



Tpcm™ 780

Storage and Instructions for Use

Tpcm 780 Shelf Life and Storage

In order to provide customers with the longest shelf life possible and maximum flexibility in shipping, Laird Technologies thermal has implemented the packaging of phase change materials in moisture resistance vacuum bags. The Tpcm 780 product has been designed using highly stable materials and extensively tested for exposure to high heat and humidity conditions found in uncontrolled shipping environments. The result is industry leading performance and exceptional shelf life stability. As a result of the implementation of new packaging Laird Technologies no longer requires humidity control during shipping and storage as long as the original bag remains unopened.

Shelf life:

1 year from date of shipment in sealed bag

Storage conditions:

0 to 40C in sealed bag. No humidity requirements.

If stored above 30°C or below 15°C, material must be stabilized between 15°C and 30°C for a minimum of 24 hours prior to use for best application.

Once the bag has been opened it is recommended to adhere to Laird Technologies standard storage conditions for phase change materials:

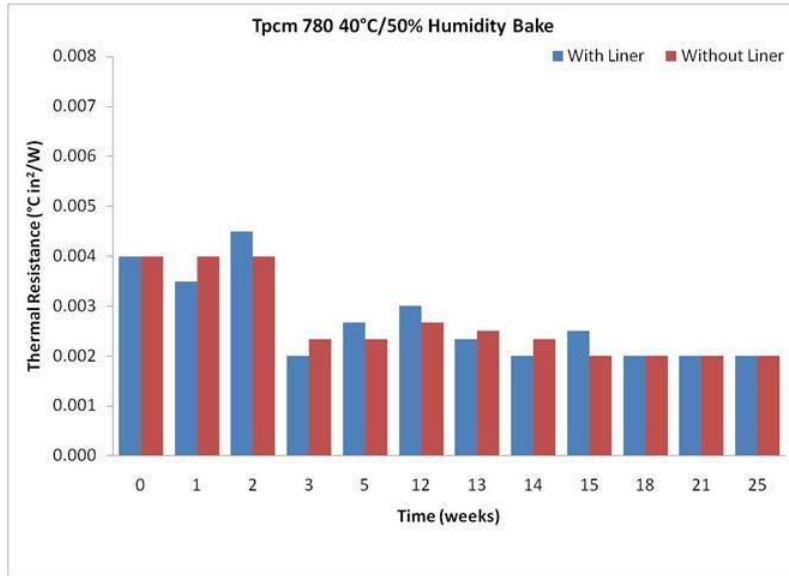
Store unused parts in the original box inside of metalized bag in which it was originally sealed. Vacuum sealing the bag (if possible) will prolong the material life. At minimum folding the bag and taping it shut should be practiced.

Temperature range - 15-35°C

Humidity – less than 50%

Duration – maximum 6 months

These conditions are suggested guidelines to ensure the longest product shelf life. However most products such as Tpcm 780 are more robust and can survive harsher conditions. For demonstration Tpcm 780 was placed in an oven with and without liners at 40°C and 50% relative humidity to simulate harsh storage conditions that may occur in many parts of the world. As shown by the data below, Tpcm 780 will withstand harsh storage conditions for more than six months.

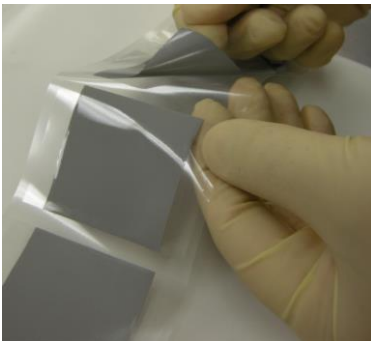


Testing conditions: ASTM D5470 at 50psi and 70°C

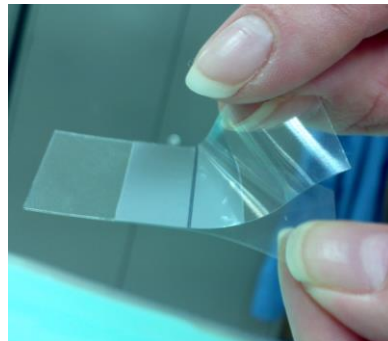
Application Instructions: Tabbed parts Tpcm 788

Ensure to maintain a clean environment free of dust and other particulates. Use gloves when handling material.

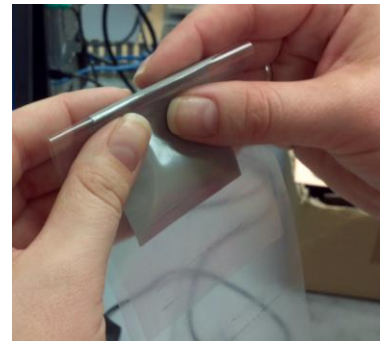
Tabbed parts may be supplied as rolls, strips or individual parts. Remove the printed/marked liner with the Tpcm 780 from the non-printed liner.



Removing Tpcm 788 from roll

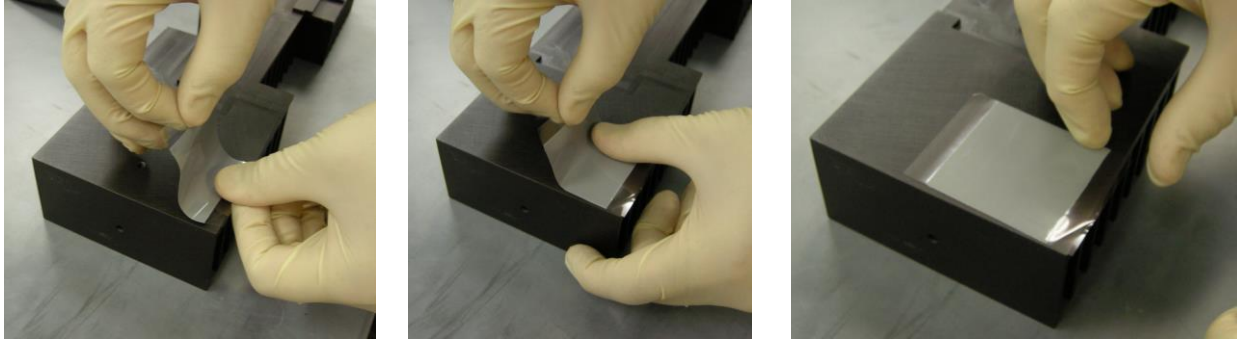


Individual tabbed part of Tpcm 788

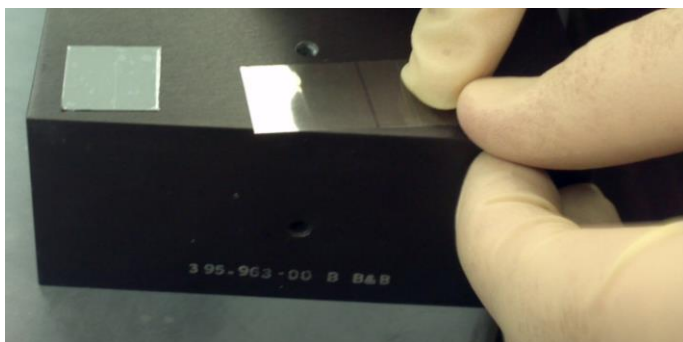
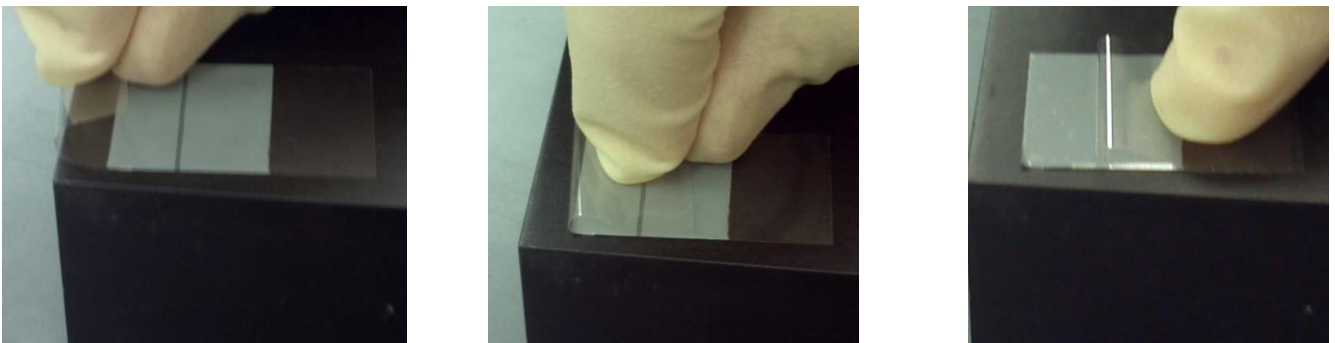
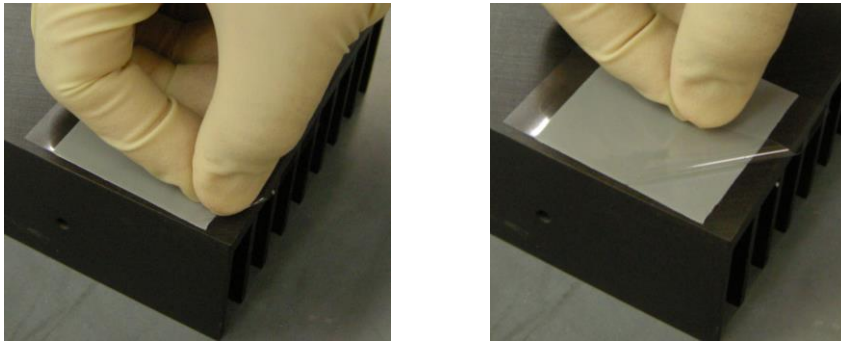


Do NOT attempt to "roll" the part off of the liner

Place the tabbed Tpcm 780 with the Tpcm 780 face down onto the heat sink or desired surface. Start at one edge and force the air out from under the pad by rubbing with moderate finger pressure.



Remove the tab by rolling the tab back creating a 180 degree peel angle. Do NOT pull upwards on the tab. Peeling from a corner for larger parts or parts with shorter tabs may be helpful.

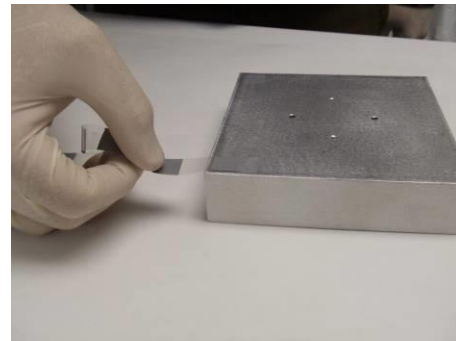
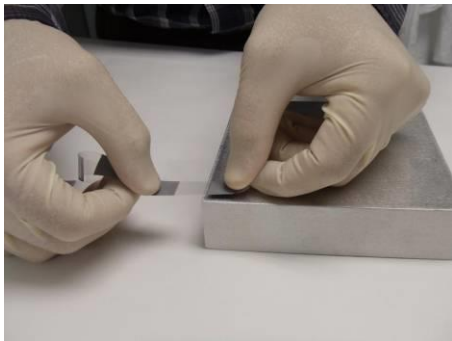


Application Instructions: Non tabbed parts Tpcm 7816 and Tpcm 7825

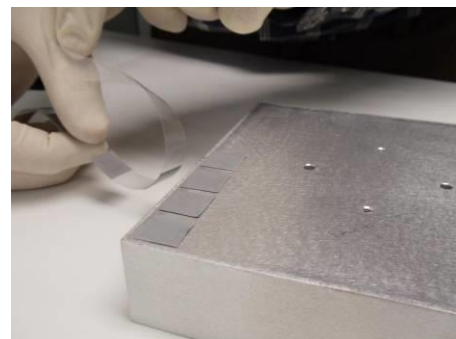
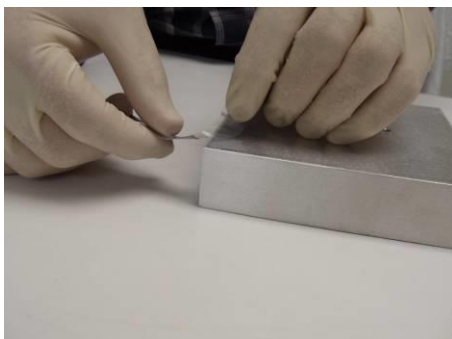
Ensure to maintain a clean environment free of dust and other particulates. Use gloves when handling material.



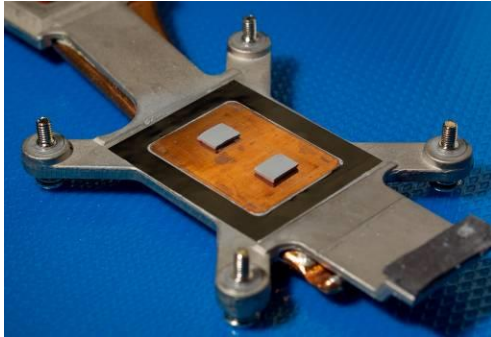
To remove the top liner, peel back at about a 180 degree angle so that the parts stick to the bottom liner. Peeling apart in the air may result in parts sticking to both liners.



Apply a part by grasping the spaces between the parts (do not touch parts to avoid contamination) and pressing the part to the desired surface. Apply mild to moderate finger pressure to the entire part including the middle and the edges.



Peel the liner off of the part at near a 180 degree angle from either side of the part. Do not hold the parts in your hand too long as the parts will absorb heat from your hand making it soft and more difficult to release the liner.



The part size should be calculated based on volume of the material used as Tpcm 780 has a thickness of 25 mils (0.625mm). Therefore, if typically, a part size is 20mm x 20mm x 0.2mm the volume of material is 80 cubic mm. To determine the part size using Tpcm 780, divide the volume by the Tpcm 780 thickness 0.625 mm and then take the square root of the remaining value. In the example, $80 \text{ cubic mm} / 0.625 \text{ mm} = 128 \text{ square mm}$. Take the square root of $128 = 11.31\text{mm}$. Therefore, the new part size is 11.31mm x 11.31 mm x 0.625mm. Tpcm 780 is designed to flow from the center of the component to the edges quickly when heated and under pressure. Flow begins at 40°C.

Achieving Optimal Performance

In most applications under normal operating conditions the heat sink side should reach 60C for at least 3 minutes while under pressure >20 psi. Under these conditions a thin bond line is formed resulting in the optimal thermal performance. If in application these parameters are not meet under normal operating conditions, a burn in operation (per mentioned parameters) may need to be added to ensure optimal performance.

Rework and Clean up

Tpcm 780 allows for removal of the heat spreader/sink at room temperature. For faster clean up, scrape away any large residual material amounts with a plastic spatula or a wooden tool however using a clean dry rag to wipe away residual material also works well. Clean residue with, toluene, acetone Isoparaffinic hydrocarbon – Isopar, Soltrol (trade names) or isopropyl alcohol.