3M™ Thermally Conductive Interface Pads 5595 and 5595S

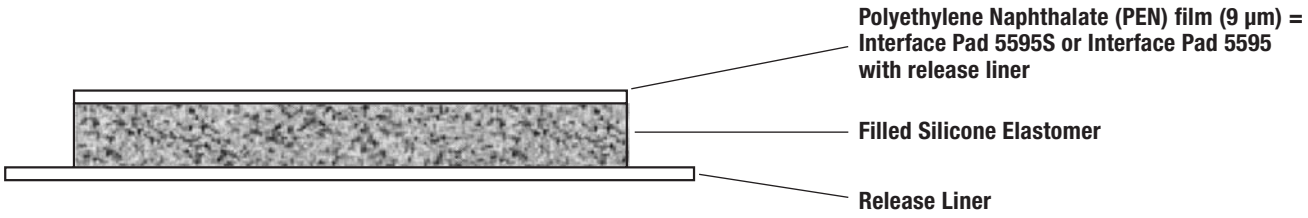
Product Description

3M™ Thermally Conductive Interface Pads 5595 and 5595S are designed to provide a preferential heat-transfer path between heat-generating components and heat sinks, heat spreaders or other cooling devices.

- The specialized silicone chemistry of Interfacel Pads 5595 and 5595S provides for good thermal stability of the base polymer with excellent softness of the thermal pad.
- Interface Pad 5595 offers good thermal conductivity in a soft silicone polymer base.
- Interface Pad 5595S has a permanent PEN film 9 micrometer thick on one side to provide for a non-tacky surface, increased puncture resistance, ease of handling and rework.
- Interface Pads 5595 and 5595S have a tacky feel. The product tack is such that a mechanical means to support the pad in a final assembly is required.

Product Construction

	3M™ Thermally Conductive Interface Pads 5595 and 5595S
Color	Grey
Pad Type	Filled Silicone Polymer
Pad Thickness	0.5 mm, 1.0 mm, 1.5 mm, 2.0 mm (>2 mm thickness available. Please inquire.)
Primary Filler Type	Ceramic
Top Liner / Film Type	Interface Pad 5595 – Silicone Coated Polyester removable Liner / Interface Pad 5595S – 9 µm PEN Film
Base Liner Thickness	Base Liner 3 mils (75 µm)



Typical Physical Properties and Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Property	Method	Value
Product Number*	3M™ Thermally Conductive Interface Pads 5595 and 5595S	
Thermal Conductivity (W/m-K)	1.6 W/m-K	3M Test Method with low pressure (<10 psi)
Operating Temperature Range****	-60° to 125°C	3M Test Method
Shelf Life	Product shelf life is 24 months from date of manufacture when stored at room temperature conditions (23-25C & 50% RH) and in the products original packaging.	3M Test Method
Hardness Shore 00**	Shore 00 results depend on test method and thickness of the sample tested. Typical results are in the 50-60 Shore 00 range @ 6 mm test thickness without the PEN film. Ask 3M for more details on pad softness.	Modified ASTM D2240
Dielectric Breakdown	400 V/mil AC (Interface Pad 5595S tested)	3M TM (ASTM D149)
Volume Resistivity	5 x 10^{12} Ohms (Interface Pad 5595S tested)	ASTM D257
Flammability Rating***	UL-94-V0 (3M tested.)	UL-94-V0 TM

Note: *Interface Pad 5595S has a 9 micrometer PEN Film added to provide for a non-tacky surface, increased puncture resistance, ease of handling and rework. **Interface Pad 5595 tested with-out PET film on product. ***9 µm PEN film is a non-FR version. ****Potential Operating Temperature Range (°C). End use application testing will determine final temperature range based on final design and other environmental conditions. Suggested Temperature range is based on a 3M Test Method.

Application Guidelines

Substrate surfaces should be clean and dry prior to the thermal pad application to ensure best thermal performance. A clean surface can improve the thermal performance of an application.

1.) Isopropyl alcohol (isopropanol) applied with a lint-free wipe or swab should be adequate for removing surface contamination such as dust or fingerprints. Do not use “denatured alcohol” or glass cleaners, which often contain oily components. Allow the surface to dry for several minutes before applying the thermal pad. More aggressive solvents (such as acetone, methyl ethyl ketone (MEK) or toluene) may be required to remove heavier contamination (grease, machine oils, solder flux, etc.) but should be followed by a final isopropanol wipe as described above.

Note: Be sure to read and follow the manufacturers’ precautions and directions when using solvents.

2.) Apply the thermal pad to one substrate at a modest angle with the use of a squeegee, rubber roller or finger pressure to help reduce the potential for air entrapment under the thermal pad during its application. Remove the release liner before application.

3.) Assemble the part by applying compression to the substrates to ensure a good wetting of the substrate surfaces with the thermal pads. Rigid substrates are more difficult to assemble without air entrapment as most rigid parts are not flat. Flexible substrates can be assembled to rigid or flexible parts with much less concern about air entrapment because one of the flexible substrate can conform to the other substrates during application.

General Information

Product selection table for 3M™ Thermally Conductive Materials.

Product	Thickness (mm)	Bulk Thermal Conductivity (W/m-K)	Typical Applications
3M™ Thermally Conductive Tapes			
8805	0.127	0.6	Applications requiring thin bonding with good thermal transfer; CPU, flex circuit and power transformer bonding to heat sinks and other cooling devices. Superior tack and wetting properties.
8810	0.25		
8815	0.375		
8820	0.50		
9889FR	1.0	0.5	Applications requiring gap filling and bonding with good thermal transfer; IC packages and PCB bonding to heat sinks, metal cases and other cooling devices.
3M™ Thermally Conductive Adhesives			
TC-2707	—	0.7	Applications requiring high adhesive strength, good surface wetting, gap filling and good thermal transfer. IC package and PCB thermal interfacing with heat sinks or other cooling devices.
TC-2810	—	1.0 - 1.4	
3M™ Thermally Conductive Interface Pads			
5506	0.5 to 2.0	2.3	Applications requiring gap filling and superior thermal performance without bonding. IC package and PCB thermal interfacing with heat sinks or other cooling devices and metal cases.
5509	0.5 to 2.0	5.0	
3M™ Thermally Conductive Interface Pads (silicone based)			
5591S	0.5 to 2.0	1.0	Applications requiring gap filling and superior thermal performance without bonding. IC package and PCB thermal interfacing with heat sinks or other cooling devices and metal cases.
5592	1.0 to 2.0	1.1	
5592S	0.5 to 2.0	—	
5595	1.0 to 2.0	1.6	
5595S	0.5 to 2.0	—	
3M™ Thermally Conductive Interface Pads (acrylic)			
5590H	0.5 to 1.5	3.0	Applications requiring gap filling and superior thermal performance without bonding. IC package and PCB thermal interfacing with heat sinks or other cooling devices and metal cases.

Application Ideas

- 3M™ Thermally Conductive Interface Thermal Pads are designed to provide a preferential heat-transfer path between heat-generating and cooling devices (e.g., fans, heat pipes and heat sinks).

Certification/Recognition

MSDS: 3M has not prepared a MSDS for these products which is are subject to the MSDS requirements of the Occupational Safety and Health Administration's Hazard Communication Standard, 29 C.F.R. 1910.1200(b)(6)(v). When used under reasonable conditions or in accordance with the 3M directions for use, these products should not present a health and safety hazard. However, use or processing of these products in a manner not in accordance with the directions for use may affect their performance and present potential health and safety hazards.

TSCA: These products are defined as an article under the Toxic Substances Control Act and therefore, are exempt from inventory listing requirements.

RoHs Complaint/REACH Compliant: These products comply with the European Union's "Restriction of Hazardous Substances" (RoHs) initiative and with European REACH regulations 2002/95/EC and 2005/618/EC.

For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-866-599-4227. Address correspondence to: 3M, Electronics Markets Materials Division, 3M Center, Building 225-3S-06, St. Paul, MN 55144-1000. Our fax number is 651-778-4244 or 1-877-369-2923. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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