Science. Applied to Life.™

Technical Data | February 2019

3M™ Thermally Conductive Acrylic Interface Pad 5500H

Product Description

3M™ Thermally Conductive Acrylic Interface Pad 5500H is designed to provide a preferential heat transfer path between heat generating components, for example, integrated circuit (IC) chips or electric vehicles batteries and heat spreaders such as aluminum heat sinks. 3M pad 5500H consists of a highly conformable slightly tacky acrylic elastomeric sheet filled with conductive ceramic particles.

Key Features

- Easy handling
- High conformability even for non-flat IC surfaces and automotive batteries
- Good flame retardancy, UL 94 V-0 rating
- No siloxane gas / oil bleeding, which often causes electric connection failure
- Soft compliant material allows for pressure relaxation, preventing high pressure zones on components
- Good electrical insulation properties
- Slight tack allows pre-assembly. Good wettability for better thermal conductivity

Product Construction/Material Description

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

3M™ Thermally Conductive Acrylic Interface Pad 5500H	
Property	**Value**
Color	White with light gray dots
Base resin	Acrylic
Pad thickness	0.5, 1.0, 1.5, 2.0 (thicker pads available upon request)
Primary filler type	Ceramic
Product liner	PET film

3M™ Thermally Conductive Acrylic Interface Pad 5500H

PET liner
Thermally conductive firm layer (low tack)
Thermally conductive conformable layer
PET liner

Applications

- Heat transfer in consumer electronics and automotive electronic products
- Decrease of compression stress to electronic parts by thermal pad softness

Examples:

- Heat transfer between PCB and heat sink
- Thermal management in automotive batteries
- Power electronics component thermal management
- Chip on film (COF) heat conduction
- LED thermal management

3M™ Thermally Conductive Acrylic Interface Pad 5500H

- HDTV IC chip
- General gap filling in electronic devices

Application Techniques

Note: Be sure to follow manufacturer's safety precautions and directions for use when using solvents.

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.

- Isopropyl alcohol (2-propanol) 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.
- 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.
- Assemble the part by applying compression to the substrates. This will 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 substrates can conform to the other substrates during application.

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. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is provided once the product is approved by 3M for general commercialization and development work is completed.

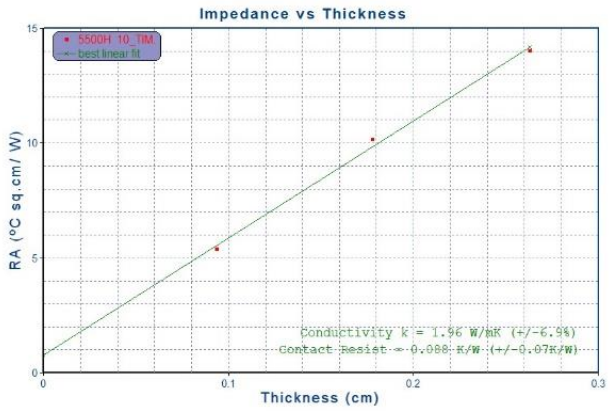
3M™ Thermally Conductive Acrylic Interface Pad 5500H		
Property	**Method**	**Typical Value**
Thermal conductivity (W/mK)[b]	3M method*[1]	3.0
Thermal conductivity (W/mK)	ASTM 5470	2.0
Hardness (Shore 00)	Asker C Shore 00	40 65
Flammability*[2]	UL94	V-0
Dielectric Strength (kV/mm)	ASTM D149	18
Volume Resistivity (Ω-cm)	ASTM D149	15×10^{12}
Operating Temperature Range	3M test method	110-130°C

*[b]Note: Tolerances of 1 mm and 1.5 mm = +/-10%, 0.5 mm +/- 0.1 mm.

*[1] Method listed as modified ASTM 5470. Sample thickness are 2-8mm. Sample size is 33mm Ø. Pressure condition is 200Kpa

*[2] File QMFZ2.E176845

3M™ Thermally Conductive Acrylic Interface Pad 5500H



Heat Resistance

3M™ Thermal Conductive Acrylic Interface Pad 5500H has high temperature (130°C durability). Samples that are aged for 2,000 hours at 130°C ambient temp show no significant change in thermal conductivity or hardness.

Note: The technical information and data should be considered representative or typical only and should not be used for specification purposes. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is shipped with the commercialized product. This value is a measured value, not a guaranteed value.

Storage and Shelf Life

Product shelf life is 12 months from date of manufacture when stored in the original packaging materials and stored between 15°C and 30°C and between 20% and 70% relative humidity. With long storage time, the material may yellow, and yellowing should be allowable. Additionally, liner release force can increase with time and impact the product converting and/or ease of liner removal.

3M™ Thermally Conductive Acrylic Interface Pad 5500H

Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is commercially available from 3M. The commercially available product will have a COA specification established. The COA contains the 3M specifications and test methods for the products performance limits that the product will be supplied against. The 3M product is supplied to 3M COA test specifications and the COA test methods. Contact your local 3M representative for this product's COA.

This technical data sheet may contain preliminary data and may not match the COA specification limits and/or test methods that may be used for COA purposes.

Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is shipped with the commercialized product.

Regulatory: For regulatory information about this product, contact your 3M representative.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use: Many factors beyond 3M's control and uniquely within user's control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Warranty, Limited Remedy, and Disclaimer: Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OR TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

3M

Electronics Materials Solutions Division
3M Center, Building 224-3N-11
St. Paul, MN 55144-1000
1-800-251-8634 phone
651-778-4244 fax
www.3M.com/electronics

60-5005-0089-1