



Overheating Graphics Card Thermal Paste Replacement

This guide will walk you through the steps of safely and effectively replacing the thermal paste of an overheating graphics card.

Written By: Chris Imperiale



INTRODUCTION

Graphics cards are a component of a computer to accelerate video display capabilities, particularly when it comes to playing video games. Like all components, they require heat management to operate normally. During normal operation, cool air is drawn in from the surrounding environment into the heat sink, which is designed to counter-act the generation of heat from the graphics processor. This cool air is converted to hot air, and expelled out of the back of your machine. To assist in this process, a thermally conductive paste (called thermal paste) is applied between the surface of the graphics chip and the copper heat sink. However, over time, this paste will lose its ability to conduct heat, which can cause premature failure of your graphics card.

This guide will teach you to safely remove your graphics card's heat sink from the circuit board, so you can replace the thermal paste and keep your machine running. For the sake of this guide, an NVIDIA GeForce GTX 660 by EVGA is used.

TOOLS:

- [Phillips #00 Screwdriver](#) (1)
 - [91% Isopropyl Alcohol](#) (1)
 - [Cotton Swabs](#) (1)
 - [Thermal Paste](#) (1)
-

Step 1 — Thermal Paste



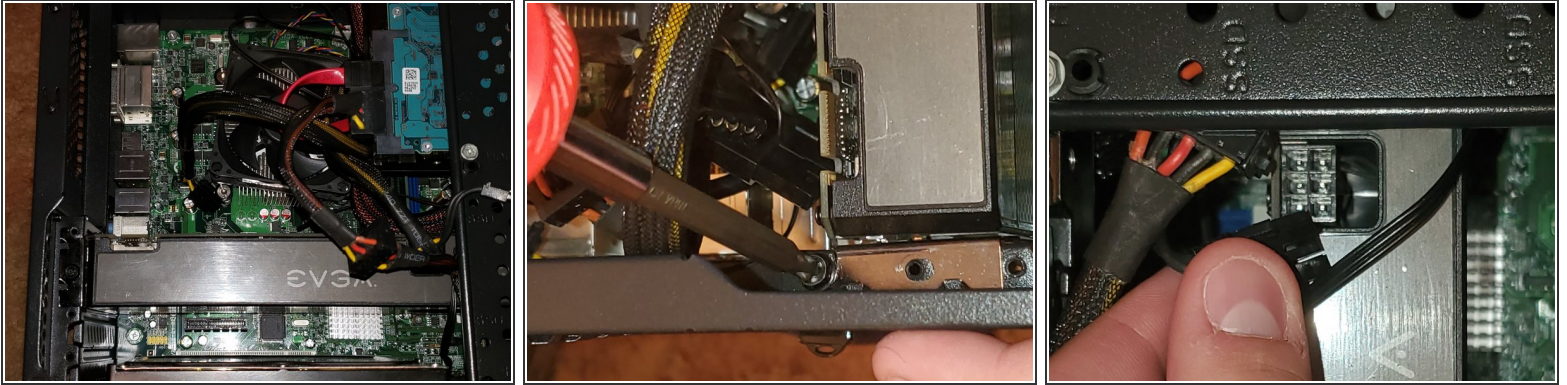
⚠ Be sure to power your computer off, and disconnect the power cable, as well as ground yourself with either a piece of metal or an anti-static wrist strap, to prevent static electricity from damaging your machine.

⚠ Verify that your thermal paste is not electrically conductive before proceeding. Typically, this will only apply to liquid metal-based thermal compounds.

- Using the thumbscrews on the rear of the case, unscrew them and remove the side panel to reveal the inside of the computer.

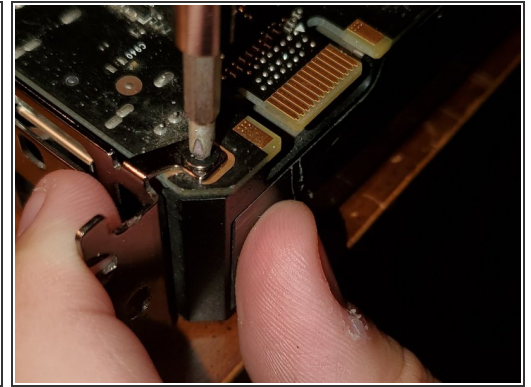
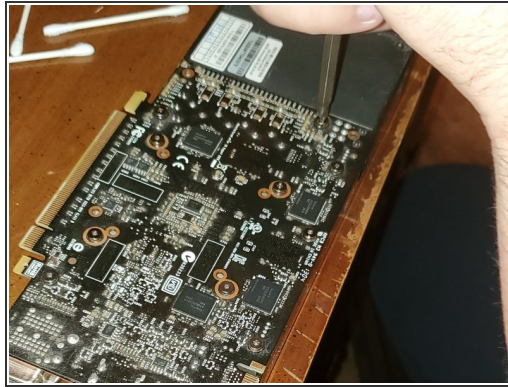
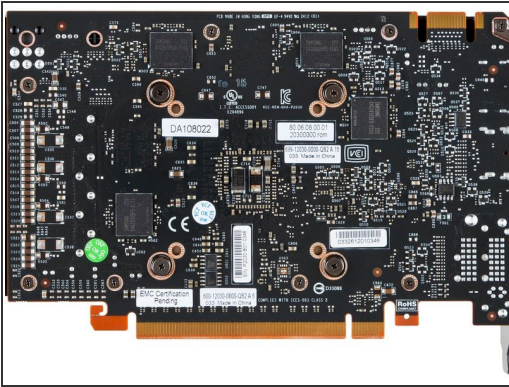
i It is a good rule of thumb to press the power button, even after disconnecting the power cable. This will discharge any remaining energy stored in your system, which will further reduce the risk of static electricity damage.

Step 2



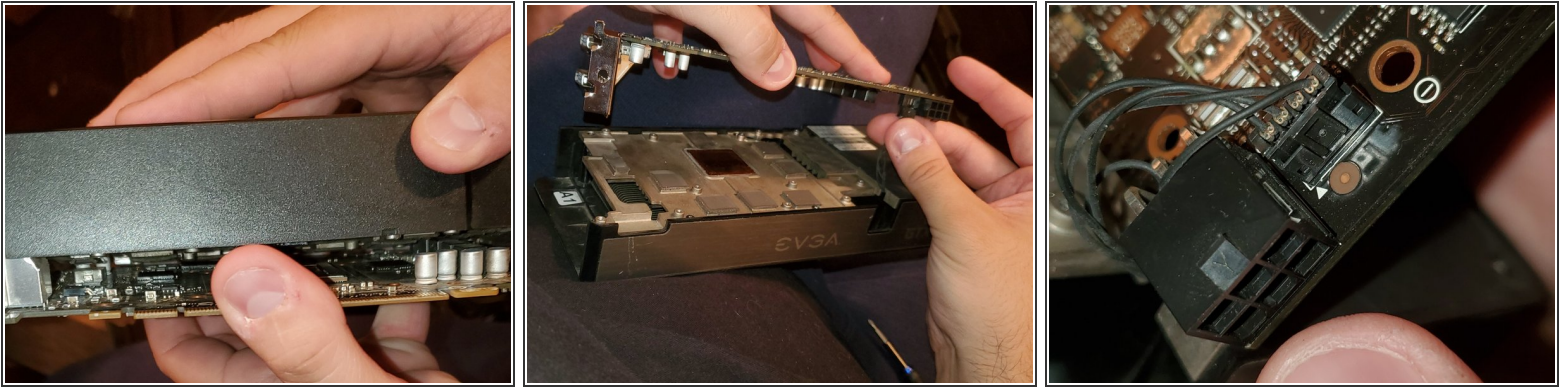
- Using a Philips-head screwdriver, unscrew the two screws holding the video card in place.
- Remove the 6-pin PCIe power connector. This is a cable that supplies your GPU with extra power from your power supply.
- ⓘ Underneath the heatsink, there is an additional 4-pin connector next to the 6-pin PCIe connector. This is for the fan; you will need to disconnect this when you separate the heat sink from the Printed Circuit Board (PCB).
- On the motherboard, press the tab on the side of the PCI Express slot (the port the GPU is connected to) and pull on the graphics card to remove it from your system.

Step 3



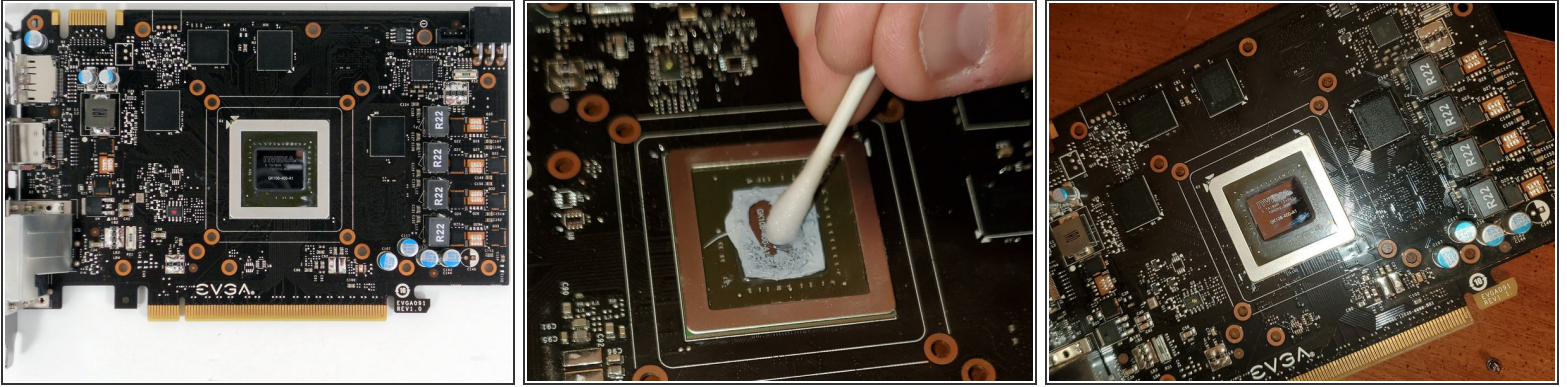
- Unscrew all screws on the bottom of the graphics card. This will allow you to remove the heatsink from the graphics card.
- ⓘ You may have a screw near the rear of the card, where the mounting bracket is. Unscrew this if you cannot remove the heat sink after unscrewing all screws.
- ⓘ You may have an extension at the end of the PCB housing an extra cooling fan. You do not need to remove these screws; only concern yourself with the screws on the PCB itself that hold the GPU and heat sink together.

Step 4



- Gently pull on the heatsink to remove the heatsink from the graphics card.
- ⚠ Do not pull it too hard, as you will need to remove the cable from the heat sink's fan to separate the two pieces completely.
- Next to where the 6-pin power connector is, is the fan connector. Handling the heat sink's fan cable from the sides, gently remove the cable from the slot.
- ⚠ If you pull the fan cable from the cable itself, you will likely destroy the fan cable.
- ★ When reassembling, do not make any adjustments when seating the cooler to the PCB, as this can affect the seal of the thermal paste, and reduce its effectiveness.

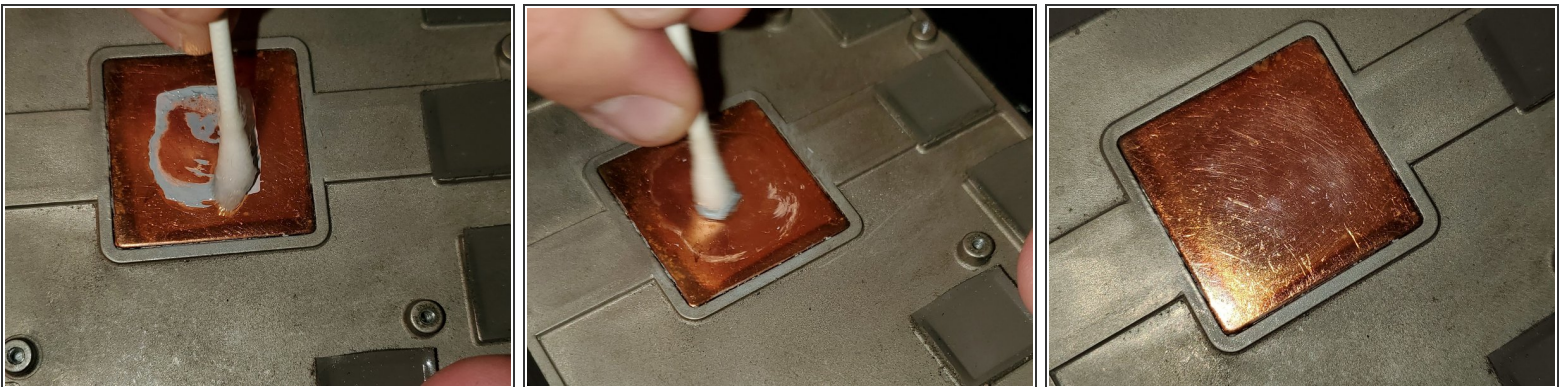
Step 5



- Using a cotton swab and 91% Isopropyl Alcohol, remove the existing thermal paste by swabbing in a circular pattern.

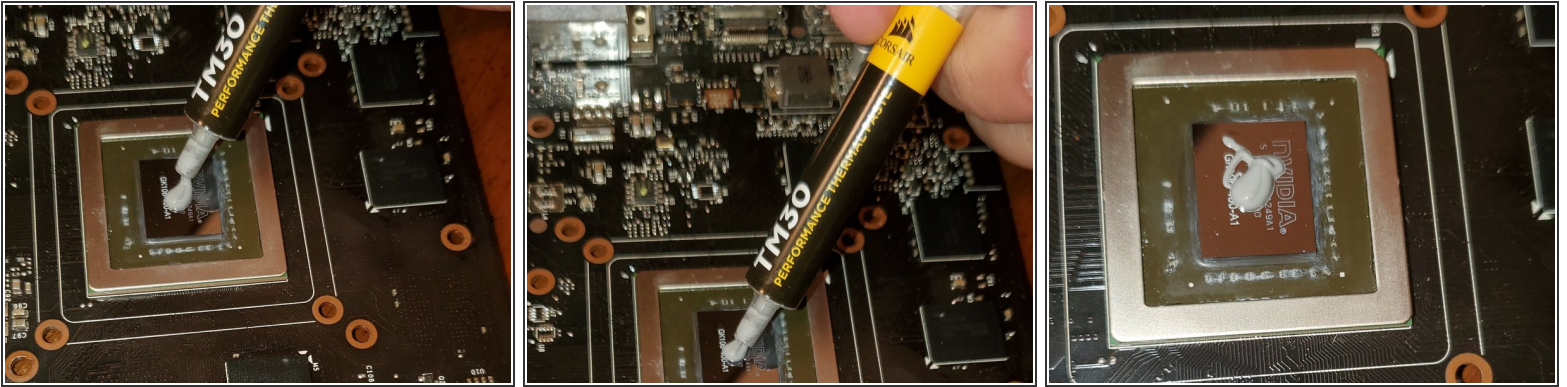
⚠ Do not apply any excessive pressure; you may scratch the graphics chip and reduce the effectiveness of your new thermal paste.

Step 6



- Repeat that process on the heatsink. This will allow for even distribution of the thermal paste to fill properly.

Step 7



- Using your new thermal paste, apply a pea-sized amount of thermal paste to the graphics chip.

⚠ Do not apply too much thermal paste; it will reduce the effectiveness of the paste, and generally be very messy.

ℹ Do not worry about spreading the paste across the graphics chip; the force of the heat sink pressing on the paste on the graphics chip will do that for you.

To reassemble your device, begin with Step 4, then work backwards from there.

Be sure to reconnect the fan to the graphics card before you begin to screw the heat sink down.

Be sure to tighten the screws in a star pattern. This will evenly distribute the force between the heat sink and graphics card, making the thermal paste work better.