Best Practices

- Prep the PCM (phase change material) panels before use according to one of the described methods provided by VeriCor.
- Ensure all components are clean and free of damage.
- Lay panels flat when turning them solid (to disperse liquid throughout the panel).
- Enable ample air flow around all panel sides.
  - Use spacers (pencils) or racks.
- Freezing/melting times vary depending on number of panels being prepped and equipment being used.
- Assemble using all six panels for maximum hold time.
  - Using less panels does not change the holding temperature, but does decrease the hold time.
- Panels are reusable (10,000+ cycles).
  - End-of-life disposal: Panels are a plastic #2, typically recycled by businesses/communities. PCM is nontoxic and readily biodegradable.
- Use a calibrated data logger or other temperature monitoring device to observe internal temperature.
- Avoid unnecessary opening of the Cool Cube™ after loading payload. Opening of the Cool Cube™ will decrease hold time.
- An infrared temperature thermometer can assist in ensuring the panels reach a safe pack-out temperature (good for finding out the approximate temperature of each panel).
- The farther the ambient temperatures are from the melting point, the quicker PCM will change states (solidify/liquefy).
**Cool Cube™ Refrigerator PCM Panels**

for vaccine, blood, medicine & more.

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**Prep Method A: Freezer/Fridge** Prep to keep product cold

1. **Remove PCM Panels**
2. **Prep PCM Panels**
3. **Assemble PCM Panels**
4. **Pack-Out Product**
5. **Close Bag/Case**

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**Panel Prep**

2.1 Lay panels flat in a freezer until all the PCM (phase change material inside the panel) turns solid. At -15°C/5°F the PCM will solidify in a couple hours.

2.2 Transfer panels into a fridge at least 3 hours before use. Panels may be stored in the fridge until needed for assembly or until the PCM melts.*

* If a fridge maintains 4°C/39°F or below, the PCM within the panels will not melt (melting point is 4.5°C/40°F), which will keep the panel solid indefinitely until pack-out. If the fridge maintains 5°C/41°F or above, periodically check for melting and restart at step 2.1 to ensure optimal performance.

2.3 Shake panels to verify the PCM is solid. If there is liquid, restart at step 2.1 to ensure the longest hold time. Using liquid PCM or panels with a solid/liquid combination decreases the hold time.

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**PCM Panel Shake Test**

<table>
<thead>
<tr>
<th>Fridge Temp</th>
<th>PCM Physics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colder</td>
<td>Solid</td>
</tr>
<tr>
<td>3°C (37.4°F)</td>
<td>Solid/Liquid Combination</td>
</tr>
<tr>
<td>6°C (42.8°F)</td>
<td>Liquid</td>
</tr>
<tr>
<td>Warmer</td>
<td>Solidifying/Melting Pt.</td>
</tr>
</tbody>
</table>

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**ISTA 7D Thermal Performance Study**

<table>
<thead>
<tr>
<th>Lab-Qualified Hold Times When Starting with Solid PCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualified Temps:</td>
</tr>
<tr>
<td>Cool Cube™ 03</td>
</tr>
<tr>
<td>Cool Cube™ 08</td>
</tr>
<tr>
<td>Cool Cube™ 28</td>
</tr>
<tr>
<td>Cool Cube™ 96</td>
</tr>
</tbody>
</table>

Times listed are based on lab validated, 24-hour cycles of a summer profile (hot ambient temperatures) without the additional thermal mass of a payload, which if conditioned properly, will improve hold times. Actual performance times may vary.

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For Technical Support Call (608) 526-6901