



Honeywell

Thermal Interface Materials

PTM7950 and PTM7950-SP Phase Change Material

PTM7950

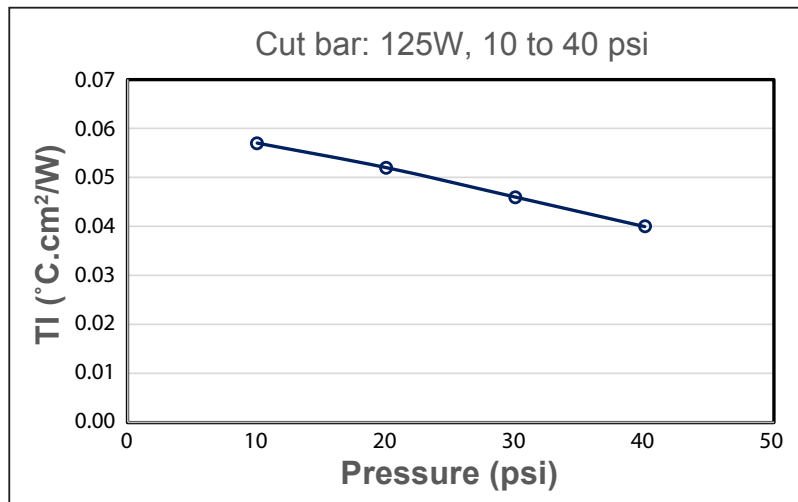
High Thermal Conductivity Phase Change Material

Honeywell's PTM7950 series, a super highly thermally conductive Phase Change Material (PCM) in both pad and paste formats, is designed to minimize thermal resistance at interfaces, maintain excellent performance through reliability testing, and provide scalable application at a competitive cost.

Based on a novel polymer PCM system, this material exhibits excellent interface wettability during typical operating temperature ranges, resulting in extremely low surface contact resistance.

A proprietary material provides superior reliability (pass 150°C baking 1000 hours, T/C-B 1000 cycles) and maintains low thermal impedance (<0.04°Ccm²/W @ no shim), making the PTM7950 series desirable for high performance integrated circuit devices.

PTM7950 Thermal Impedance (TI) vs. Pressure



PTM7950 is ideal for high performance IT/Enterprise computing applications.

Honeywell TIMs Serve Multiple Applications



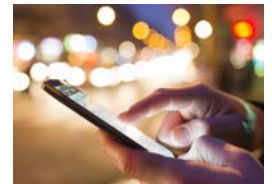
Automotive & Power



IT/Enterprise



Telecomm



Consumer Electronics



High-Brightness LED

FEATURES & BENEFITS

- High performance filler and polymer technology
- Phase change at 45°C
- Highly conductive filler loading to optimize performance
- Superior handling and reworkability
- Superior reliable thermal performance
- Available in both pad and paste formats

PTM7950 Technical Information

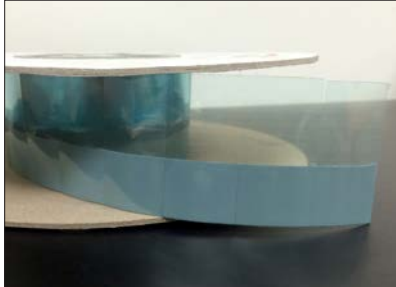
Physical Properties	Unit	Test Method	PTM7950	PTM7950-SP
Thermal Conductivity	W/m-K	ASTM D5470	8.5	8.5
Thermal Impedance @ no shim	$^{\circ}\text{Ccm}^2/\text{W}$	ASTM D5470 Modified	0.04	0.04
Specific Gravity	g/cm^3	ASTM D374	2.8	2.5
Viscosity	$\text{Pa}\cdot\text{s}$ @ 2 10 ¹ /s, 25 $^{\circ}\text{C}$	Rheometer HON	NA	21
Volume Resistivity	$\Omega\cdot\text{cm}$	ASTM D257-700	2.1×10^{14}	2.1×10^{14}
Thickness Range	mm		0.20-1.00	NA

STORAGE CONDITION

Refer to product label.

THERMAL IMPEDANCE POST RELIABILITY (ASTM E1461)

End of Line	0.04 $^{\circ}\text{C}\cdot\text{cm}^2/\text{W}$
Bake 150 $^{\circ}\text{C}$, 1000 h	0.04 $^{\circ}\text{C}\cdot\text{cm}^2/\text{W}$
Double 85, 1000h	0.04 $^{\circ}\text{C}\cdot\text{cm}^2/\text{W}$
Temperature Cycling "B" (-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$, 1000 cycles)	0.045 $^{\circ}\text{C}\cdot\text{cm}^2/\text{W}$



PTM7950 pad format. It is also available in paste/ printable format.



PTM7950-SP applied to IGBT module.

Product Use

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

More Honeywell TIMs

PTM7950 is part of Honeywell's TIM Solutions family of phase change materials. Whatever the thermal challenge, we offer a TIM product that provides just the right characteristics for your application. Find out more about:

PTM7000 Series	PTM6000 Series
PTM5000 Series	PCM45F Series
HT Series	LTM Series

By visiting: electronicmaterials.com



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PTM7950 Phase Change Thermal Interface Material

Application Notes for PTM7950 Pad or Roll Format Products

INTRODUCTION

PTM7950, one of Honeywell's family of thermal interface materials, is a polymeric thermal conductive Phase Change Material (PCM) designed to minimize thermal impedance at interfaces. It incorporates sophisticated conductive filler size distribution that achieves optimum packing density—over 80% by weight compared with conventional phase change materials.



PTM7950 changes phase at 45°C to assure maximum surface conformance. These application notes detail the best known procedure for applying Roll Format PTM7950 pads to components, heat sinks or thermal spreaders.

MATERIAL FORMAT

PTM7950 pads are offered in pre-cut sizes



STORAGE

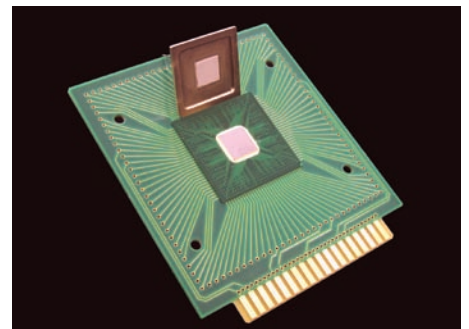
Recommended storage temperature prior to application is 19°C-25°C.

Best Known Application Method for PTM7950 Pad Materials

1. Clean surface of heat sink with IPA.
2. Using a heat gun or an oven, heat the surface of the heat sink where the PTM7950 is to be applied. The temperature should be between 90 and 150°F.
3. Remove the roll liner side of the liner from the PTM. Cooling the material in a refrigerator for 10 minutes will make it easier to remove the liner.
4. Place the PTM on the heated heat sink surface. Then using your thumb, apply even pressure across the entire surface of the PTM pad. It would be the same as applying a sticker.
5. Let the heat sink cool to room temperature.
6. After the heat sink has cooled the tab liner can then be removed (a fast motion may be used). Starting to peel from a corner edge may also be helpful.

NOTES:

1. Chilling the material will make the liner easier to remove.
2. Slightly heating the substrate before applying the material assists adhesion.
3. Remember to apply even pressure across entire surface of pad.
4. Let substrate cool before removing tab liner.



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Application of PTM7950-SP

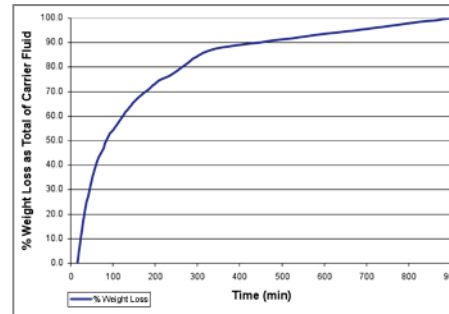
- The application of PTM7950-SP is suitable for various LED applications in backlight, general lighting and illumination



Different shapes of PTM7950-SP are possible depending on the screen print design.

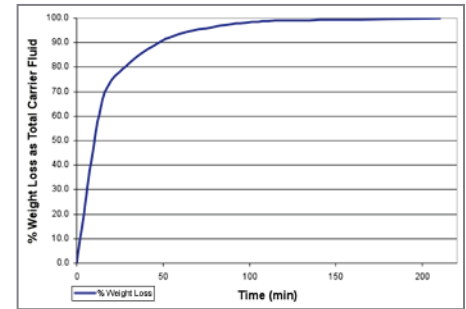
- PTM7950-SP will dry after approximately 15 hours at ambient temperatures with a thickness of 10 to 12 mils*
- PTM7950-SP dry time can also be accelerated in a forced exhaust oven or similar equipment at 50°C for 3.5 hours

% Weight Loss of Carrier Fluid @ RT



Carrier fluid evaporation v time in open air @ 25°C for a 20mmX20mm, 10 mil sample

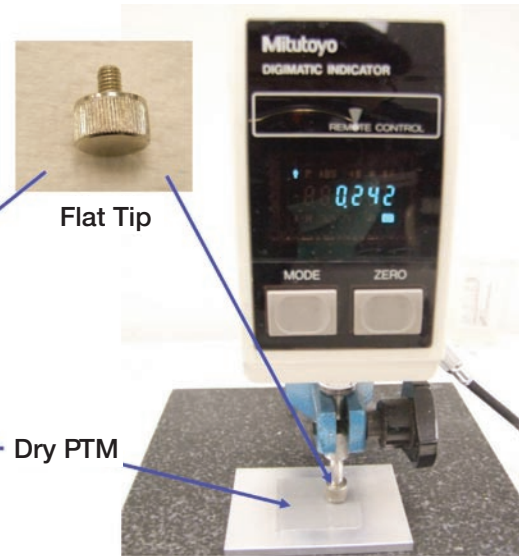
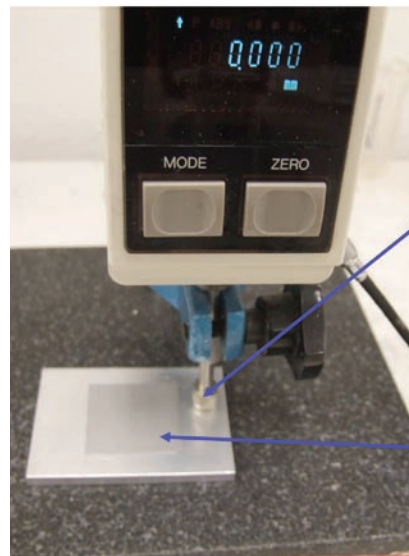
% Weight Loss of Carrier Fluid @ 50°C



Carrier fluid evaporation v time in open air @ 50°C for a 20mmX20mm, 10 mil sample

*Dry time may vary depending on environment temperature and ventilation conditions

Suggested Measurement of Dried PTM7950-SP Thickness



1. Zero the drop gauge reading on application surface (e.g. heat sink)

2. Measure the PTM layer thickness

Rework of PTM7950-SP

- If rework is required simply remove PTM7950-SP from the heat sink surface and use an appropriate cleaning solvent such as acetone, IPA or toluene to remove any residue

- Solvent can be applied to soften and remove the dried applications. A hard plastic edge may be applied to assist the removal of dried application as well
- Reapply PTM7950-SP on the newly cleaned surface



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HONEYWELL TIM ADVANTAGES

Quality

- Industry-leading reliability over device lifetime
- More than twenty years specializing in TIM materials R&D and manufacturing
- Proprietary formulations optimized for the needs of specific applications
- Proven, long-standing supplier with multiple worldwide quality certifications

Customer Focused

- Serving diverse range of customers
- TIMs offered in both pad and paste formats for ease of application
- Superior global technical support
- Portfolio of other materials, such as thermal spreaders, electrical interconnect and pure metals

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