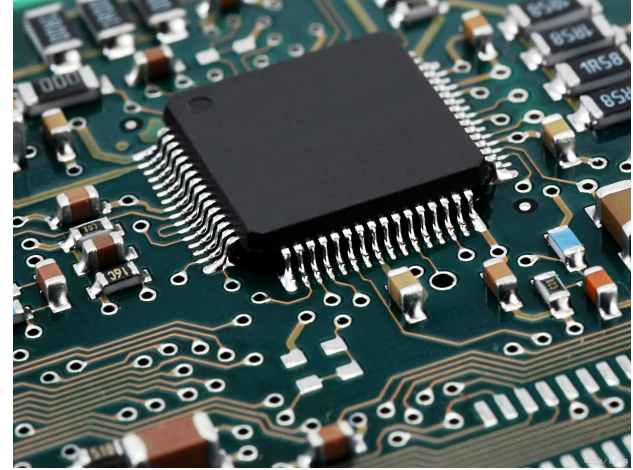
Comparing Dimensions	Phase Change Materials (PCM)	Traditional Heat Dissipation (such as Fan+Aluminum Radiator)
Transient Thermal Management	Excellent (Absorbs Sudden Heat)	Slow Response, Dependent on Airflow
Volume/Weight	Lightweight and Space Saving	A Larger Heat Dissipation Structure is Required
Energy Consumption	Zero Power Consumption (Passive Cooling)	Need Fan Power Supply
Cost	Medium to High (Material+Packaging Cost)	Low (Mature Solution)



# Carbon Fiber Materials

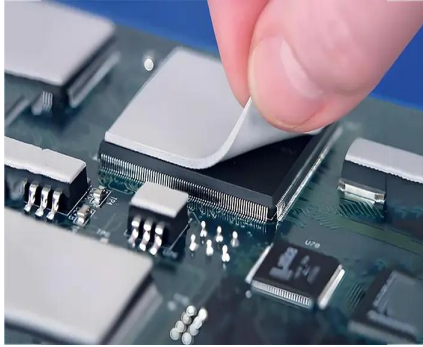
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Carbon fiber can be used for structural reinforcement, heat dissipation, electromagnetic shielding and special sensors in PCBA, but the insulation problem and cost challenges need to be addressed. Currently, it is mainly applied in high-end fields (such as military, aerospace, and high-performance automotive electronics). In the future, with the advancement of materials modification technology, it may expand its application in consumer electronics.



# PCBA Application Scenario

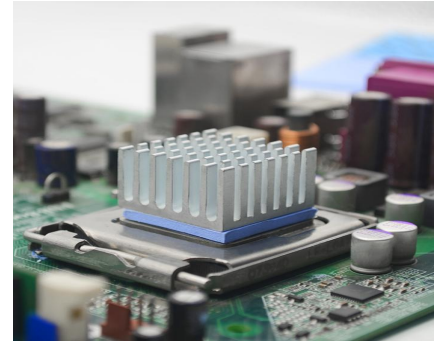
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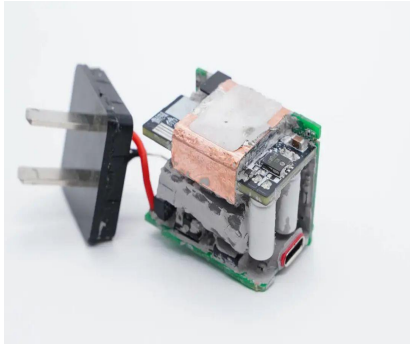
Computer CPU



Wireless Charger



5G Electronic Equipment



Charger Plug



Electric Battery

# Thank You!

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