Carbice Reliable cooling expertise.™

Carbice® Ice Pad: Installation & Thermal Activation Checklist

The Carbice Ice Pad is designed for long-term reliability, delivering thermal performance that improves with use instead of degrading over time. Unlike traditional thermal interface materials (TIMs), it requires a short break-in period to fully settle between the CPU and heatsink before reaching optimal performance. Because of this, standard thermal paste tests that measure results immediately after installation may not reflect the Ice Pad's long-term performance advantages.

A. Surface Preparation

1. Ensure CPU and heat sink contact surfaces are clean and free of contaminants.
2. Do not place any objects (e.g., thermocouples) within interface regions.

B. Pad Installation

1. Remove one liner. Apply pad directly to the center of the CPU.
2. Ensure pad is flat and there is no bending or wrinkling.
3. Remove second liner. Install cooler immediately.
4. Follow proper cooler assembly instructions.

C. Automatic Thermal Activation

As your system heats up and cools down during normal use or game play, the carbon nanotube pad naturally settles into the CPU and heat sink surfaces over time. This creates a stronger, more reliable thermal connection that maintains performance for years without degrading.

D. Manual Thermal Activation

You can also utilize benchmarking software to achieve accelerated thermal activation manually if you are testing your system. See below for recommended procedures to emulate the effects of long-term cycling:

1. **Apply load to the CPU to maintain a TDie temperature of at least 85°C for 5 minutes.**
   - Fan speeds can be lowered to 30% if needed to maintain CPU temperatures above 85°C.
2. **Cycle the CPU by idling at or under 45°C for 3 minutes or more.**
3. **Repeat steps 1 & 2 at minimum 5-10 times for the best results.**
   - Using this type of cycling, you should see a first temperature reduction due to the polymer reflow within the first 5-10 cycles. From this point on, temperatures should further improve due to the carbon nanotubes wicking into microcavities of the contact surfaces. This should typically become measurable after 200-400 cycles.
   - The pad will typically reach a steady state after 2000-3000 cycles and then maintain this performance level. Internal validation has shown performance stability for more than 100,000 cycles.

Recommended free software:

- HWInfo - Use to monitor your CPU temperature & power.
- Fan Control - Use to monitor & control fan speeds and curves.
- Cinebench 24 - Run the CPU (Multi-core) benchmark test.
- OCCT* - Run the CPU Stability test using the Normal/Steady setting or switch to the Extreme/Steady stress test to deliver 100% power to the chip for higher CPU temperatures.

**OCCT is an extreme CPU benchmarking test that pushes the CPU power beyond any typical gaming benchmark; and therefore, could induce CPU throttling before the product fully activates.*

E. Evaluating Gaming performance

- Do not evaluate performance until activation steps have been completed.
- If applicable, reset fans back to the default settings.
- Continue until CPU Tdie temperature reaches a stable steady-state value.
- Evaluate CPU benchmarks using Cinebench 24.

Troubleshooting

If you experience lower than expected CPU benchmarks or you did not notice any initial temperature improvement, try the following:

- Confirm Tdie temperature target and dwell time of 30 minutes was achieved.
- Make sure fans are all operating properly and installed correctly to deliver optimal air flow.
- Verify cooler mounting instructions (contact + torque) were followed.
- Further reduce cooling and continue operation before re-evaluating performance.

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