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).

Various methods based on type of panel, equipment available & purpose.
Panel Prep

2.1 Lay panels flat in a refrigerator for a minimum of 24 hours before use.

2.2 Shake panels to check the state of the PCM (phase change material inside the panel).
   - If liquid... panel is at the fridge temp but above 5°C; anticipate shorter hold times.
   - If solid... panel is at the fridge temp but below 4°C; ideal for maximum hold times.
   - If solid/liquid combination... panel is at the fridge temp of 4-5°C; monitor time/temp.

In a refrigerator that maintains 4°C or below, the PCM will be solid (ideal for keeping product cold in warm/hot conditions). In a refrigerator that maintains 5°C or above, the PCM will be liquid. Although the PCM is liquid, the panel is at the temperature of the storage environment after 3 hours (i.e., stored in a 6°C fridge, the panels are at 6°C). Assembling the Cool Cube™ with liquid PCM panels (additional thermal mass) will help keep the product at its temperature, just for a shorter amount of time. Monitor Cool Cube™ temperature closely.

Prep Method B: Fridge ONLY Prep to keep product cold

This prep is for when the Cool Cube™ will be used for shorter durations.

ISTA 7D Thermal Performance Study

<table>
<thead>
<tr>
<th>PCM Panel Shake Test</th>
<th>PCM Panel</th>
<th>ISTA 7D Thermal Performance Study</th>
<th>Lab-Qualified Hold Times When Starting with Solid PCM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fridge Temp</td>
<td>PCM Physics</td>
<td>Qualified Temps: 2-8°C</td>
</tr>
<tr>
<td>Colder</td>
<td>3°C (37.4°F)</td>
<td></td>
<td>65 hrs</td>
</tr>
<tr>
<td>Solid</td>
<td>Solid/Liquid Combination</td>
<td>76 hrs</td>
<td>53 hrs</td>
</tr>
<tr>
<td>Solid</td>
<td>Liquid</td>
<td>103 hrs</td>
<td>68 hrs</td>
</tr>
<tr>
<td></td>
<td>4.5°C (41.7°F)</td>
<td>Solidifying/Melting Pt.</td>
<td>126 hrs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>