



Céramique™

Premium High-Density Thermal Compound

Application Instructions

NOTE: The instructions for Ceramique are different than for other Arctic Silver products. please read the instructions thoroughly before using the product.

Important Precautions

Not for ingestion.

Keep the compound out of the reach of children and pets.

Follow the instructions at the bottom of this page to clean Ceramique off of yourself, your CPU, and other hardware.

Caution:

Never turn on a computer without a heatsink properly mounted on the CPU with a thermal interface material between the CPU core and the heatsink. A modern high-performance CPU can be permanently damaged in less than 5 seconds without a heatsink.

Caution:

Ceramique is a grease, not an adhesive. It cannot be used to glue a heatsink to a chip. To permanently glue a heatsink to a chip that does not have any other attachment method, please use Arctic Silver Adhesive or Arctic Alumina Adhesive.

Important Reminder:

Due to the unique shapes and sizes of the particles in Ceramique, it will take a minimum of 25 hours and several thermal cycles to achieve maximum particle to particle thermal conduction and for the heatsink to CPU interface to reach maximum conductivity. (This period will be longer in a system without a fan on the heatsink.) On systems measuring actual internal core temperatures via the CPU's internal diode, the measured temperature will often drop slightly over this "break-in" period. This break-in will occur during the normal use of the computer as long as the computer is turned off from time to time and the interface is allowed to cool to room temperature. Once the break-in is complete, the computer can be left on if desired.

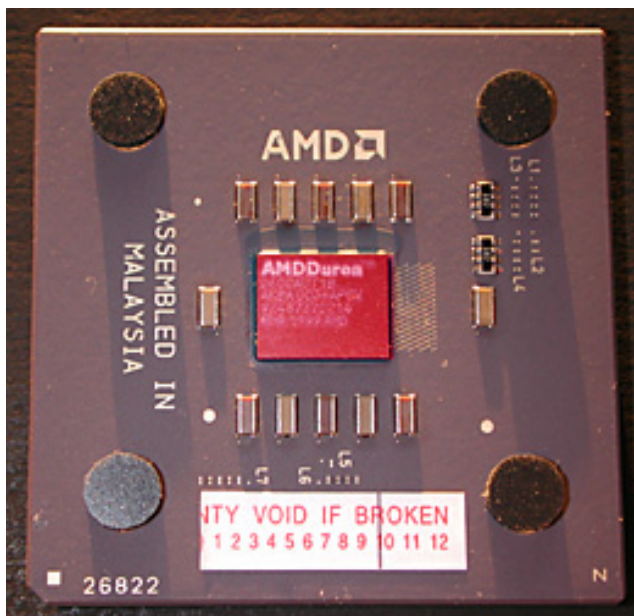
Application Instructions

1. **ONLY Ceramique should be between the processor core and the heatsink.** Remove any thermal pads or other interface material from the heatsink before applying the Ceramique. Thermal pads can be scraped off with a plastic tool that will not scratch the bottom then the remnants can be removed with a xylene based cleaner, (Goof Off and some carburetor cleaners) acetone, mineral spirits, or high-purity isopropyl alcohol.

Never use any oil or petroleum based cleaners (WD-40, oil based grease removers and many automotive degreasers) on the base of a heatsink. If you use a citrus based cleaner, you must use ArctiClean 2 Thermal Surface Purifier to remove the citrus oil before applying new thermal material, Any oil remaining on the heatsink will fill in the microscopic valleys in the metal and significantly reduce the effectiveness of any subsequently applied thermal compound.

If your heatsink has a thermal 'pad' mounted on it, this pad must be removed before using Ceramique. Thermal pads are made with paraffin wax that melts once it gets hot. When it melts, it will fill in the microscopic valleys in the heatsink with wax. To minimize the permanent contamination of the mounting surface with wax, the thermal pad should be removed before it is used and melted. Never use heat or hot water to remove the pad, the heat will melt the wax into the heatsink.

2. On the CPU, Ceramique should only be applied to the top of the core. The core is the raised rectangle in the center of the CPU and is highlighted in red in the photos below of AMD and Intel CPUs.





Note that on the Intel P4, the compound is applied to the integral heat spreader.
(The metal cap that covers the actual CPU core.)

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3. Clean the mating surfaces completely with ArctiClean 2 Thermal Surface Purifier or a low residual solvent (High-purity isopropyl alcohol or acetone will work) and a LINT FREE cloth. (i. e. lens cleaning cloth) If another thermal compound has previously been applied to the heatsink, the mounting surfaces should be thoroughly scrubbed and cleaned with ArctiClean 1 Thermal Material Remover followed by ArctiClean 2 Thermal Surface Purifier. If you do not have ArctiClean, a xylene based cleaner, (Goof Off and some carburetor cleaners) acetone, mineral spirits, or 99% pure isopropyl alcohol can be used. It is important to keep the surfaces free of foreign materials and NOT to touch the surfaces (a hair, piece of lint, and even dead skin cells can significantly affect the thermal interfaces performance, especially on modern small core CPUs as the surface area is already severely limited). In addition, oils from your fingers can adversely affect the performance by preventing the micronized silver fill from directly contacting the metal surface. (Fingerprints can be as thick as 0.005")

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4. Determine what area on the base of the heatsink will contact the CPU core once the heatsink is mounted. Squeeze enough Ceramique onto the center of this area to create a small mound.

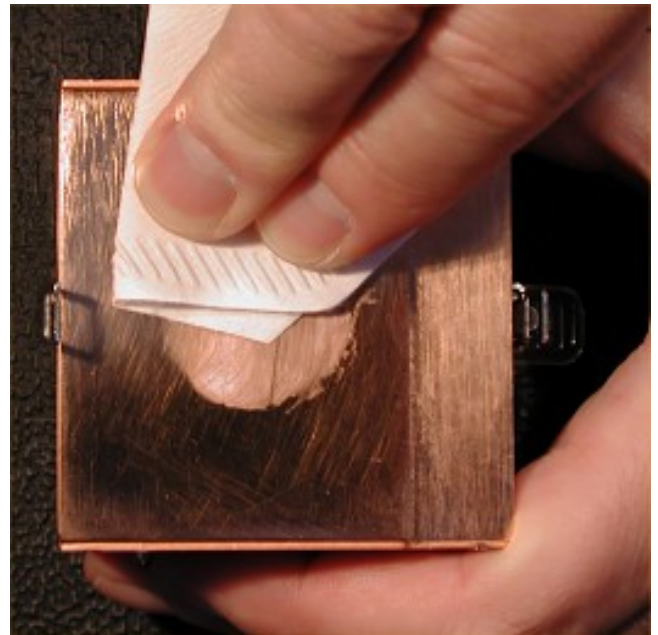


5. Put a finger into a plastic bag and thoroughly rub the compound into the base of the heatsink using both clockwise and counter-clockwise circular motion. This will ensure optimum filling of the microscopic valleys in the metal where the CPU core will contact the heatsink.

DO NOT use your bare finger to apply or smooth the compound (skin cells, and oils again)



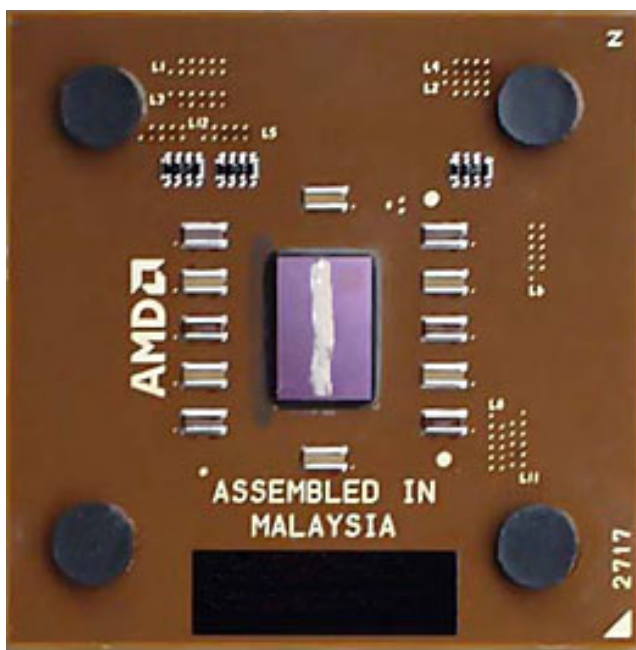
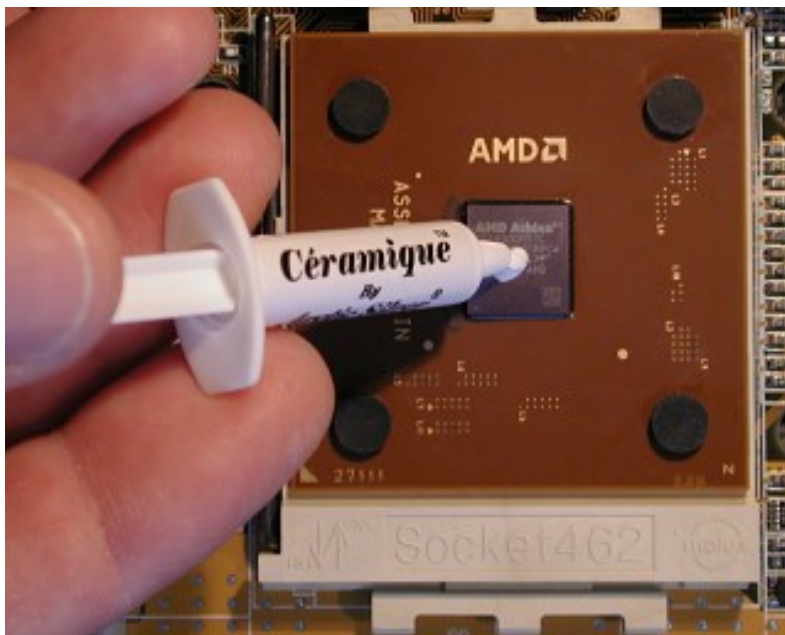
6. Re-clean the heatsink surface with a LINT FREE cloth like a lens tissue or a coffee filter. Do not use any solvent or fluid. You may notice that the base of the heatsink is slightly discolored even after all the compound would seem to have been removed. That is the Ceramique filling the microscopic valleys.



If you have a small core CPU like an Intel P3 or AMD, continue on to step 7.

If you have a Intel P4 type CPU with a large metal heat spreader, skip steps 7 and 8 and go to step 9.

7. On a small core CPU like an Intel P3 or AMD, put a small amount of Ceramique onto the center of the CPU core as shown in the photo. On CPUs with rectangular cores, a thin line of Ceramique can be applied down the center of the core as shown in the photo below.



Only apply the thermal compound to the top of the actual CPU core. (Also known as the slug or die.) In the photos above, the core is the small raised rectangle in the middle of each AMD processor.

Only a very small amount of Ceramique is needed on P3 or AMD CPU cores, about the size of an uncooked grain of short-grain white rice or 1/2 of a BB.

- 8. RECHECK** to make sure no foreign contaminants are present on either the bottom of the heatsink or the top of the CPU core. Mount the heatsink on the CPU in the proper orientation per the heatsink's instructions. Verify that the pressure point on the clip is directly above the CPU core.

Once the heatsink is properly mounted and the attachment clips are secure, grasp the heatsink and very gently wiggle it slightly clockwise and counterclockwise one time each. (Just one or two degrees or so.)

Leave the heatsink parallel with the CPU and the edge of the motherboard.



If you have a small core CPU like an Intel P3 or AMD, you are done mounting the heatsink. Please see the storage and removal sections below.

If you have a Intel P4 type CPU with a large metal heat spreader, continue on to step 9.

- 9.** On an Intel P4 or AMD Athlon64 type CPU with a large metal heat spreader, put a small amount of Ceramique onto the center of the heat spreader as shown in the photo.

Only a small amount of Ceramique is needed.

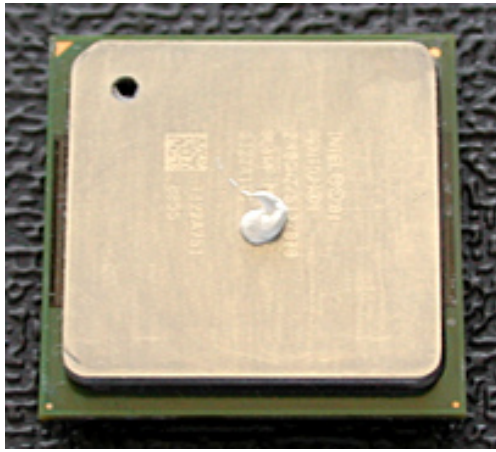
P4:

Slightly less than the size of an uncooked grain of short-grain white rice or 1/2 of a BB.

Athlon64:

About the size of one and a quarter uncooked grains of short-grain white rice or 2/3 of a BB.





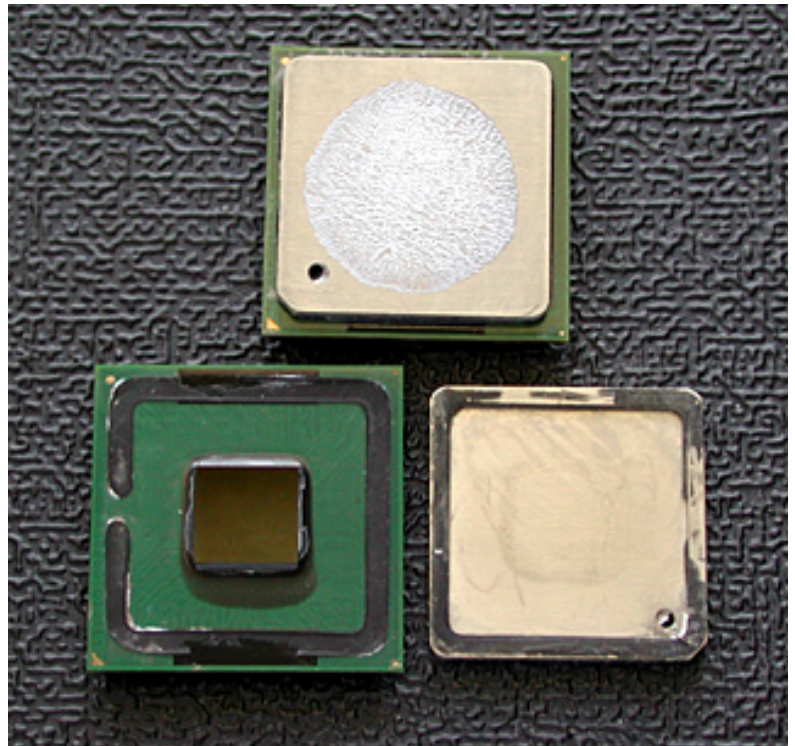
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- 10. RECHECK** to make sure no foreign contaminants are present on either the bottom of the heatsink or the top of the CPU core. Mount the heatsink on the CPU per the heatsink's instructions. Be sure to lower the heatsink straight down onto the CPU.

Once the heatsink is properly mounted, grasp the heatsink and very gently wiggle it slightly clockwise and counterclockwise one time each if possible. (Just one or two degrees or so.)

Please note that some heatsinks cannot be wiggled once mounted.

Our testing has shown that this method minimizes the possibility of air bubbles and voids in the thermal interface between the heat spreader and the heatsink. Since the vast majority of the heat from the core travels directly through the heat spreader, it is more important to have a good interface directly above the actual CPU core than it is to have the heat spreader covered with compound from corner to corner.

The photo to the right shows how the pressure from the heatsink base spreads the compound and also shows a P4 with the heat spreader removed to show the location of the actual CPU core that is the source of the heat.



Storage

To keep the compound fresh for future applications, always replace the cap on the syringe after each use. The syringe should be stored tip down so that any slight separation that occurs over a long period of time will be at the back end of the syringe with fully suspended particles below that.

Removal Instructions (From Hardware)

1. Ceramique can easily be removed from hardware using the proper cleaners and tools. For general clean-up, a cloth or paper towel will work well. Intricate cleaning can be accomplished with Q-tip swabs. An old toothbrush can often get the compound out of crevices that other tools cannot reach.

The recommended cleaners are:

CPU Core:

ArctiClean 1 Thermal Material Remover followed by ArctiClean 2 Thermal Surface Purifier. If you do not have ArctiClean, use high-purity isopropyl alcohol or acetone and a bit of careful rubbing.

Do not use nail polish remover as it contains fragrance oils and other contaminants. (If you use acetone, do a final cleaning with isopropyl alcohol.)

Heatsink:

ArctiClean 1 Thermal Material Remover followed by ArctiClean 2 Thermal Surface Purifier. If you do not have ArctiClean, use xylene based products (Goof Off, some carburetor cleaners and many brake cleaners.), mineral spirits or high-purity isopropyl alcohol.

Remember:

Once you have applied a thermal grease or melted a thermal pad onto a heatsink, it is impossible to remove all of the grease or pad from the microscopic valleys in the heatsink using standard cleaning chemicals and paper or fabric towels. Any subsequent thermal material will be applied over the remnants of the original material.

Never use any oil or petroleum based cleaners (WD-40, oil based grease removers and many automotive degreasers) on the base of a heatsink. If you use a citrus based cleaner, you must use ArctiClean 2 Thermal Surface Purifier to remove the citrus oil before applying new thermal material, Any oil remaining on the heatsink will fill in the microscopic valleys in the metal and significantly reduce the effectiveness of any subsequently applied thermal compound.

CPU Substrate:

In many cases, Ceramique can simply be wiped off of the substrate with a dry paper towel. If any additional cleaning is needed, use any of the following cleaners.

ArctiClean

Isopropyl alcohol.

Acetone.

Any dish detergent (Dawn, Lux, Palmolive, Etc.)

Do not use soap for an automatic dishwasher to clean a CPU.

WD-40, citrus based grease removers.

Xylene based products (Goof Off, some carburetor cleaners and many brake cleaners)

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2. If you use any of the suggested products other than ArctiClean to remove Ceramique from the CPU substrate or heatsink base, always do a final cleaning with high-purity isopropyl alcohol to remove any residue from the cleaner.
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Removal Instructions (From You)

1. Wash your hands with any dish washing detergent (Dawn, Lux, Palmolive, Etc.) rather than hand soap.
(Do not use soap for an automatic dishwasher.)
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