# **Packaging Materials**

# Honeywell



A FAMILY OF HIGH THERMAL CONDUCTIVE PHASE CHANGE MATERIALS

# Honeywell PCM45 Phase Change Thermal Interface Materials

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### A FAMILY OF HIGH THERMAL CONDUCTIVE PHASE CHANGE MATERIALS

### **BENEFITS**

- High performance filler and resin technology
- Screen printable paste or tape format
- Phase change at 45°C
- High conductive filler loading to maximize loading density
- Superior handling and reworkability
- Excellent thermal reliability after thermal cycling and HAST

#### Handling Benchmark (Typical Values)



### **OVERVIEW**

Honeywell Electronic Materials has developed the PCM45 Series, a family of high thermal conductive Phase Change Materials (PCM) designed to minimize thermal resistance at interfaces.



Based on a novel polymer PCM system, these materials exhibit excellent wetting at interfaces during typical operating temperature range, resulting in very low surface contact resistance.

A proprietary filler material provides high thermal conductivity (3.0–5.0 W/m°C) and a low thermal impedance (<0.25°C cm<sup>2</sup>/W), suitable for high performance IC devices.

## MATERIAL CHARACTERISTICS

#### **Physical Properties**

	PCM45	PCM45F
Thermal Conductivity	3.0 W/m°C	3.0 W/m°C
Thermal Impedance	0.25°C cm²/W	0.20°C cm <sup>2</sup> /W
Volume Resistivity	3x10 <sup>+15</sup> Ωcm	3x10 <sup>+15</sup> Ωcm
Specific Gravity	2.2gm/cm <sup>3</sup>	2.2gm/cm <sup>3</sup>
Typical Bond Line	1.5 mils	1.0 mil
Thickness @ 30psi/60°C		

#### Thermal Impedance Post Reliability

	PCM45	PCM45F
End of Line	0.25°C cm²/W	0.20°C cm <sup>2</sup> /W
1000 hrs T/C "B	0.26°C cm²/W	0.20°C cm²/W
192 hrs 85C/85%RH	0.26°C cm²/W	0.21°C cm²/W
96 hrs HAST	0.30°C cm²/W	0.25°C cm²/W
500 hrs @ 150°C	0.25°C cm²/W	0.20°C cm²/W

#### For more information

www.electronicmaterials.com

#### **Specialty Materials**

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# FEATURES

#### **High Thermal Performance**



Key outputs in thermal impedance for the PCM45 series of materials have been measured to fit individual needs.

### APPLICATIONS

Clamping pressure and temperature are suggested to achieve a minimum bond line thickness of the interface material, typically less than 1.5mil (0.038mm) for best thermal performance.

- Thermal interface between die and heat spreader (TIM1 Application)
- Thermal Interface between die and heat sink (TIM2 Application)

#### Tape Formats

- No Carrier
- Supplied Thickness: 10 mils



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