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| |  | | --- | | Desktop |  |  | | --- | | **How to apply Thermal Interface Material (TIM)** | |

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| http://www.intel.com/sites/templates/pix/circuit388.gif |
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| The Thermal Interface Material (TIM) is used to provide efficient thermal exchange between the processor Integrated Heat Spreader (IHS) and the fan-heatsink. Proper installation of the thermal interface material is crucial to the success of the thermal solution. Failure to properly install the thermal interface material could cause the processor to overheat.  Most of the thermal solutions shipped with the Boxed Intel® Desktop and Server Processors have the TIM already applied to the bottom of the heatsink in a 3 bar application from the factory as shown below. If this is true in your case, there is no need to apply additional TIM.  **Related Information:** [Processor Installation video for the LGA1156, LGA1155, and LGA1150 sockets](http://www.intel.com/support/processors/sb/cs-030860.htm)  http://www.intel.com/support/processors/sb/img/factorytim300.jpg  Replacement or reinstallation of the processor or heat sink requires replacement of the thermal interface material. Application of the thermal interface material to the top of the processor is critical in order to insure effective heat transfer from the processor to the thermal solution. Failure to apply the thermal interface material could cause the processor to either shut down or operate inefficiently.  http://www.intel.com/support/processors/sb/img/freshtimpack300.jpghttp://www.intel.com/support/processors/sb/img/showpillowpack_resized2.jpg  You can order thermal interface material replacement kits through Intel Customer Support. The Intel part number is G15816-001 for the pillow pack. As an alternative, you can order from retail sites like Newegg\* or other online retailers.  Below are the steps you should follow during the thermal interface material reinstallation process.  **Thermal Interface Material Installation (Thermal Grease TC-1996)**   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | http://www.intel.com/support/processors/sb/img/freshcpu.jpg  http://www.intel.com/support/processors/sb/img/donottouch.jpg | | **Important**: Make sure the processor and heatsink bonding surfaces are free from previously applied thermal interface material and any other debris.  TIM is not reusable and previous Thermal Interface Material should be completely removed.  Do not place a sticker or any other material on top of the processor Integrated Heat Spreader (IHS). Only Thermal Interface Material (TIM) should be used between the processor IHS and the heat sink. Using any other material will degrade the thermal transfer characteristics and could potentially damage the processor (causing the warranty to be voided).  Never touch the thermal interface material as any foreign substances (such as oils from your skin) can reduce the effectiveness of the thermal contact. Thermal grease is very prone to smudging and must not be touched. | | http://www.intel.com/support/processors/sb/img/cs030329_1.jpg | | This photo shows a processor with used TIM that needs to be replaced.  A good general guideline to follow in regard to TIM replacement is to replace it if you are removing the fan-heatsink or processor. | | Step 1 | http://www.intel.com/support/processors/sb/img/image019.jpg | Wipe off previously applied/used TIM on the heatspreader with a soft, dry cloth or tissue. | | http://www.intel.com/support/processors/sb/img/image007.jpg | Be careful not to touch the gold contacts at the bottom of the CPU. | | http://www.intel.com/support/processors/sb/img/installcpu.jpg | Install the processor in the socket. | | Step 2 | http://www.intel.com/support/processors/sb/img/unpacktim.jpg | Once the processor is installed in the socket, it is time to add the TIM.  This part is for adding TIM to the top of the processor.   Remove the syringe from the protective plastic covering. | | Step 3 | |  |  | | --- | --- | | http://www.intel.com/support/processors/sb/img/twistcap.jpg | **Preparing the Syringe** Open the tip of the syringe by twisting off cap. | |  | or | | http://www.intel.com/support/processors/sb/img/cutpillowpack_resized2.jpg | **Preparing the Pillow Pack** Cut the package on the dotted black line. | | http://www.intel.com/support/processors/sb/img/cs030329_2.jpg | **TIM Application**  This picture shows the approximate amount to apply.  Once the processor is operating it will heat up and the TIM will spread across the top of the processor and the bottom of the fan-heatsink. | | | | Step 4 | |  |  | | --- | --- | | http://www.intel.com/support/processors/sb/img/injectcpu.jpg | **Syringe Application** Inject the thermal grease from the syringe to the center of the Integrated Heat Spreader surface. | |  | or | | http://www.intel.com/support/processors/sb/img/applytim_resized.jpg | **Pillow Pack Application** Dispense the thermal interface material from the package to the center of the processor surface.  There will be some residue left in the package after installation. | | | | Step 5 | http://www.intel.com/support/processors/sb/img/installheatsink.jpg | Install the heat sink. | |  |  | | --- | | **Related topics** | | [Installation and integration of LGA1150 socket processors](http://www.intel.com/support/processors/sb/CS-034492.htm) | | [Installation and integration of LGA1155 socket processors](http://www.intel.com/support/processors/sb/CS-032115.htm) | | [Installation and integration of LGA1156 socket processors](http://www.intel.com/support/processors/sb/CS-031280.htm) | | [Installation and integration of LGA2011 socket processors](http://www.intel.com/support/processors/sb/CS-032893.htm) |   **This applies to:**   |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | [Intel® Celeron® Desktop Processor](http://support.intel.com/support/processors/celeron/)  [Intel® Core™ i3 Desktop Processor](http://support.intel.com/support/processors/corei3/)  [Intel® Core™ i5 Desktop Processor](http://support.intel.com/support/processors/corei5/)  [Intel® Core™ i7 Desktop Processor](http://support.intel.com/support/processors/corei7/)  [Intel® Core™ i7 Processor Extreme Edition](http://support.intel.com/support/processors/corei7ee/)  [Intel® Core™2 Duo Desktop Processor](http://support.intel.com/support/processors/core2duo/)  [Intel® Core™2 Extreme Processor](http://support.intel.com/support/processors/core2extreme/) | [Intel® Core™2 Quad Processor](http://support.intel.com/support/processors/core2quad/)  [Intel® Pentium® 4 Processor Extreme Edition](http://support.intel.com/support/processors/pentium4/extreme/)  [Intel® Pentium® 4 Processors](http://support.intel.com/support/processors/pentium4/)  [Intel® Pentium® D Processor](http://support.intel.com/support/processors/pentiumd/)  [Intel® Pentium® Processor Extreme Edition](http://support.intel.com/support/processors/ppee/)  [Intel® Pentium® Processor for Desktop](http://support.intel.com/support/processors/pentiumdualcore/)  [Intel® Xeon® Processor 3000 Sequence](http://support.intel.com/support/processors/xeon3k/) | | |