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- > [IC Diamond](#) /
- > [IC Diamond 24 Carat 4.8 Gram Thermal Compound User Manual](#)

IC Diamond IC Diamond 24 Carat

IC Diamond 24 Carat Thermal Compound User Manual

Model: IC Diamond 24 Carat | Brand: IC Diamond

1. INTRODUCTION

This user manual provides comprehensive instructions for the proper application and maintenance of IC Diamond 24 Carat 4.8 Gram Thermal Compound. Designed for superior thermal performance and reliability, this compound is essential for efficient heat transfer in electronic components such as CPUs, GPUs, and other integrated circuits.

IC Diamond thermal compound is engineered with 92% purified synthetic micronized diamond, a natural thermal superconductor. Its unique formulation ensures high particle density and resistance to pump-out or bake-out, providing long-lasting performance.

2. PRODUCT OVERVIEW



Figure 2.1: IC Diamond 24 Carat Thermal Compound in its retail packaging.



Figure 2.2: The IC Diamond 24 Carat thermal compound syringe.

IC Diamond 24 Carat Thermal Compound is an electronics-grade OEM thermal compound designed for critical heat transfer applications. Key features include:

- **Superior Thermal Performance:** Engineered to meet OEM specifications for maximum performance and durability.
- **High Particle Purity:** Contains 92% purified synthetic micronized diamond, a natural thermal superconductor with a conductivity of 2,000-2,500 W/mK.
- **Enhanced Reliability:** High/tight particle density seals in liquids and retards fluid loss, lasting 3 to 4 times longer than typical retail pastes.
- **Non-Capacitive and Electrically Non-Conductive:** Safe for use in electronic assemblies without risk of short circuits.
- **Versatile Application:** Suitable for CPUs, GPUs, LED lighting, IC packaging, and battery thermal management.

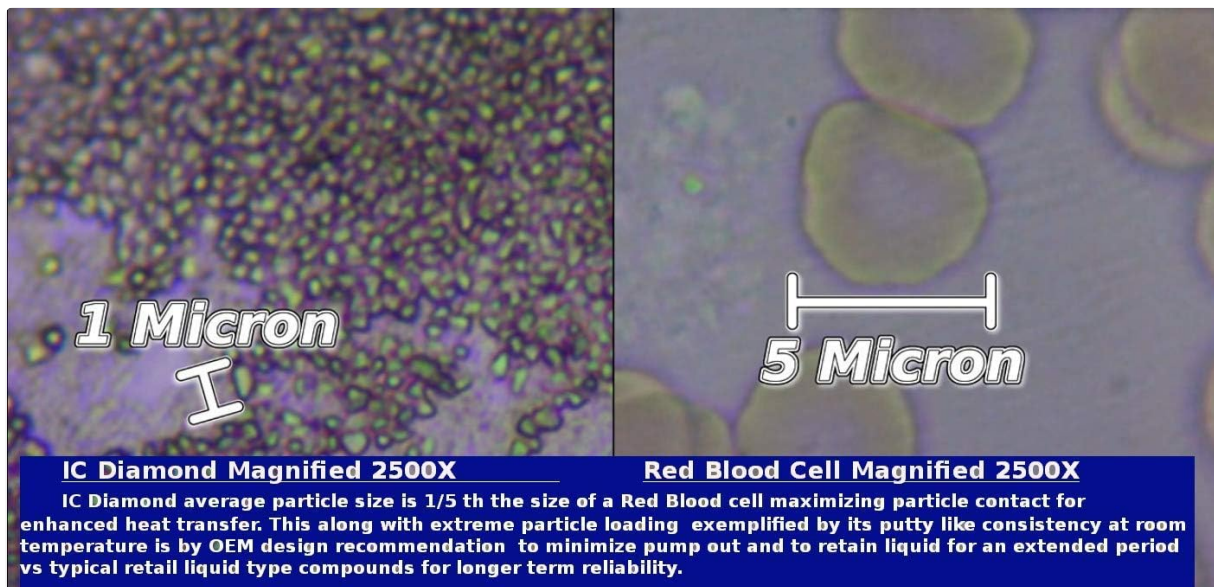


Figure 2.3: Microscopic view illustrating IC Diamond particle size (approx. 1 micron) compared to red blood cells (approx. 5 microns), highlighting its fine consistency for optimal contact.

The average particle size of IC Diamond is 1/5th the size of a Red Blood Cell, maximizing particle contact for enhanced heat transfer. This, combined with extreme particle loading, results in a putty-like consistency at room temperature, designed to minimize pump-out and retain liquid for extended reliability.

3. SAFETY INFORMATION

- IC Diamond thermal compound is **electrically non-conductive**, reducing the risk of short circuits if accidentally applied outside the intended area.
- While non-conductive, the compound contains actual diamond particles (0.4 micron average size) which are abrasive. **Do not allow the applicator tip or any hard object with compound on it to touch the CPU/GPU die or Integrated Heat Spreader (IHS) surface.** This can cause scratches.
- Avoid contact with eyes and skin. In case of contact, rinse thoroughly with water.
- Keep out of reach of children and pets.
- Store in a cool, dry place.

4. SETUP AND APPLICATION

Proper application is critical for optimal performance. Follow these steps carefully:

1. Preparation:

- Ensure the surfaces of the CPU/GPU die and the heatsink base are clean and free of any old thermal paste or debris. Use a lint-free cloth and isopropyl alcohol for cleaning.
- Due to its thick consistency, it is recommended to warm the syringe before application. You can place the sealed syringe in warm water (not boiling) for a few minutes or gently warm it in your hand. This will make the paste easier to dispense.
- If the initial amount dispensed is very hard or chalky, discard the first 2-3mm of paste until a more viscous consistency is achieved.

2. Application Method (Pea Size):

- For most CPUs with an Integrated Heat Spreader (IHS), apply a single pea-sized blob (approximately 5.0mm to 5.5mm in diameter) of the compound directly onto the center of the CPU's IHS.

- For bare dies (e.g., some GPUs or laptop CPUs), you may apply a very thin, almost hazy layer across the entire die surface first using a gloved finger (ensure no hard objects touch the die), then apply the pea-sized blob on top.
- **CRITICAL:** Once the paste is applied, **NEVER touch the applicator tip or any hard object to the die or IHS surface.** Doing so will cause the diamond particles on the tip to scratch the surface.

3. Heatsink Installation:

- Carefully place the heatsink directly onto the CPU/GPU, ensuring proper alignment.
- Apply even, firm pressure as you secure the heatsink. The compound is designed to spread under mounting pressure. Do not twist or slide the heatsink excessively, as this can introduce air pockets.
- Tighten the heatsink mounting screws firmly and evenly, typically in a diagonal pattern, until fully seated.

4. Cure Time:

- IC Diamond thermal compound has zero cure time, meaning it performs well immediately. However, optimal thermal performance is typically achieved after approximately 24 hours of operation, allowing the compound to fully settle and spread under heat and pressure.
- After initial use and once the system has reached operating temperature, it is recommended to shut down the system and re-tighten the heatsink screws slightly to ensure maximum mounting pressure as the paste settles.



Figure 4.1: Back of the IC Diamond packaging, showing manufacturer's notes on application.

Note from manufacturer's packaging: "IC Diamond™ is composed mostly of diamond powder (92%), and as such is quite thick. This high viscosity is by design for increased reliability and it is what makes our application procedure different. Proper application is critical to optimum performance. Squeeze onto the center of the CPU (where the heat is most concentrated) an amount of IC Diamond™ compound about the size of a pea (5.0mm to 5.5mm). Place the heat sink on the CPU and press it down to spread IC Diamond™ over the CPU's surface. (Do not remove the sink to check the spread as it will introduce air into the joint). Clamp the heat sink and power up the PC."

5. OPERATING CONSIDERATIONS

Once applied, IC Diamond thermal compound operates passively, facilitating heat transfer from your component to the heatsink. Its robust formulation is designed to resist pump-out and bake-out, ensuring stable thermal performance over extended periods without frequent re-application.

Monitor your system's temperatures using appropriate software to ensure optimal cooling. Significant temperature increases over time may indicate a need for re-application or inspection of your cooling solution.

6. MAINTENANCE

IC Diamond thermal compound is known for its long-term stability and reliability, often lasting 3 to 4 times longer than typical retail thermal pastes. Regular maintenance involves:

- **Periodic Temperature Monitoring:** Keep an eye on your CPU/GPU temperatures. If you notice a consistent increase in temperatures under load, it might be time to inspect and potentially re-apply the thermal paste.
- **Re-application:** When re-applying, always clean off the old thermal compound completely from both the component and the heatsink using isopropyl alcohol and a lint-free cloth before applying new paste.
- **Storage:** Store the unused portion of the syringe in a cool, dry place to maintain its consistency and shelf life.

7. TROUBLESHOOTING

Problem	Possible Cause	Solution
High CPU/GPU Temperatures after application	<ul style="list-style-type: none"> • Insufficient or excessive paste applied. • Uneven spread due to improper mounting pressure. • Air pockets introduced during heatsink installation. • Heatsink not properly seated or tightened. 	<ul style="list-style-type: none"> • Re-clean surfaces and re-apply paste following the "pea size" method (Section 4). • Ensure heatsink is tightened evenly and firmly. • Verify heatsink compatibility and proper installation.
Scratches on CPU/GPU die or IHS	Applicator tip or hard object with compound touched the surface during application.	This is typically cosmetic on the IHS and does not affect performance unless very deep. For bare dies, this can be more critical. Always avoid touching the surface with anything but the paste itself.
Paste is too thick/hard to dispense	Compound is cold or has settled.	Warm the syringe in warm water or by holding it in your hand for a few minutes before use. Discard the first few millimeters if it's chalky.

8. SPECIFICATIONS

Attribute	Value
Brand	IC Diamond
Model Number	IC Diamond 24 Carat
Composition	92% Purified Synthetic Micronized Diamond
Thermal Conductivity	2,000-2,500 W/mK
Electrical Conductivity	Non-conductive

Attribute	Value
Capacitive	Non-capacitive
Weight	4.8 Grams (0.32 ounces)
Manufacturer	INNOVATIVE COOLING
UPC	013964286519
Package Dimensions	5.91 x 1.65 x 1.54 inches

9. WARRANTY AND SUPPORT

Specific warranty details for IC Diamond thermal compound are not provided in this manual. For warranty inquiries or technical support, please contact the manufacturer, INNOVATIVE COOLING, directly through their official channels or visit the IC Diamond Store on Amazon.

For additional information and resources, you may visit the [IC Diamond Store](#).

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This manual is for informational purposes only. Specifications are subject to change without notice.